



## **New Jetson Center for Youth**

Baker, Louisiana

### **Construction Documents**

Specifications – Volume 1

Date: March 30, 2026

Project No. 08-403-04-02, Part 09 (F.08000078) & 08-403-24-01, F.08000165  
GHC Project #: 571506

Site Code: 2-17-044

State ID: NEW

State of Louisiana  
Jeff Landry – Governor

Division of Administration  
Taylor F. Barras – Commissioner of Administration

Office of Facility Planning and Control  
Matthew H. Baker. – Director

Office of Juvenile Justice  
Courtney Myers – Deputy Secretary

## **Volume 1**

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### **Project Information:**

#### **New Jetson Center for Youth**

Baton Rouge, Louisiana  
Project No. 08-403-04-02, Part 09 (F.08000078))  
State ID: NEW  
Site Code: 2-17-044

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# ECS Southeast, LLP

Geotechnical Engineering Report

**New Jetson Center for Youth**

Groom Road and Highway 964  
Baker, Louisiana

ECS Project No. 65:1419

August 31, 2023





August 31, 2023

Mr. Damien Job  
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ECS Project No. 65:1419

Reference: Geotechnical Engineering Report  
**New Jetson Center for Youth**  
Groom Road and Highway 964  
Baker, Louisiana

Mr. Job:

ECS Southeast, LLP (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analysis for the New Jetson Center for Youth project in Baker, LA. Our services were performed in accordance with our agreed to scope of work. This report presents our geotechnical analysis of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to Grace Hebert Curtis Architects, LLC during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to evaluate subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please feel free to contact us.

Respectfully submitted,

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- Boring Location Diagram

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## EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

### SUBSURFACE CONDITIONS:

- Surface Material: Topsoil, approximately 6 Inches with grass cover.
- Probable Fill: Not encountered
- Expected Undercut: Approximately 6 Inches in previously undeveloped areas.
- Natural Material: Tan, Gray and Brown Lean Clay (CL), Tan, Gray, and Brown fat Clay (CH), Brown Silty Clay (CL-ML)
- Swell Potential (PVR): Moderately expansive clays encountered above the water table.
- Groundwater: Encountered at depths of approximately 25 to 28 feet in borings B-1 through B-6. Not encountered in borings B-7 to B-9, or P-1 to P-6.

### DESIGN & CONSTRUCTION RECOMMENDATIONS:

- Shallow foundations
  - Max. Net Allow. Bearing Pressure
    - 2,000 psf for spread footings
  - Min. Exterior Footing Depth = 24 inches
  - Min. Interior Footing Depth = Per structural design
- Slab-on-Grade: Modulus of Subgrade Reaction of 125 pci
- Seismic Design: IBC Site Class “D”

ECS should be retained to review all project documents to confirm conformance with our recommendations, and to perform CMT testing for earthwork and foundation construction activities to document that our recommendations are strictly followed. This also allows us to quickly provide recommendations for remedial activities, where necessary.

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## 1.0 INTRODUCTION

The purpose of this study was to provide geotechnical information for the design of a New Jetson Center for Youth. The project will include a single-story, slab-on-grade building design with associated parking and drive areas. We anticipate the plan area of the building to encompass approximately 91,000 square feet. The recommendations developed for this report are based on project information supplied by the client.

Our services were provided in accordance with our Proposal No. 1852P, dated April 17, 2023, as authorized by Mr. Damien Job with GHC Architects on June 1, 2023, which includes our Terms and Conditions of Service.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items:

- Observations from our site reconnaissance including current site conditions and surface topographic conditions.
- Description of the field exploration and laboratory tests performed.
- Final logs of soil test borings and records of the field exploration and laboratory tests in accordance with the standard practice of geotechnical engineers. This includes a location diagram.
- Recommendations for allowable bearing pressure for conventional shallow foundation systems and estimates of total and differential foundation settlement. This will include specific project information and design loads assumed by ECS.
- Recommendations for floor slab and pavement construction, including recommendations for subgrade modulus and subgrade improvements.
- Evaluation of the on-site soil characteristics encountered in the soil boring. Specifically, we will discuss the suitability of the on-site materials for reuse as engineered fill to support ground slabs. A discussion of groundwater and its potential impact on structures and project construction.
- Recommendations regarding site preparation and construction observations and testing.



## 2.0 PROJECT INFORMATION

### 2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The project is located near the corner of Highway 964 and Groom Road in Baker, LA. The site has been used as grazing pastures for cattle and contains no existing structures; however, multiple buried gas pipelines run east to west across the site approximately 50 to 100 feet south of Groom Road. The topography of the site varies with surface elevations ranging from +70 feet MSL to +82 feet MSL. The elevations and topographic variations were estimated from Google Earth. The location is depicted on the Figure shown below:



General Site Location Outlined in Red

## 2.2 PROPOSED CONSTRUCTION

The following information explains our understanding of the planned development including proposed buildings and related infrastructure:

| SUBJECT                       | PROVIDED DESIGN INFORMATION                                                 |
|-------------------------------|-----------------------------------------------------------------------------|
| Building Footprint            | Approximately 91,000 Square Feet                                            |
| Number of Stories             | Single-Story                                                                |
| Usage                         | Juvenile Detention                                                          |
| Framing                       | Steel With CMU Walls                                                        |
| Assumed Column Loads          | 40 kips Maximum                                                             |
| Assumed Wall Loads            | 3 Kips Per Linear Foot (klf) Maximum                                        |
| Lowest Finish Floor Elevation | EL. 199 ft MSL (Estimated to be less than 2 feet above present site grades) |

**Pavement:** It is anticipated the proposed site grading will require minor excavation ('cut') and 'fill' thicknesses. The planned traffic loading was not provided to ECS. Therefore, it was necessary for us to estimate design traffic volumes. Based on similar type developments we assumed a maximum daily traffic volume of 500 automobiles and 12 delivery trucks for medium-duty pavement areas, and a maximum daily traffic volume of 250 automobiles, and three delivery trucks for light-duty pavement areas.

***If ECS's understanding of the project is not correct, especially if the structural loads or elevations are different, please contact ECS so that we may review these changes and revise our recommendations, as appropriate.***

## 3.0 FIELD EXPLORATION AND LABORATORY TESTING

### 3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field and laboratory data to assist in the determination of geotechnical recommendations.

#### 3.1.1 Test Borings

Our scope of work included drilling a total of fifteen (15) soil test borings. Nine (9) test borings were located in the footprint of the proposed building and were advanced to a depth of approximately 30 feet below the existing site grades. Six (6) test borings were drilled for the parking and drive pavements to a depth of approximately 6 feet below the existing site grades. **Note: Borings B-9 and P-1 were relocated approximately 50' south from their original proposed locations to maintain a safe distance from the existing buried gas pipelines.** Our borings were located with a handheld GPS unit, and their approximate locations are shown on the Boring Location Diagram in Appendix A. The approximate ground surface elevations noted in this report were estimated from Google Earth.

Representative soil samples were obtained by means of Standard Penetration Test (SPT) procedures in accordance with ASTM Specifications D-1586 in granular soils and by means of Shelby tube sampling procedures in accordance with ASTM Specifications D-1587 in cohesive soils. SPT sampling is performed

by driving a split-barrel sampler into the soil in 1.5-foot intervals with a 140-lb hammer and measures the resistance of the soil to penetration of the 2-inch diameter sampler. In the Shelby tube sampling procedure, a thin walled, steel, seamless tube with sharp cutting edges is pushed hydraulically into the soil, and a relatively undisturbed sample is obtained.

Field logs of the soils encountered in the borings were maintained by the drill crew. After recovery, each geotechnical soil sample was removed for the sampler and visually classified. Representative portions of each soil sample were then wrapped in plastic and transported to our laboratory for further visual examination and laboratory testing. After completion of the drilling operations, the boreholes were backfilled with cuttings to the existing ground surface.

### 3.2 SUBSURFACE CHARACTERIZATION

The following text provides generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information specific information, please refer to the Boring Logs in Appendix B:

**GENERALIZED SUBSURFACE CONDITIONS**

| Approximate Depth (ft) | Elevation <sup>(1)</sup> (Ft, MSL) | Stratum No. | Soil Description                                                                                |
|------------------------|------------------------------------|-------------|-------------------------------------------------------------------------------------------------|
| 0 – 0.5 ft             | EL. +77.0 to +76.5                 | -           | GRASS COVER/TOPSOIL                                                                             |
| 0.5 – 30.0 ft          | EL. +76.5 to +57.0                 | I           | ALTERNATING LAYERS OF LEAN CLAY (CL) and FAT CLAY (CH), Firm to Very Stiff, Brown, Tan and Gray |

Notes:

- (1) Please note that the ground surface elevations were surveyed by a licensed surveyor; these elevations are approximate based on Google-Earth©.
- (2) Soil descriptions show generalized strata to 30'. Strata in the borings vary with depth, please see attached Boring Logs in Appendix B.

Please refer to the attached boring logs and laboratory data summary for this field exploration for a more detailed description of the subsurface conditions encountered in the borings as the stratification descriptions above are generalized for presentation purposes.

### 3.3 GROUNDWATER OBSERVATIONS

Groundwater levels, if observed, were made in the borings during and shortly after drilling operations. In auger drilling operations, water is not introduced into the borehole and the groundwater position can often be evaluated by observing water flowing into and out of the excavation. Furthermore, visual observation of soil samples retrieved can often be used in evaluating the groundwater conditions.

**Groundwater was encountered at a depth of approximately 25 feet to 28 feet in borings B-1 through B-6 at the time of drilling.**

The highest groundwater observations are normally encountered in the late winter or early spring or following seasonal heavy rainfall events. Fluctuations in the location of the long-term water table may occur due to changes in precipitation, evaporation, surface water runoff and other factors not immediately apparent at the time of his investigation. Therefore, the groundwater conditions at this site are expected to be significantly influenced by surface water runoff and seasonal rainfall.

### 3.4 LABORATORY TESTING

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples. The soil samples were tested for moisture content, Atterberg Limits, and percent passing standard No. 200 sieve, and Unconfined Compression.

Each sample was visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols. After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposition.

## 4.0 DESIGN RECOMMENDATIONS

The following recommendations have been developed based on provided project information and assumptions made by ECS as described in Sections 2 and 3. If there are any changes to the project characteristics or if different subsurface conditions are encountered during construction, ECS should be consulted so that the recommendations of this report can be reviewed. Site grading information was not provided during this report; however, we have assumed that the foundation elevation will be less than 2 feet above existing site elevations. If the finished floor elevation deviates from this assumed site grades, the recommendations provided below should be evaluated by our office.

### 4.1 GEOTECHNICAL CONSIDERATIONS

Based on the subsurface conditions encountered in the borings, the anticipated loading conditions and the lowest level bearing elevation, the site appears suited for the proposed development provided the recommendations herein are strictly adhered to. The following sections detail our recommendations for the proposed development regarding foundation and below grade work.

#### 4.1.1 Presence of Expansive Soils

Based on the laboratory test results, the subsurface soils encountered within the building pad and pavement areas generally have moderate swelling potential. Soils with swelling potential located above the water table and within depths that are subject to changes in moisture are expected to experience volume change and were considered in our potential vertical rise (PVR) estimation. **The potential vertical rise (PVR) is estimated to be less than 1 inch using an applied load of 1.0 psi.**

Generally, one (1) inch of PVR is acceptable as the maximum allowable value used for design and construction. However, the structural engineer must confirm if these PVR values are within acceptable limits for the specific project. These PVR estimations assume that the soils are allowed to increase/decrease in moisture content from a relatively dry condition to a relatively wet condition over a depth of approximately 10 feet from the existing ground surface at the time of field exploration.

#### **4.1.2 Moisture Sensitive Soils**

Based on the laboratory test results, fine grained soils were disclosed directly beneath the surface layer across the site. These soils are moisture sensitive, subject to volume changes and will become inadequate when wet of their optimum moisture content as evaluated by ASTM D698. Effective site drainage should be implemented at the onset of construction and maintained throughout the construction process. Care should be taken to keep construction traffic to a minimum across the site during wet periods. Water should not be allowed to pond on construction areas (building pads or pavement subgrade).

#### **4.1.3 Perimeter Conditions**

Positive drainage away from the structure should be provided during construction and maintained throughout the life of the proposed project. Water should not be allowed to infiltrate into the excavations during construction. Foundation soils should not be allowed to become wet. Grades must be sloped to provide effective drainage away from the building during and after construction. Adjacent concrete sidewalks and pavements should be sloped to provide drainage away from the building, and joints should be sealed; close attention should be paid to those directly abutting the building.

Roof runoff and surface drainage should be collected and discharged away from the structure to prevent wetting of the foundation soils. Roof gutters should be installed and connected to downspouts and pipes directing roof runoff into stormwater collection systems or discharged onto positively sloped pavements.

## 4.2 FOUNDATIONS

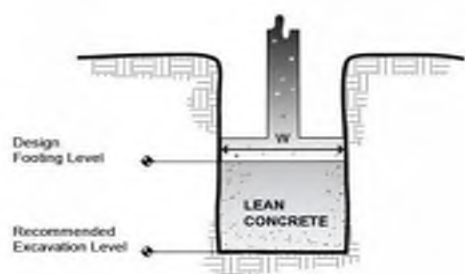
For structures with maximum column loads of 40 kips or less and provided subgrades and structural fills are prepared as recommended in this report, the proposed structure can be supported by shallow foundations. For column loads greater than 40 kips, ECS should be consulted to provide additional recommendations. We recommend that the foundation design use the following parameters:

| Design Parameter                                                              | Column Footing                                 | Wall Footing         |
|-------------------------------------------------------------------------------|------------------------------------------------|----------------------|
| Net Allowable Bearing Pressure <sup>(1)</sup>                                 | 2,000 psf                                      |                      |
| Acceptable Bearing Soil Material                                              | Compacted Engineered Fill or Stiff Native Soil |                      |
| Minimum Width                                                                 | 24 inches                                      | 18 inches            |
| Minimum Footing Embedment Depth (below slab or finished grade) <sup>(2)</sup> | 24 inches                                      | 18 inches            |
| Estimated Total Settlement                                                    | Less than 1- inch                              | Less than 1- inch    |
| Estimated Differential Settlement <sup>(3)</sup>                              | Less than 1/2 inches between columns           | Less than 1/2 inches |

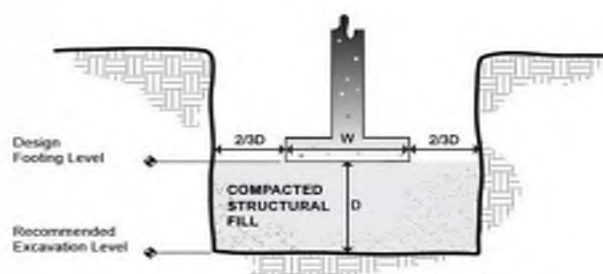
Notes:

- (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
- (2) For bearing considerations and expansive soil concerns.
- (3) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

**Potential Undercuts:** Most of the soils at the foundation bearing elevation are anticipated to be adequate for support of the proposed structure without remediation. If soft or loose soils are observed during footing observations, the footings should be extended to adequate bearing soils. Undercut areas should be backfilled with compacted engineered fill or lean concrete ( $f'_c \geq 1,000$  psi at 28 days) to the original design bottom of footing elevation; the original footing should be constructed on top of the hardened lean concrete or engineered fill. If engineered fill is used to backfill the undercut footing, the over-excavated footings should be widened accordingly on all sides for each one (1) foot of over excavation as detailed in the figure below. If lean concrete is used for backfill, the over-excavation does not require widening.



**Lean Concrete Backfill**



**Structural Fill Backfill**

The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure. The final footing elevation should be evaluated by ECS's geotechnical engineering personnel to evaluate that the bearing soils are capable of supporting the recommended net allowable bearing pressure and adequate for foundation construction. These evaluations should include visual observations using a T-probe or static cone penetrometer, or with the use of a Dynamic Cone Penetrometer (DCP), if necessary. Evaluations

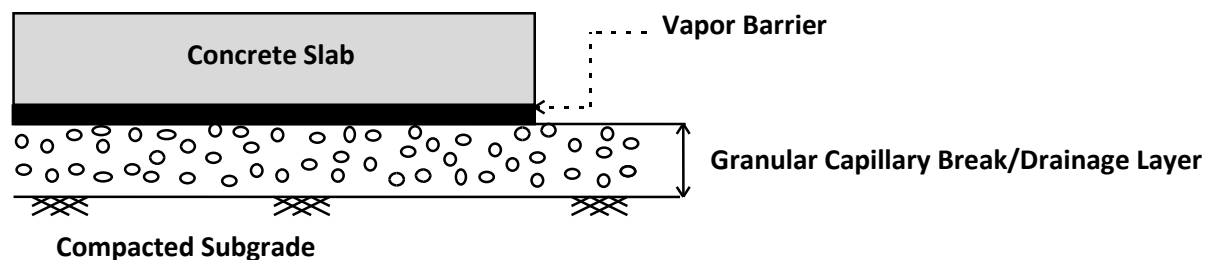
should be performed within each column footing excavation (minimum of 2 tests per column footing) and at intervals not greater than 25 feet in continuous footings. The DCP testing should extend at least 2 feet below the final foundation subgrade. A minimum DCP value of 10 blows should be used for the evaluation of the foundations.

The settlement of a structure is a function of the compressibility of the bearing materials, bearing pressure, actual structural loads, fill depths, and the bearing elevation of footings with respect to the final ground surface elevation. Estimates of settlement for foundations bearing on engineered or non-engineered fills are strongly dependent on the quality of fill placed. Factors that may affect the quality of fill include maximum loose lift thickness of the fills placed and the amount of compactive effort placed on each lift. If the recommendations outlined in this report are followed, we expect total settlements for the proposed construction to be in the range of 1 inch or less, while the differential settlement will be approximately half of the anticipated total settlement. This evaluation is based on our engineering experience and the anticipated loadings for this type of structure and is intended to aid the structural engineer with the design.

Exposure to the environment may weaken the soils at the foundation bearing level if the foundation excavations remain exposed during periods of inclement weather. Therefore, foundation concrete should be placed the same day that final excavation is achieved, and the design bearing pressure verified. If the bearing soils are softened by surface water absorption or exposure to the environment, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the foundation excavation must remain open overnight, or if rainfall is apparent while the bearing soils are exposed, we recommend that a 1 to 3-inch thick "mud mat" of "lean" concrete be placed over the exposed bearing soils before the placement of reinforcing steel.

#### 4.3 SLABS ON GRADE

Provided subgrades and structural fills are prepared as discussed herein, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade) on lean natural soils, newly placed fill soils or lime treated soils. Based on the assumed finished floor elevation, it appears that the slabs will bear on native clay material or newly placed structural fill. The following graphic depicts our soil-supported slab recommendations:



1. Drainage Layer Thickness: 4 inches
2. Drainage Layer Material: GRAVEL (GP, GW), SAND (SP, SW)

Soft or yielding soils may be encountered in some areas. Those soils should be removed and replaced with compacted Structural Fill in accordance with the recommendations included in this report.



**Subgrade Modulus:** Provided the structural fill and granular drainage layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction,  **$k_1$  of 125 pci (lbs./cu. inch)**. The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

**Vapor Barrier:** Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

**Slab Isolation:** Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop down footing/monolithic slab configuration, the slab should be designed with adequate reinforcement and load transfer devices to reduce risk of overstressing of the slab.

#### 4.4 SEISMIC DESIGN CONSIDERATIONS

**Seismic Site Classification:** The International Building Code (IBC) 2015/2018 requires site classification for seismic design based on the upper 100 feet of a soil profile. The methods are utilized in classifying sites, namely the shear wave velocity ( $V_s$ ) method; the unconfined compressive strength ( $s_u$ ) method; and the Standard Penetration Resistance (N-value) method. The unconfined compressive strength ( $s_u$ ) method was used in classifying this site.

| SEISMIC SITE CLASSIFICATION |                               |                                                 |                                             |
|-----------------------------|-------------------------------|-------------------------------------------------|---------------------------------------------|
| Site Class                  | Soil Profile Name             | Shear Wave Velocity, $V_s$ ,<br>(ft./s)         | Soil Undrained Shear<br>Strength (psf)      |
| A                           | Hard Rock                     | $V_s > 5,000$ fps                               | N/A                                         |
| B                           | Rock                          | $2,500 < V_s \leq 5,000$ fps                    | N/A                                         |
| C                           | Very dense soil and soft rock | $1,200 < V_s \leq 2,500$ fps                    | $\geq 2000$                                 |
| <b>D</b>                    | <b>Stiff Soil Profile</b>     | <b><math>600 \leq V_s \leq 1,200</math> fps</b> | <b><math>1000 \leq S_u \leq 2000</math></b> |
| E                           | Soft Soil Profile             | $V_s < 600$ fps                                 | $< 1000$                                    |

Based upon our interpretation of the subsurface conditions, the appropriate **Seismic Site Classification** is **“D”** as shown in the preceding Table.

The Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses. If a higher site classification is beneficial to the project, we can provide additional testing methods that may yield more favorable results.



## 4.5 PAVEMENTS

**Subgrade Characteristics:** Based on the results of our borings, it appears that the pavement subgrade will consist mainly of lean clay soils. The soils across the site are moisture sensitive and will become difficult to work with when wet. Care should be taken if construction is performed during wet weather periods.

California Bearing Ratio [CBR] testing was not performed as part of this study. Therefore, we have assumed a CBR value of the onsite subsoil to be 3 for preliminary design purposes.

We were not provided traffic loading information, so we have assumed loadings typical of this type of project. We assumed a maximum daily traffic volume of 500 automobiles and 12 delivery trucks for medium duty pavement areas, and a maximum daily traffic volume of 250 automobiles, and three delivery trucks for light duty pavement areas. Our pavement section recommendations for medium duty (drives) pavements should accommodate occasional heavier loadings due to trash trucks, delivery vehicles and light truck traffic and may be considered for main drives. Typical pavement sections are presented below. Actual pavements sections and joint spacing, if applicable, should be designed based on specific traffic loads.

| PROPOSED PAVEMENT SECTIONS                                                  |                   |            |                           |             |            |
|-----------------------------------------------------------------------------|-------------------|------------|---------------------------|-------------|------------|
| MATERIAL                                                                    | FLEXIBLE PAVEMENT |            | RIGID PAVEMENT            |             |            |
|                                                                             | Medium Duty       | Light Duty | Heavy <sup>(2)</sup> Duty | Medium Duty | Light Duty |
| Portland Cement Concrete ( $f'_c = 4000$ psi)                               | -                 | -          | 8 in.                     | 6 in.       | 5 in.      |
| Asphaltic Concrete Surface Course                                           | 2 inches          | 1 ½ inches | -                         |             | -          |
| Asphaltic Concrete Binder Course                                            | 2 inches          | 1 ½ inches | -                         |             | -          |
| Graded Aggregate Base Course <sup>(1)</sup>                                 | 6 inches          | 6 inches   | 4 inches                  | 4 inches    | 4 inches   |
| Proofrolled In-Situ lean Clay or Compacted Engineered Fill (Min. Thickness) | 12 inches         | 12 inches  | 12 inches                 | 12 inches   | 12 inches  |

Notes:

- (1) Lime treated fill for rigid pavement and cement treated fill for flexible pavement may be used as an alternative to aggregate base course. Review Section 5.1.5 for additional information.
- (2) Large, front loading garbage trucks frequently impose concentrated front wheel loads on pavements during loading. This type of loading typically results in rutting of asphalt pavement and ultimately pavement failures. For preliminary design purposes, we recommend that the pavement in trash pickup areas consist of an 8-inch thick, 4,000 psi, reinforced concrete slab over at least 12 inches of properly compacted engineered fill material.

**Pavement Considerations:** In regions of improper surface and/or subsurface drainage, a softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Esurance of positive drainage will reduce the possibility of the subgrade materials becoming saturated during the normal service period of the pavement.

The reinforced pavement in the trash pick-up area should extend to a minimum of 5 feet past the location of the expected wheel loads. When traffic loading becomes available, ECS or the Civil Engineer can design the pavements. Appropriate jointing should also be incorporated into the design of the PCC pavement which should be specified, constructed, and tested to meet the following requirements:

1. Proper pavement joint spacing and saw-cutting will be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer and saw cutting should be performed while the concrete is in

its “green’ state. The design engineer should refer to ACI330R-08 for more detailed for the design of rigid pavement.

2. Portland Cement Concrete: Minimum compressive strength of 4,000 psi at 28 days.
3. Hot Mix asphaltic concrete should conform to the latest edition of the LSSRB Section 502. Structural fill should meet the criteria for material properties and compaction recommended in Section 5.1 of this report.
4. Crushed aggregate base should be compacted to maximum lift height of eight inches to a minimum of 95 percent of the Standard Proctor (ASTM D698) maximum dry density. Aggregate should conform to the latest edition of the Louisiana Standard Specifications for Roads and Bridges (LSSRB) Section 1003.03.

Representative soil samples should be collected from the upper 2 feet of the final pavement subgrade to assess the suitability of the in-situ CBR values, prior to implementation of the pavement sections provided herein. Often during construction and preparation of the roadway subgrade, the soil materials may be improved and can sometimes yield reduced pavement sections based on the actual CBR values and traffic loads.

## 5.0 SITE CONSTRUCTION RECOMMENDATIONS

### 5.1 SUBGRADE PREPARATION

The existing soils are moisture sensitive and will become inadequate when above their optimum moisture content as evaluated by ASTM D698. Effective site drainage should be implemented at the beginning of and maintained throughout construction activities. Care should be taken to keep construction traffic to a minimum during and immediately after times of inclement weather.

ECS should be on-site full-time during earthwork and foundation construction activities to document that our recommendations are strictly followed and to provide recommendations for remedial activities, if necessary.

#### 5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping approximately 6 inches of topsoil, gravel laden soils, root balls of trees, utilities and soft or yielding materials from the 10-foot expanded building limits, and 5 feet beyond the toe of structural fills.

**Note: Following stripping and grubbing the entire construction area should be proofrolled as outlined in Section 5.1.2 of this report. Soils observed to rut or deflect greater than an inch in depth should be undercut and replaced or otherwise mitigated.**

Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas. In wooded areas, the root balls may extend as deep as about 2 feet and will require additional localized stripping depth to completely remove the organics. ECS should be retained to evaluate that topsoil and

poor surficial materials have been removed prior to the placement of structural fill or construction of structures.

### **5.1.2 Proofrolling**

Following clearing activities and prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with a half loaded tandem-axle dump truck or similar construction equipment weighing a minimum of 15 tons. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying localized yielding materials.

Where proofrolling identifies areas of yielding or “pumping” subgrade those areas should be repaired prior to the placement of subsequent structural fill or other construction materials. Observations of yielding or “pumping” should be addressed with ECS to establish the appropriate remediation as outlined in Section 5.1.3.

### **5.1.3 Subgrade Stabilization**

Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed inadequate materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade. Anticipated methods of subgrade stabilization of the near surface soils are provided below:

**Moisture Conditioning:** If it is established that high moisture content is the cause of the inadequate subgrade, the geotechnical engineer may require the earthwork contractor process the upper 12 to 18 inches of in-situ subgrade by windrowing with a dozer or plowing with a set of heavy-duty disk harrows until soil moisture is observed to be within 2 percent of its optimum moisture content as evaluated by ASTM D698 to improve subgrade conditions before consideration other mitigation approaches. The drying effort should begin after the exposed subgrade is free of standing water and the windrowing/disking should be continuous during a period of dry weather. ECS should be onsite to periodically perform soil moisture testing. The processed areas should be sealed with compaction equipment and a flat drum roller or dozer blade at the end of the day in case of overnight rain. If weather conditions do not allow appropriate time to dry the native subgrade, the geotechnical engineer may recommend chemical treatment with lime or cement in order to provide an adequate working surface for fill placement.

**Undercut and Replace:** Where proofrolling identifies areas of yielding or “pumping” subgrade those areas can be repaired by undercut of the yielding or ‘pumping’ soils. The undercut areas should be backfilled with compacted structural fill. Undercut should extend to adequate subgrade soils as observed by the geotechnical engineer or their qualified representative.

**Lime Stabilization:** Lime stabilization may be used to modify onsite clay soils to achieve an adequate working surface and achieve PIs between 10 and 25 for reuse as structural fill. The amount of lime necessary to achieve lime stabilization will vary depending on the clay mineral, plasticity and type of lime used for stabilization. For estimating purposes 4 to 6% percent of lime by volume should be used; however, a laboratory lime series should be performed at the time of construction to establish the optimum lime content. Surficial samples should be collected from across the site and testing should be conducted on the composite sample. The subgrade soils should meet the requirements of Section 305.4,

and lime treatment of the subbase should meet the requirements of Section 304 - Type B, of the latest edition of the LSSRB. An ECS Field Engineer or Senior Technician should be present during lime treatment activities to observe lime quantities and document that treated areas are in conformance with the project requirements. Please note that caution should be used when powdered lime is used in closely populated areas. To control dust, a lime slurry or pelletized lime may be used where dust must be controlled. In addition, pelletized lime will generally require 2 to 3 times the effort to properly pulverize and mix into the clay soils than a powder or slurry.

**Cement Stabilization:** When soils have PI values of 15 or below, cement stabilization should be used in lieu of lime treatment. Additionally, 12 inches of cement stabilized soil can be used as an alternative to aggregate base course for light and medium duty flexible pavement. A minimum of 10% by volume of cement is recommended to use for a cement stabilized base course and should be prepared in general accordance with LSSRB, Section 303-04. Note that the cement treatment of the roadways should be conducted in general accordance with LSSRB, Section 303. Cement stabilized base course should yield a compressive strength of at least 250 psi at 7 days as evaluated by a mix design in accordance with DOTD TR 432 Standard Procedure. The treated soil should be compacted at least 95% of maximum dry density  $\pm 3\%$  the optimum moisture content in accordance with the Sub-section 303.11 of LSSRB.

#### **5.1.4 Probable Fill**

Fill material was not encountered in the soil borings at the time of exploration; however, the site has been used as an agricultural field in the past. Therefore, it is possible that fill material or debris may be encountered between or beyond our borings. If encountered, ECS recommends removing the existing fill and debris in its entirety and replacing it with well compacted structural fill meeting the parameters outlined in this report.

## 5.2 EARTHWORK OPERATIONS

### 5.2.1 Structural Fill

Prior to placement of structural fill, representative bulk samples (approximately 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to evaluate if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

**Satisfactory Structural Fill Materials:** Materials satisfactory for use as Structural Fill should consist of inorganic soils with the following engineering properties and compaction requirements.

| STRUCTURAL FILL INDEX PROPERTIES |                     |                                                                                                                                                                    |
|----------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soil Type                        | USCS Classification | Property                                                                                                                                                           |
| Imported Clay Fill               | CL, SC              | LL < 45, 10<PI<25                                                                                                                                                  |
| Imported Sand Fill               | SP, SP-SM           | Less than 10% passing #200 sieve                                                                                                                                   |
| Aggregate Base                   | GP                  | LADOTD 610 crushed limestone or similarly graded recycled aggregate                                                                                                |
| On-Site Soils                    | CL/CH               | The native lean and fat clay soils in do not appear to meet the requirements for reuse as structural fill without lime treatment due to avg. LL's greater than 45. |

| STRUCTURAL FILL COMPACTION REQUIREMENTS |                                                    |
|-----------------------------------------|----------------------------------------------------|
| Subject                                 | Requirement                                        |
| Compaction Standard                     | Standard Proctor, ASTM D698                        |
| Required Compaction                     | 95% of Max. Dry Density                            |
| Moisture Content                        | Optimum to +3 % Points of the Soil's Optimum Value |
| Loose Thickness                         | 8 Inches Prior to Compaction                       |

**Fill Placement:** Excessively wet fill soils or aggregates should be scarified, aerated, and moisture conditioned prior to compaction.

**On-Site Borrow Suitability:** Natural deposits of soils that meet the definition above may be used as structural fill on the site.

## 5.3 FOUNDATION AND SLAB OBSERVATIONS

**Protection of Foundation Excavations:** Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open; therefore, foundation concrete should be placed the same day that excavations are made. Bearing soils that are weakened by surface water intrusion or exposure must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing

soils are exposed, a 1 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

**Footing Subgrade Observations:** Most of the soils at the foundation bearing elevation are anticipated to be adequate for support of the proposed structure. ECS should observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are as recommended.

**Slab Subgrade Verification:** Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in Section 5.1.2.

## 5.4 UTILITY INSTALLATIONS

**Utility Subgrades:** The soils encountered in our exploration are expected to be generally adequate for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Loose or inadequate materials encountered should be removed and replaced with adequate compacted Structural Fill, or pipe stone bedding material.

**Utility Backfilling:** The granular bedding material (often AASHTO #57 stone) should be at least 4 inches thick, but not less than that specified by the civil engineer’s project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should conform to Section 5.2.

**Excavation Safety:** Excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining adequate excavations and slopes. The contractor’s responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor’s activities; such responsibility is not being implied and should not be inferred.

## 6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by Grace Hebert Curtis Architects, LLC. If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

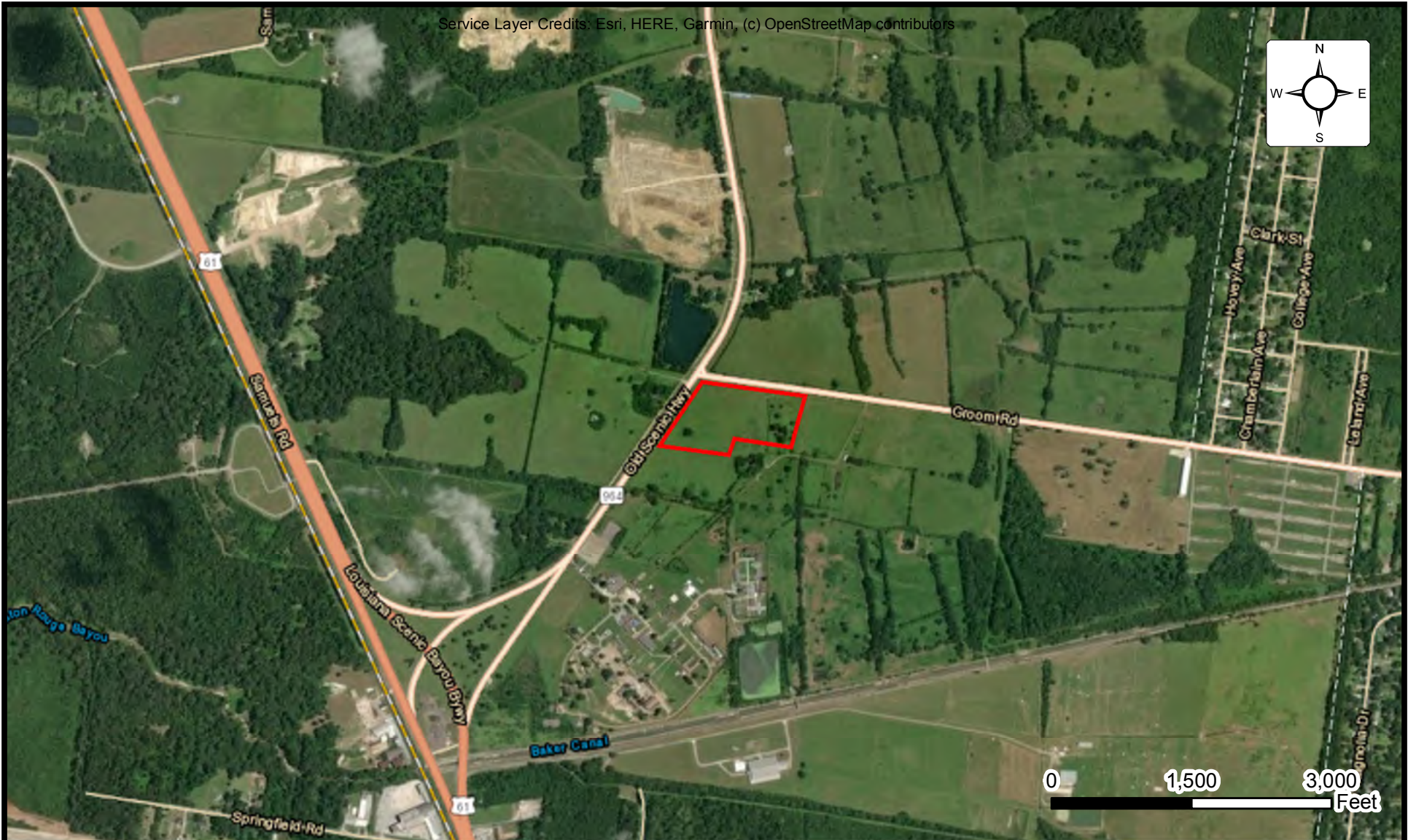
## **Appendix A - Drawings and Reports**

Site Location Diagram

Boring Location Diagram(s)



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors



## SITE LOCATION DIAGRAM NEW JETSON CENTER FOR YOUTH

HWY. 964 AND GROOM ROAD, BAKER, LOUISIANA  
GRACE HEBERT CURTIS ARCHITECTS

|                        |
|------------------------|
| ENGINEER<br>JCC3       |
| SCALE<br>AS NOTED      |
| PROJECT NO.<br>65:1419 |
| FIGURE<br>1 OF 1       |
| DATE<br>8/28/2023      |





## BORING LOCATION DIAGRAM NEW NEW JETSON CENTER FOR YOUTH

HWY. 964 AND GROOM ROAD, BAKER, LOUISIANA GRACE  
HEBERT CURTIS ARCHITECTS

|                        |
|------------------------|
| ENGINEER<br>JCC3       |
| SCALE<br>AS NOTED      |
| PROJECT NO.<br>65:1419 |
| FIGURE<br>1 OF 1       |
| DATE<br>8/28/2023      |

## **Appendix B – Field Operations**

Reference Notes

Boring Logs



ECS Southeast, LLP

## REFERENCE NOTES FOR BORING LOGS

CLIENT Grace Hebert Curtis Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

MATERIAL<sup>1,2,3</sup>CH: FAT CLAY  
high plasticityCL: LEAN CLAY  
low to medium plasticityCL-ML: USCS Low Plasticity  
Silty Clay

## DRILLING SAMPLING SYMBOLS &amp; ABBREVIATIONS

|     |                         |     |                            |
|-----|-------------------------|-----|----------------------------|
| SS  | Split Spoon Sampler     | PM  | Pressuremeter Test         |
| ST  | Shelby Tube Sampler     | RD  | Rock Bit Drilling          |
| WS  | Wash Sample             | RC  | Rock Core, NX, BX, AX      |
| BS  | Bulk Sample of Cuttings | REC | Rock Sample Recovery %     |
| PA  | Power Auger (no sample) | RQD | Rock Quality Designation % |
| HSA | Hollow Stem Auger       |     |                            |

## PARTICLE SIZE IDENTIFICATION

| DESIGNATION           | PARTICLE SIZES                                 |
|-----------------------|------------------------------------------------|
| Boulders              | 12 inches (300 mm) or larger                   |
| Cobbles               | 3 inches to 12 inches (75 mm to 300 mm)        |
| Gravel: Coarse        | 3/4 inch to 3 inches (19 mm to 75 mm)          |
| Fine                  | 4.75 mm to 19 mm (No. 4 sieve to 3/4 inch)     |
| Sand: Coarse          | 2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)     |
| Medium                | 0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)   |
| Fine                  | 0.074 mm to 0.425 mm (No. 200 to No. 40 sieve) |
| Silt & Clay ("Fines") | <0.074 mm (smaller than a No. 200 sieve)       |

## COHESIVE SILTS &amp; CLAYS

| UNCONFINED<br>COMPRESSIVE<br>STRENGTH, QP <sup>4</sup> | SPT <sup>5</sup><br>(BPF) | CONSISTENCY <sup>7</sup><br>(COHESIVE) |
|--------------------------------------------------------|---------------------------|----------------------------------------|
| <0.25                                                  | <2                        | Very Soft                              |
| 0.25 - <0.50                                           | 3 - 4                     | Soft                                   |
| 0.50 - <1.00                                           | 5 - 8                     | Firm                                   |
| 1.00 - <2.00                                           | 9 - 15                    | Stiff                                  |
| 2.00 - <4.00                                           | 16 - 30                   | Very Stiff                             |
| 4.00 - 8.00                                            | 31 - 50                   | Hard                                   |
| >8.00                                                  | >50                       | Very Hard                              |

RELATIVE  
AMOUNT<sup>7</sup>COARSE  
GRAINED  
(%)<sup>8</sup>FINE  
GRAINED  
(%)<sup>8</sup>

|                            |         |         |
|----------------------------|---------|---------|
| Trace                      | ≤ 5     | ≤ 5     |
| With                       | 10 - 20 | 10 - 25 |
| Adjective<br>(ex: "Silty") | 25 - 45 | 30 - 45 |

## GRAVELS, SANDS &amp; NON-COHESIVE SILTS

| SPT <sup>5</sup> | DENSITY      |
|------------------|--------------|
| <5               | Very Loose   |
| 5 - 10           | Loose        |
| 11 - 30          | Medium Dense |
| 31 - 50          | Dense        |
| >50              | Very Dense   |

WATER LEVELS<sup>6</sup>

|   |                          |
|---|--------------------------|
| ▽ | WL (First Encountered)   |
| ▼ | WL (Completion)          |
| ▽ | WL (Seasonal High Water) |
| ▽ | WL (Stabilized)          |

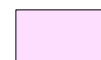
## FILL AND ROCK



FILL



POSSIBLE FILL



PROBABLE FILL



ROCK

<sup>1</sup>Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.<sup>2</sup>To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.<sup>3</sup>Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].<sup>4</sup>Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).<sup>5</sup>Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.<sup>6</sup>The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.<sup>7</sup>Minor deviation from ASTM D 2488-17 Note 14.<sup>8</sup>Percentages are estimated to the nearest 5% per ASTM D 2488-17.

| DEPTH, FT | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-1<br>LAT: 30.590714°<br>LONG: -91.203675°<br>SURFACE EL.: 74.0' | STRATUM DEPTH, FT | CLASSIFICATION   |                          |                  |              |               |                       | SHEAR STRENGTH |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|           |             |        |         |                    | STRATUM DESCRIPTION                                                          |                   | UNIT DRY WT, PCF | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|           |             |        |         |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## NOTES:

1. ▽: Water First Noticed.
2. Terms and symbols defined on reference notes.

START DATE: June 29, 2023  
 COMPLETION DATE: June 29, 2023  
 TOTAL DEPTH: 30.0'  
 CAVED DEPTH: N/A  
 DRY AUGER: Y  
 WET ROTARY: N  
 BACKFILL: Y  
 LOGGER: NB  
 DRILL RIG: Track  
 HAMMER TYPE: Auto



Client: Grace Hebert Curtis Architects, LLC

## LOG OF BORING NO. B-1

Project Name: New Jetson Center for Youth

Site Location: Baker, Louisiana

Project No.

65-1419

PM/PE

NB/JC



| DEPTH, FT | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-3<br>LAT: 30.590611°<br>LONG: -91.20316°<br>SURFACE EL.: 76.0' | STRATUM DEPTH, FT | CLASSIFICATION   |                          |                  |              |               |                       | SHEAR STRENGTH |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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|           |             |        |         |                    | STRATUM DESCRIPTION                                                         |                   | UNIT DRY WT, PCF | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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| DEPTH, FT | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-4<br>LAT: 30.590349°<br>LONG: -91.202776°<br>SURFACE EL.: 77.0' | STRATUM DEPTH, FT | CLASSIFICATION   |                          |                  |              |               |                       | SHEAR STRENGTH |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|           |             |        |         |                    | STRATUM DESCRIPTION                                                          |                   | UNIT DRY WT, PCF | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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## LOG OF BORING NO. B-4



| DEPTH, FT | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-5<br>LAT: 30.590509°<br>LONG: -91.202353°<br>SURFACE EL.: 79.0' | STRATUM DEPTH, FT | CLASSIFICATION   |                          |                  |              |               |                       | SHEAR STRENGTH |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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|           |             |        |         |                    | STRATUM DESCRIPTION                                                          |                   | UNIT DRY WT, PCF | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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| DEPTH, FT | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-6<br>LAT: 30.590506°<br>LONG: -91.20189°<br>SURFACE EL.: 78.0' | STRATUM DEPTH, FT | CLASSIFICATION    |                          |                  |              |               |                       | SHEAR STRENGTH |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|           |             |        |         |                    | STRATUM DESCRIPTION                                                         |                   | UNIT DRY WT., PCF | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|           |             |        |         |                    |                                                                             |                   |                   |                          |                  |              |               |                       |                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## NOTES:

1. ▽: Water First Noticed.
2. Terms and symbols defined on reference notes.

START DATE: June 29, 2023  
 COMPLETION DATE: June 29, 2023  
 TOTAL DEPTH: 30.0'  
 CAVED DEPTH: N/A  
 DRY AUGER: Y  
 WET ROTARY: N  
 BACKFILL: Y  
 LOGGER: NB  
 DRILL RIG: Track  
 HAMMER TYPE: Auto



Client: Grace Hebert Curtis Architects, LLC

## LOG OF BORING NO. B-6

Project Name: New Jetson Center for Youth

Site Location: Baker, Louisiana

Project No.

65-1419

PM/PE

NB/JC

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL                                      | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-7<br>LAT: 30.590206°<br>LONG: -91.201632°<br>SURFACE EL.: 75.0' | STRATUM DEPTH, FT             | CLASSIFICATION      |                          |                  |                                                                                                                                                                                                              |               | SHEAR STRENGTH        |     |     |     |     |     |
|-------------------------------------------------------------------------------------|-------------|---------------------------------------------|---------|--------------------|------------------------------------------------------------------------------|-------------------------------|---------------------|--------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------|-----|-----|-----|-----|-----|
|                                                                                     |             |                                             |         |                    | STRATUM DESCRIPTION                                                          |                               | UNIT DRY WT, PCF    | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT                                                                                                                                                                                                 | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF |     |     |     |     |
|                                                                                     |             |                                             |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 |
|                                                                                     |             |                                             |         | 3-3-4 (7)          | Brown lean clay, firm (CL)                                                   |                               |                     |                          | 26               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 4-3-4 (7)          |                                                                              |                               |                     | 92                       | 37               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| 5                                                                                   |             |                                             |         | WOH-3-4 (7)        |                                                                              |                               |                     |                          | 25               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 1-2-3 (5)          |                                                                              |                               |                     |                          | 21               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 5-7-9 (16)         |                                                                              | ---tan, with sand, very stiff |                     |                          |                  | 21                                                                                                                                                                                                           |               |                       |     |     |     |     |     |
| 10                                                                                  |             |                                             |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 2-6-7 (13)         | ---brown and gray, stiff                                                     |                               |                     |                          | 21               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| 15                                                                                  |             |                                             |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 4-5-6 (11)         |                                                                              |                               |                     |                          | 20               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| 20                                                                                  |             |                                             |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 3-5-6 (11)         | Brown fat clay, stiff (CH)                                                   | 23.5                          |                     |                          | 32               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| 25                                                                                  |             |                                             |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             |                                             |         | 3-8-8 (16)         | ---tan, very stiff                                                           |                               |                     |                          | 21               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| 30                                                                                  |             |                                             |         |                    | Bottom Depth of Borehole = 30 Feet                                           | 30.0                          |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| 35                                                                                  |             |                                             |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
| NOTES:<br>1. Terms and symbols defined on reference notes.                          |             |                                             |         |                    |                                                                              |                               |                     |                          |                  | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 30.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |               |                       |     |     |     |     |     |
|  |             | Client: Grace Hebert Curtis Architects, LLC |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               | LOG OF BORING NO. B-7 |     |     |     |     |     |
|                                                                                     |             | Project Name: New Jetson Center for Youth   |         |                    |                                                                              |                               |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |
|                                                                                     |             | Site Location: Baker, Louisiana             |         |                    |                                                                              |                               | Project No. 65-1419 |                          |                  | PM/PE NB/JC                                                                                                                                                                                                  |               |                       |     |     |     |     |     |

| DEPTH, FT | WATER LEVEL | SYMBOL | SAMPLES   | BLOWS PER 6 INCHES | BORING NO. B-8<br>LAT: 30.589662°<br>LONG: -91.204094°<br>SURFACE EL.: 70.0' | STRATUM DEPTH, FT | CLASSIFICATION   |                          |                  |              |               |                       | SHEAR STRENGTH |     |     |     |     |     |
|-----------|-------------|--------|-----------|--------------------|------------------------------------------------------------------------------|-------------------|------------------|--------------------------|------------------|--------------|---------------|-----------------------|----------------|-----|-----|-----|-----|-----|
|           |             |        |           |                    | STRATUM DESCRIPTION                                                          |                   | UNIT DRY WT, PCF | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF            |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 |
| 5         |             |        |           | 2-3-4 (7)          | Brown lean clay, firm (CL)                                                   |                   |                  |                          | 12               | 48           | 30            | 18                    |                |     |     |     |     |     |
|           |             |        | 3-2-3 (5) |                    |                                                                              |                   |                  | 21                       |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        | 2-3-4 (7) |                    |                                                                              |                   |                  | 21                       |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        | 2-3-4 (7) |                    |                                                                              |                   |                  | 21                       |                  |              |               |                       |                |     |     |     |     |     |
| 10        |             |        |           | 2-3-2 (5)          | Tan fat clay, firm (CH)                                                      | 8.5               |                  |                          | 22               |              |               |                       |                |     |     |     |     |     |
| 15        |             |        |           | 3-2-5 (7)          | ---brown                                                                     |                   |                  |                          | 20               |              |               |                       |                |     |     |     |     |     |
| 20        |             |        |           | 3-5-5 (10)         | Tan and gray lean clay, stiff (CL)                                           | 18.5              |                  |                          | 31               |              |               |                       |                |     |     |     |     |     |
| 25        |             |        |           | 1-3-5 (8)          | Tan fat clay with sand, firm (CH)                                            | 23.5              |                  |                          | 21               |              |               |                       |                |     |     |     |     |     |
| 30        |             |        |           | 7-10-13 (26)       | ---brown, very stiff                                                         |                   |                  |                          | 23               |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    | Bottom Depth of Borehole = 30 Feet                                           | 30.0              |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |
|           |             |        |           |                    |                                                                              |                   |                  |                          |                  |              |               |                       |                |     |     |     |     |     |

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL                                      | SAMPLES | BLOWS PER 6 INCHES | BORING NO. B-9<br>LAT: 30.591392°<br>LONG: -91.202487°<br>SURFACE EL.: 82.0' | STRATUM DEPTH, FT | CLASSIFICATION      |                          |                  |                                                                                                                                                                                                              |               | SHEAR STRENGTH        |     |     |     |     |     |     |
|-------------------------------------------------------------------------------------|-------------|---------------------------------------------|---------|--------------------|------------------------------------------------------------------------------|-------------------|---------------------|--------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------|-----|-----|-----|-----|-----|-----|
|                                                                                     |             |                                             |         |                    | STRATUM DESCRIPTION                                                          |                   | UNIT DRY WT, PCF    | PASSING NO. 200 SIEVE, % | WATER CONTENT, % | LIQUID LIMIT                                                                                                                                                                                                 | PLASTIC LIMIT | PLASTICITY INDEX (PI) | KSF |     |     |     |     |     |
|                                                                                     |             |                                             |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 |
|                                                                                     |             |                                             |         | 3-7-5 (12)         | Tan lean clay, stiff (CL)                                                    |                   |                     |                          | 14               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             |                                             |         | 3-2-2 (4)          | ---firm                                                                      |                   |                     |                          | 21               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 5                                                                                   |             |                                             |         | 2-1-3 (4)          | ---brown                                                                     |                   |                     |                          | 23               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             |                                             |         | 3-3-4 (7)          |                                                                              |                   |                     |                          | 21               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 10                                                                                  |             |                                             |         | 2-5-8 (13)         | ---tan and red, stiff                                                        |                   |                     |                          | 18               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             |                                             |         | 3-5-7 (12)         | ---tan and gray                                                              |                   |                     |                          | 19               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 15                                                                                  |             |                                             |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             |                                             |         | 4-5-7 (12)         |                                                                              |                   |                     |                          | 23               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 20                                                                                  |             |                                             |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             |                                             |         | 2-3-5 (8)          | Tan fat clay, firm (CH)                                                      | 23.5              |                     |                          | 28               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 25                                                                                  |             |                                             |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             |                                             |         | 4-4-6 (10)         | ---stiff                                                                     |                   |                     |                          | 26               |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 30                                                                                  |             |                                             |         |                    | Bottom Depth of Borehole = 30 Feet                                           | 30.0              |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| 35                                                                                  |             |                                             |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
| NOTES:<br>1. Terms and symbols defined on reference notes.                          |             |                                             |         |                    |                                                                              |                   |                     |                          |                  | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 30.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |               |                       |     |     |     |     |     |     |
|  |             | Client: Grace Hebert Curtis Architects, LLC |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               | LOG OF BORING NO. B-9 |     |     |     |     |     |     |
|                                                                                     |             | Project Name: New Jetson Center for Youth   |         |                    |                                                                              |                   |                     |                          |                  |                                                                                                                                                                                                              |               |                       |     |     |     |     |     |     |
|                                                                                     |             | Site Location: Baker, Louisiana             |         |                    |                                                                              |                   | Project No. 65-1419 |                          |                  | PM/PE NB/JC                                                                                                                                                                                                  |               |                       |     |     |     |     |     |     |

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER<br>6 INCHES | BORING NO. P-1<br>LAT: 30.591434°<br>LONG: -91.203008°<br>SURFACE EL.: 80.0' | STRATUM<br>DEPTH, FT | CLASSIFICATION                                                                                                                                                                                              |                     |                 |                  |                          |                               | SHEAR STRENGTH |     |                       |     |  |
|-------------------------------------------------------------------------------------|-------------|--------|---------|-----------------------|------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|------------------|--------------------------|-------------------------------|----------------|-----|-----------------------|-----|--|
|                                                                                     |             |        |         |                       | UNIT DRY WT,<br>PCF                                                          |                      | PASSING NO.<br>200 SIEVE, %                                                                                                                                                                                 | WATER<br>CONTENT, % | LIQUID<br>LIMIT | PLASTIC<br>LIMIT | PLASTICITY<br>INDEX (PI) | KSF                           |                |     |                       |     |  |
|                                                                                     |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          | 0.5                           | 1.0            | 1.5 | 2.0                   | 2.5 |  |
|                                                                                     |             |        |         | 3-4-4<br>(8)          | Brown lean clay, firm (CL)                                                   |                      |                                                                                                                                                                                                             |                     | 20              | 40               | 21                       | 19                            |                |     |                       |     |  |
|                                                                                     |             |        |         | 4-5-5<br>(10)         | ---stiff                                                                     |                      |                                                                                                                                                                                                             |                     | 24              |                  |                          |                               |                |     |                       |     |  |
| 5                                                                                   |             |        |         | 3-4-5<br>(9)          |                                                                              |                      |                                                                                                                                                                                                             |                     | 24              |                  |                          |                               |                |     |                       |     |  |
|                                                                                     |             |        |         |                       | Bottom Depth of Borehole = 6 Feet                                            | 6.0                  |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| 10                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| 15                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| 20                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| 25                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| 30                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| 35                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |     |                       |     |  |
| <b>NOTES:</b><br>1. Terms and symbols defined on reference notes.                   |             |        |         |                       |                                                                              |                      | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 6.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |                     |                 |                  |                          |                               |                |     |                       |     |  |
|  |             |        |         |                       |                                                                              |                      | <b>Client:</b> Grace Hebert Curtis Architects, LLC                                                                                                                                                          |                     |                 |                  |                          |                               |                |     |                       |     |  |
|                                                                                     |             |        |         |                       |                                                                              |                      | <b>Project Name:</b> New Jetson Center for Youth                                                                                                                                                            |                     |                 |                  |                          |                               |                |     |                       |     |  |
|                                                                                     |             |        |         |                       |                                                                              |                      | <b>Site Location:</b> Baker, Louisiana                                                                                                                                                                      |                     |                 |                  |                          | <b>Project No.</b><br>65-1419 |                |     | <b>PM/PE</b><br>NB/JC |     |  |

**LOG OF BORING NO. P-1**

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER<br>6 INCHES | BORING NO. P-2<br>LAT: 30.591439°<br>LONG: -91.203916°<br>SURFACE EL.: 76.0' | STRATUM<br>DEPTH, FT                        | CLASSIFICATION              |                     |                 |                                                                                                                                                                                                             |                          |                            | SHEAR STRENGTH |  |  |             |  |                              |  |       |  |       |
|-------------------------------------------------------------------------------------|-------------|--------|---------|-----------------------|------------------------------------------------------------------------------|---------------------------------------------|-----------------------------|---------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------|----------------|--|--|-------------|--|------------------------------|--|-------|--|-------|
|                                                                                     |             |        |         |                       | UNIT DRY WT,<br>PCF                                                          |                                             | PASSING NO.<br>200 SIEVE, % | WATER<br>CONTENT, % | LIQUID<br>LIMIT | PLASTIC<br>LIMIT                                                                                                                                                                                            | PLASTICITY<br>INDEX (PI) | KSF<br>0.5 1.0 1.5 2.0 2.5 |                |  |  |             |  |                              |  |       |  |       |
|                                                                                     |             |        |         | 3-11-8<br>(19)        | Brown lean clay, very stiff (CL)                                             |                                             |                             |                     | 26              |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
|                                                                                     |             |        |         | 5-7-6<br>(13)         | ---stiff                                                                     |                                             |                             |                     | 18              |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 5                                                                                   |             |        |         | 7-7-8<br>(15)         |                                                                              |                                             |                             |                     | 25              |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
|                                                                                     |             |        |         |                       | Bottom Depth of Borehole = 6 Feet                                            | 6.0                                         |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 10                                                                                  |             |        |         |                       |                                                                              |                                             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 15                                                                                  |             |        |         |                       |                                                                              |                                             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 20                                                                                  |             |        |         |                       |                                                                              |                                             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 25                                                                                  |             |        |         |                       |                                                                              |                                             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 30                                                                                  |             |        |         |                       |                                                                              |                                             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| 35                                                                                  |             |        |         |                       |                                                                              |                                             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
| <b>NOTES:</b><br>1. Terms and symbols defined on reference notes.                   |             |        |         |                       |                                                                              |                                             |                             |                     |                 | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 6.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |                          |                            |                |  |  |             |  |                              |  |       |  |       |
|  |             |        |         |                       |                                                                              | Client: Grace Hebert Curtis Architects, LLC |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  | <b>LOG OF BORING NO. P-2</b> |  |       |  |       |
|                                                                                     |             |        |         |                       |                                                                              | Project Name: New Jetson Center for Youth   |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  |             |  |                              |  |       |  |       |
|                                                                                     |             |        |         |                       |                                                                              | Site Location: Baker, Louisiana             |                             |                     |                 |                                                                                                                                                                                                             |                          |                            |                |  |  | Project No. |  | 65-1419                      |  | PM/PE |  | NB/JC |

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL                                      | SAMPLES | BLOWS PER<br>6 INCHES | BORING NO. P-3<br>LAT: 30.591279°<br>LONG: -91.203516°<br>SURFACE EL.: 76.0' | STRATUM<br>DEPTH, FT | CLASSIFICATION                                                                                                                                                                                              |                     |                 |                  |                          |                                                                                                                                                                                                                                 | SHEAR STRENGTH |       |  |  |  |
|-------------------------------------------------------------------------------------|-------------|---------------------------------------------|---------|-----------------------|------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|--|--|--|
|                                                                                     |             |                                             |         |                       | UNIT DRY WT,<br>PCF                                                          |                      | PASSING NO.<br>200 SIEVE, %                                                                                                                                                                                 | WATER<br>CONTENT, % | LIQUID<br>LIMIT | PLASTIC<br>LIMIT | PLASTICITY<br>INDEX (PI) | <input type="checkbox"/> Penetrometer      Unconfined ▼<br><input type="checkbox"/> Torvane              Triaxial ●<br><input type="checkbox"/> Hand Vane            Miniature Vane ▲<br><br>KSF<br>0.5   1.0   1.5   2.0   2.5 |                |       |  |  |  |
|                                                                                     |             |                                             |         |                       | STRATUM DESCRIPTION                                                          |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
|                                                                                     |             |                                             |         | 3-8-7<br>(15)         | Brown lean clay, stiff (CL)                                                  |                      |                                                                                                                                                                                                             |                     | 15              |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
|                                                                                     |             |                                             |         | 5-6-8<br>(14)         | ---brown and reddish tan                                                     |                      |                                                                                                                                                                                                             |                     | 24              |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 5                                                                                   |             |                                             |         | 4-5-5<br>(10)         |                                                                              |                      |                                                                                                                                                                                                             |                     | 25              |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
|                                                                                     |             |                                             |         |                       | Bottom Depth of Borehole = 6 Feet                                            | 6.0                  |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 10                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 15                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 20                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 25                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 30                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| 35                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
| <b>NOTES:</b><br>1. Terms and symbols defined on reference notes.                   |             |                                             |         |                       |                                                                              |                      | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 6.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
|  |             | Client: Grace Hebert Curtis Architects, LLC |         |                       |                                                                              |                      | LOG OF BORING NO. P-3                                                                                                                                                                                       |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
|                                                                                     |             | Project Name: New Jetson Center for Youth   |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |       |  |  |  |
|                                                                                     |             | Site Location: Baker, Louisiana             |         |                       |                                                                              |                      | Project No.                                                                                                                                                                                                 |                     | 65-1419         |                  |                          | PM/PE                                                                                                                                                                                                                           |                | NB/JC |  |  |  |



| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER<br>6 INCHES | BORING NO. P-4<br>LAT: 30.591162°<br>LONG: -91.202542°<br>SURFACE EL.: 81.0' | STRATUM<br>DEPTH, FT | CLASSIFICATION                                                                                                                                                                                              |                     |                 |                  |                          |     | SHEAR STRENGTH                |     |     |                       |  |  |
|-------------------------------------------------------------------------------------|-------------|--------|---------|-----------------------|------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|------------------|--------------------------|-----|-------------------------------|-----|-----|-----------------------|--|--|
|                                                                                     |             |        |         |                       | UNIT DRY WT,<br>PCF                                                          |                      | PASSING NO.<br>200 SIEVE, %                                                                                                                                                                                 | WATER<br>CONTENT, % | LIQUID<br>LIMIT | PLASTIC<br>LIMIT | PLASTICITY<br>INDEX (PI) | KSF |                               |     |     |                       |  |  |
|                                                                                     |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          | 0.5 | 1.0                           | 1.5 | 2.0 | 2.5                   |  |  |
|                                                                                     |             |        |         | 4-6-5<br>(11)         | Tan lean clay, stiff (CL)                                                    |                      |                                                                                                                                                                                                             |                     | 10              |                  |                          |     |                               |     |     |                       |  |  |
|                                                                                     |             |        |         | 6-8-7<br>(15)         | ---brown and tan                                                             |                      |                                                                                                                                                                                                             |                     | 19              |                  |                          |     |                               |     |     |                       |  |  |
| 5                                                                                   |             |        |         | 4-4-5<br>(9)          | Brown fat clay, stiff (CH)                                                   | 4.5                  |                                                                                                                                                                                                             |                     | 25              |                  |                          |     |                               |     |     |                       |  |  |
|                                                                                     |             |        |         |                       | Bottom Depth of Borehole = 6 Feet                                            | 6.0                  |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| 10                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| 15                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| 20                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| 25                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| 30                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| 35                                                                                  |             |        |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
| <b>NOTES:</b><br>1. Terms and symbols defined on reference notes.                   |             |        |         |                       |                                                                              |                      | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 6.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
|  |             |        |         |                       |                                                                              |                      | <b>Client:</b> Grace Hebert Curtis Architects, LLC                                                                                                                                                          |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
|                                                                                     |             |        |         |                       |                                                                              |                      | <b>Project Name:</b> New Jetson Center for Youth                                                                                                                                                            |                     |                 |                  |                          |     |                               |     |     |                       |  |  |
|                                                                                     |             |        |         |                       |                                                                              |                      | <b>Site Location:</b> Baker, Louisiana                                                                                                                                                                      |                     |                 |                  |                          |     | <b>Project No.</b><br>65-1419 |     |     | <b>PM/PE</b><br>NB/JC |  |  |

LOG OF BORING NO. P-4

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL                                      | SAMPLES | BLOWS PER<br>6 INCHES | BORING NO. P-5<br>LAT: 30.590454°<br>LONG: -91.204045°<br>SURFACE EL.: 72.0' | STRATUM<br>DEPTH, FT | CLASSIFICATION                                                                                                                                                                                              |                     |                 |                  |                          |                                                                                                                                                                                                                                 | SHEAR STRENGTH |  |  |  |  |
|-------------------------------------------------------------------------------------|-------------|---------------------------------------------|---------|-----------------------|------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|--|--|--|
|                                                                                     |             |                                             |         |                       | UNIT DRY WT,<br>PCF                                                          |                      | PASSING NO.<br>200 SIEVE, %                                                                                                                                                                                 | WATER<br>CONTENT, % | LIQUID<br>LIMIT | PLASTIC<br>LIMIT | PLASTICITY<br>INDEX (PI) | <input type="checkbox"/> Penetrometer      Unconfined ▼<br><input type="checkbox"/> Torvane              Triaxial ●<br><input type="checkbox"/> Hand Vane            Miniature Vane ▲<br><br>KSF<br>0.5   1.0   1.5   2.0   2.5 |                |  |  |  |  |
| STRATUM DESCRIPTION                                                                 |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
|                                                                                     |             |                                             |         | 3-3-5<br>(8)          | Brown lean clay with gravel, firm (CL)                                       |                      |                                                                                                                                                                                                             | 13                  |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
|                                                                                     |             |                                             |         | 3-4-6<br>(10)         | ---stiff                                                                     |                      |                                                                                                                                                                                                             | 16                  |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 5                                                                                   |             |                                             |         | 7-7-6<br>(13)         | Brown fat clay, stiff (CH)                                                   | 4.5                  |                                                                                                                                                                                                             | 21                  |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
|                                                                                     |             |                                             |         |                       | Bottom Depth of Borehole = 6 Feet                                            | 6.0                  |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 10                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 15                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 20                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 25                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 30                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| 35                                                                                  |             |                                             |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
| <b>NOTES:</b><br>1. Terms and symbols defined on reference notes.                   |             |                                             |         |                       |                                                                              |                      | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 6.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
|  |             | Client: Grace Hebert Curtis Architects, LLC |         |                       |                                                                              |                      | <b>LOG OF BORING NO. P-5</b>                                                                                                                                                                                |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
|                                                                                     |             | Project Name: New Jetson Center for Youth   |         |                       |                                                                              |                      |                                                                                                                                                                                                             |                     |                 |                  |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |
|                                                                                     |             | Site Location: Baker, Louisiana             |         |                       |                                                                              |                      | Project No.<br>65-1419                                                                                                                                                                                      |                     |                 | PM/PE<br>NB/JC   |                          |                                                                                                                                                                                                                                 |                |  |  |  |  |

| DEPTH, FT                                                                           | WATER LEVEL | SYMBOL | SAMPLES | BLOWS PER<br>6 INCHES | BORING NO. P-6<br>LAT: 30.590147°<br>LONG: -91.20353°<br>SURFACE EL.: 73.0' | STRATUM<br>DEPTH, FT                                                        | CLASSIFICATION                                                                                                                                                                                              |                     |                 |                  |                          |                               | SHEAR STRENGTH |  |                       |  |  |  |
|-------------------------------------------------------------------------------------|-------------|--------|---------|-----------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|------------------|--------------------------|-------------------------------|----------------|--|-----------------------|--|--|--|
|                                                                                     |             |        |         |                       | UNIT DRY WT,<br>PCF                                                         |                                                                             | PASSING NO.<br>200 SIEVE, %                                                                                                                                                                                 | WATER<br>CONTENT, % | LIQUID<br>LIMIT | PLASTIC<br>LIMIT | PLASTICITY<br>INDEX (PI) | KSF<br>0.5 1.0 1.5 2.0 2.5    |                |  |                       |  |  |  |
|                                                                                     |             |        |         | 4-4-3<br>(7)          | Brown lean clay, firm (CL)                                                  |                                                                             |                                                                                                                                                                                                             |                     | 26              |                  |                          |                               |                |  |                       |  |  |  |
|                                                                                     |             |        |         | 5-5-6<br>(11)         | ---brown and gray, stiff                                                    |                                                                             |                                                                                                                                                                                                             |                     | 24              |                  |                          |                               |                |  |                       |  |  |  |
| 5                                                                                   |             |        |         | 3-5-6<br>(11)         | Brown fat clay, stiff (CH)                                                  | 4.5                                                                         |                                                                                                                                                                                                             |                     | 26              |                  |                          |                               |                |  |                       |  |  |  |
|                                                                                     |             |        |         |                       | Bottom Depth of Borehole = 6 Feet                                           | 6.0                                                                         |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| 10                                                                                  |             |        |         |                       |                                                                             |                                                                             |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| 15                                                                                  |             |        |         |                       |                                                                             |                                                                             |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| 20                                                                                  |             |        |         |                       |                                                                             |                                                                             |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| 25                                                                                  |             |        |         |                       |                                                                             |                                                                             |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| 30                                                                                  |             |        |         |                       |                                                                             |                                                                             |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| 35                                                                                  |             |        |         |                       |                                                                             |                                                                             |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
| <b>NOTES:</b><br>1. Terms and symbols defined on reference notes.                   |             |        |         |                       |                                                                             |                                                                             | START DATE: June 28, 2023<br>COMPLETION DATE: June 28, 2023<br>TOTAL DEPTH: 6.0'<br>CAVED DEPTH: N/A<br>DRY AUGER: Y<br>WET ROTARY: N<br>BACKFILL: Y<br>LOGGER: BS<br>DRILL RIG: Track<br>HAMMER TYPE: Auto |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
|  |             |        |         |                       |                                                                             | <b>LOG OF BORING NO. P-6</b><br>Client: Grace Hebert Curtis Architects, LLC |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
|                                                                                     |             |        |         |                       |                                                                             | Project Name: New Jetson Center for Youth                                   |                                                                                                                                                                                                             |                     |                 |                  |                          |                               |                |  |                       |  |  |  |
|                                                                                     |             |        |         |                       |                                                                             | Site Location: Baker, Louisiana                                             |                                                                                                                                                                                                             |                     |                 |                  |                          | Project No.<br><b>65-1419</b> |                |  | PM/PE<br><b>NB/JC</b> |  |  |  |

## **Appendix C – Laboratory Testing**

Laboratory Testing Summary

| Soil Boring ID | Depth Interval (ft) | D2488                                                                                       | D2216        | D2166/D2850       |      | D4318            |    |    | D422/D1140/D6913 | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|---------------------------------------------------------------------------------------------|--------------|-------------------|------|------------------|----|----|------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description                                                                          | Moisture (%) | Unit Weight (PCF) |      | Atterberg Limits |    |    |                  | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                                                                             |              | Wet               | Dry  | LL               | PL | PI |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 0.5 - 2.0           | Brown lean clay (CL)                                                                        | 12.6         |                   |      |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 2.0 - 4.0           | Very stiff brown and light gray fat clay with ferrous nodules, silt pockets, and roots (CH) | 25.8         | 122.8             | 97.6 | 52               | 22 | 30 |                  | 2.322                |                         | 3.1                |                          | MS           |                                |                     |          |
| B-1            | 4.0 - 6.0           | Stiff brownish gray, tan, and brown lean clay with silt lenses and ferrous nodules (CL)     | 26.9         | 122.6             | 96.6 | 49               | 21 | 28 |                  | 1.278                |                         | 4.8                |                          | MS           |                                |                     |          |
| B-1            | 6.5 - 8.0           | Brown fat clay (CH)                                                                         | 23.9         |                   |      |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 8.5 - 10.0          | Tan fat clay (CH)                                                                           | 25.0         |                   |      |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 13.5 - 15.0         | Tan lean clay (CL)                                                                          | 19.7         |                   |      |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 18.5 - 20.0         | Tan lean clay (CL)                                                                          | 21.5         |                   |      |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 23.5 - 25.0         | Tan fat clay with silt lenses (CH)                                                          | 29.8         |                   |      |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-1            | 28.0 - 30.0         | Medium tan lean clay with sand lenses and ferrous nodules (CL)                              | 27.5         | 120.6             | 94.6 | 37               | 19 | 18 |                  | 0.815                |                         | 2.0                |                          | AS(60)       |                                |                     |          |

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Slickensided = SLS    Bulge = B    Crumble = C

Technical Responsibility: W. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419

**New Jetson Center for Youth**  
**Baker, Louisiana**



ECS Limited  
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Baton Rouge, LA 70809  
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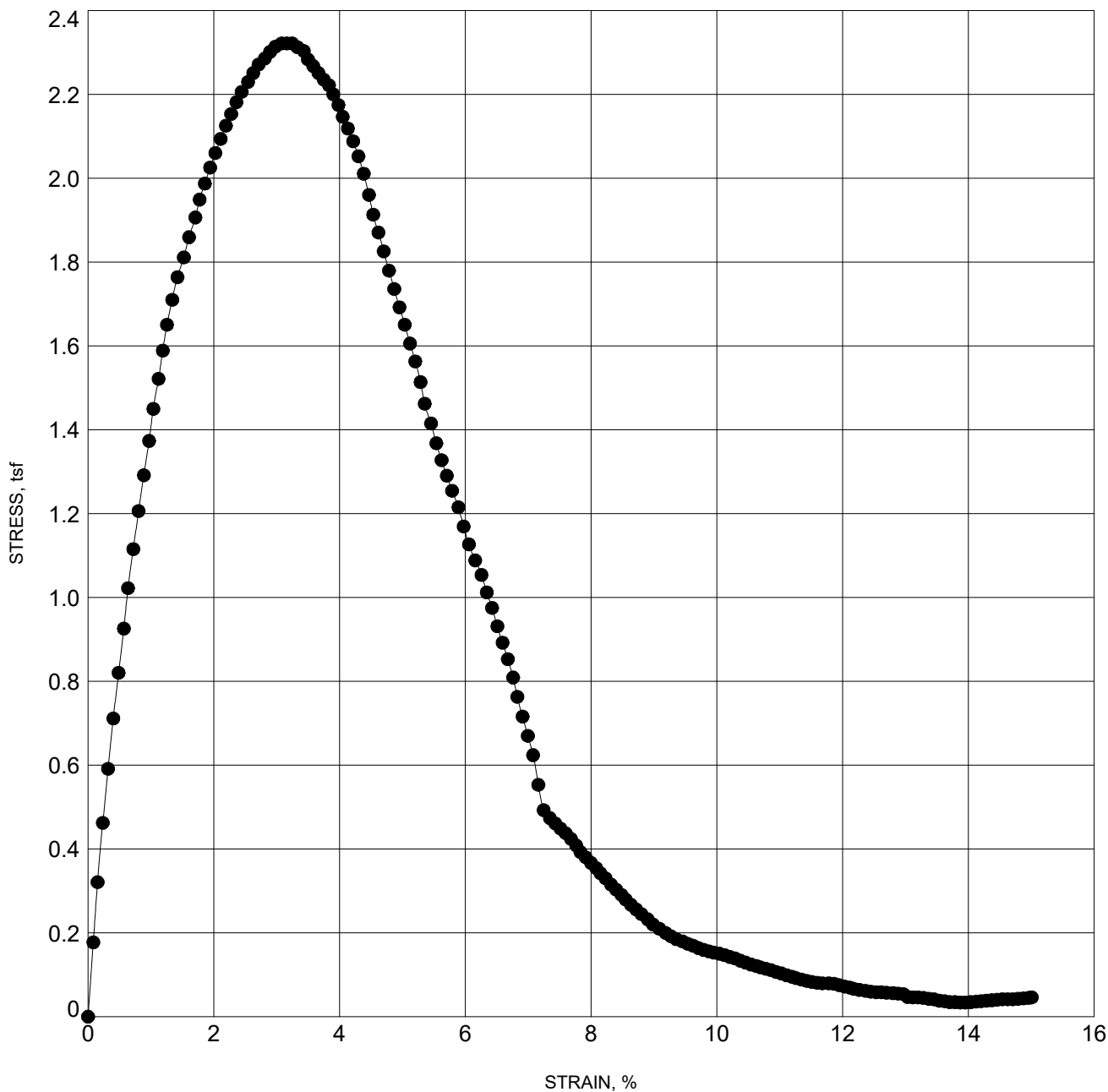
# UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



| Boring ID                                                                                                |       | B-1                    | Depth(ft)             |                          | 2.0 - 4.0              |                         |
|----------------------------------------------------------------------------------------------------------|-------|------------------------|-----------------------|--------------------------|------------------------|-------------------------|
| Water Content, %                                                                                         | 25.8  |                        | Specimen Diameter     | 2.859                    | LL =52                 |                         |
| Wet Density, pcf                                                                                         | 122.8 |                        | Specimen Height       | 5.977                    | PL =22                 |                         |
| Dry Density, pcf                                                                                         | 97.6  |                        | Height/diameter ratio | 2.09                     | PL = 30                |                         |
| Saturation, %                                                                                            | 94.1  |                        | Failure Stress, tsf   | 2.322                    | %200=                  |                         |
| Void Ratio                                                                                               | 0.75  |                        | Strain, %             | 3.1                      | Organic=Not Applicable |                         |
| Description: Very stiff brown and light gray fat clay with ferrous nodules, silt pockets, and roots (CH) |       |                        |                       |                          |                        |                         |
| Tested By: S. Campbell                                                                                   |       | Date Tested: 7/31/2023 |                       | Reviewed By: Wendy Allen |                        | Date Reviewed: 8/9/2023 |



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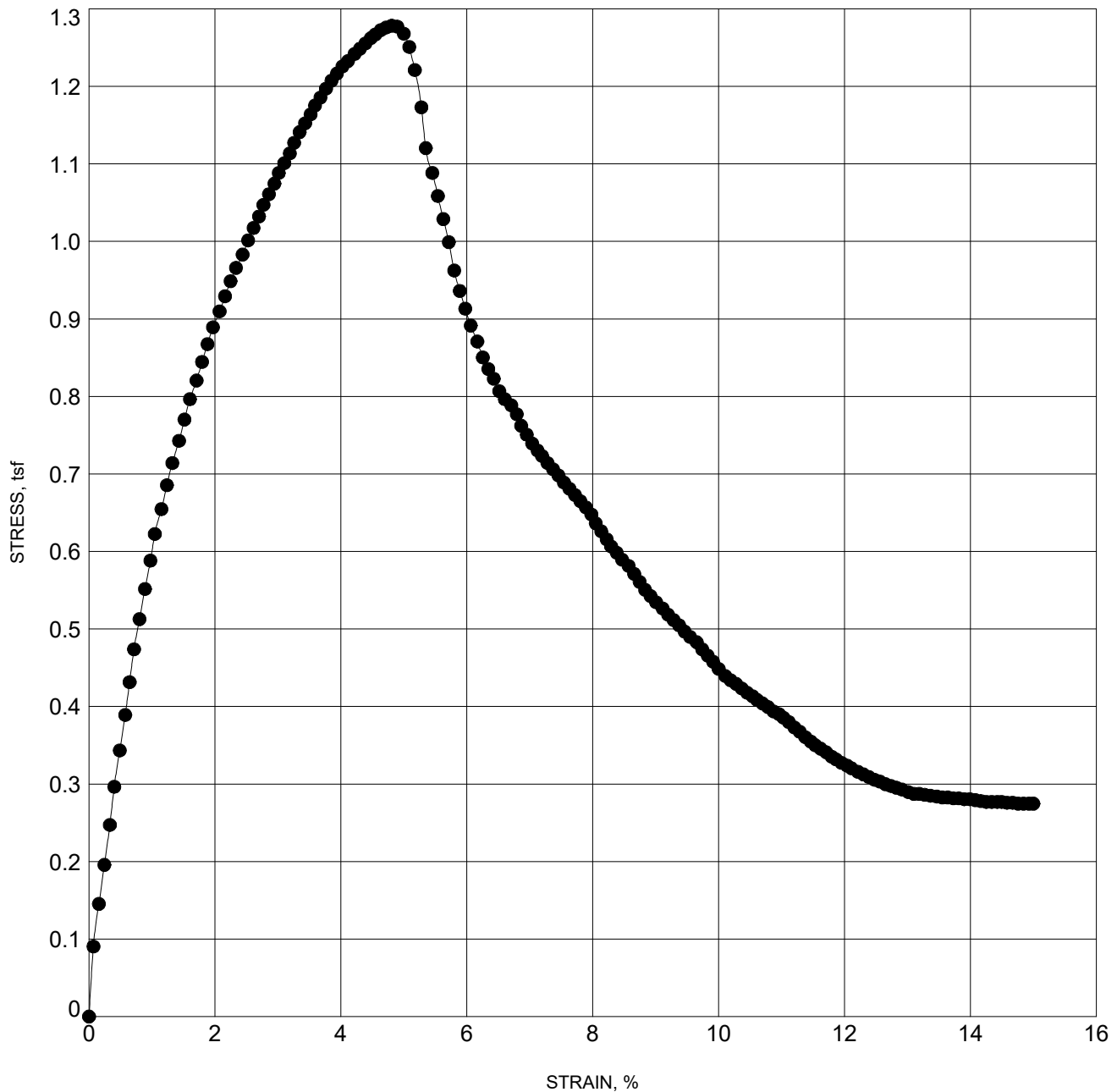
# UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



|                                                                                                      |       |                        |                       |                          |                        |
|------------------------------------------------------------------------------------------------------|-------|------------------------|-----------------------|--------------------------|------------------------|
| Boring ID                                                                                            |       | B-1                    | Depth(ft)             |                          | 4.0 - 6.0              |
| Water Content, %                                                                                     | 26.9  |                        | Specimen Diameter     | 2.831                    | LL =49                 |
| Wet Density, pcf                                                                                     | 122.6 |                        | Specimen Height       | 5.740                    | PL =21                 |
| Dry Density, pcf                                                                                     | 96.6  |                        | Height/diameter ratio | 2.03                     | PL = 28                |
| Saturation, %                                                                                        | 95.7  |                        | Failure Stress, tsf   | 1.278                    | %200=                  |
| Void Ratio                                                                                           | 0.77  |                        | Strain, %             | 4.8                      | Organic=Not Applicable |
| Description: Stiff brownish gray, tan, and brown lean clay with silt lenses and ferrous nodules (CL) |       |                        |                       |                          |                        |
| Tested By: S. Campbell                                                                               |       | Date Tested: 7/31/2023 |                       | Reviewed By: Wendy Allen |                        |
|                                                                                                      |       |                        |                       | Date Reviewed: 8/9/2023  |                        |



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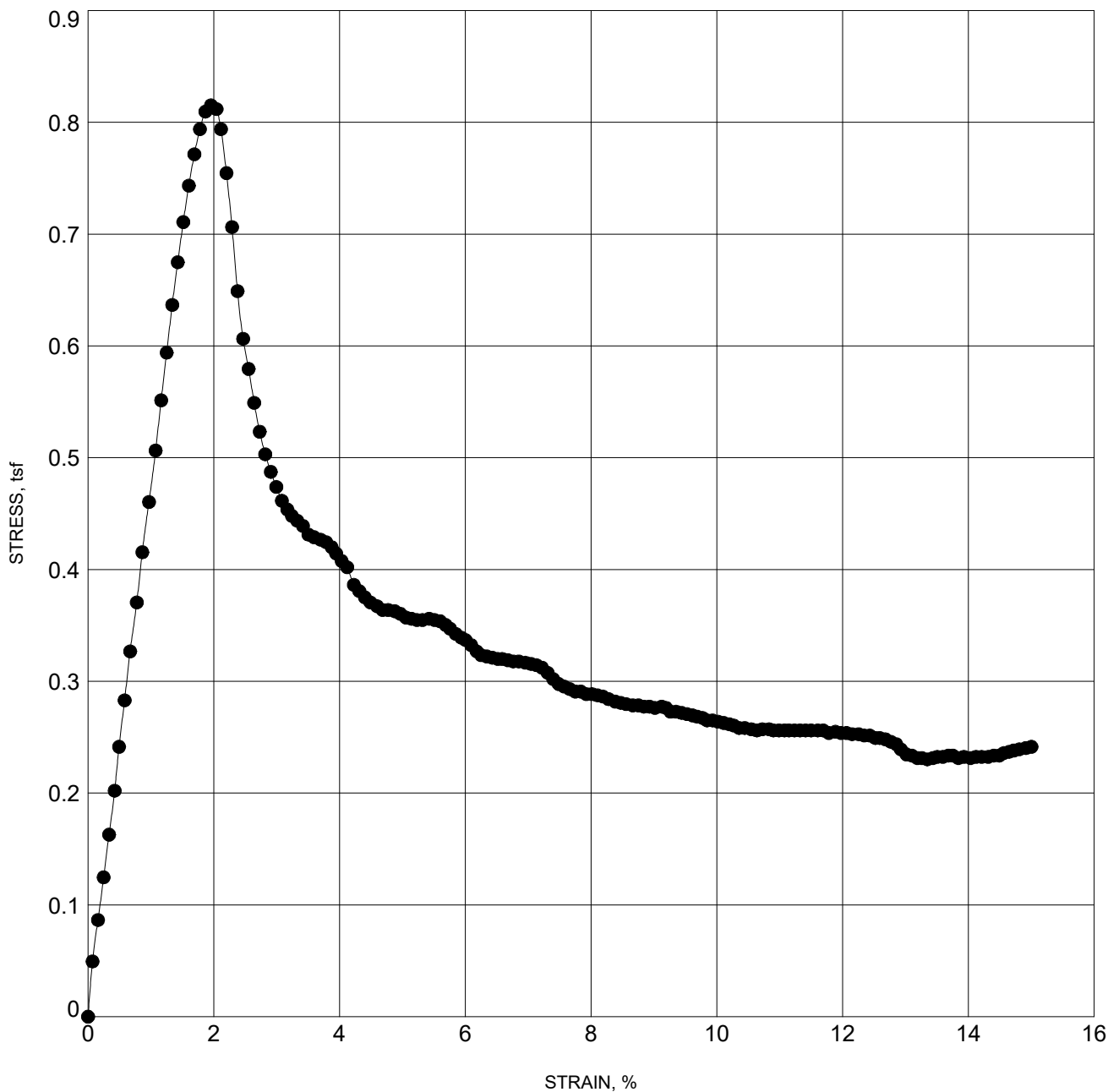
# UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

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|                                                                             |       |                        |       |                          |  |
|-----------------------------------------------------------------------------|-------|------------------------|-------|--------------------------|--|
| Boring ID                                                                   |       | B-1                    |       | Depth(ft) 28.0 - 30.0    |  |
| Water Content, %                                                            | 27.5  | Specimen Diameter      | 2.858 | LL =37                   |  |
| Wet Density, pcf                                                            | 120.6 | Specimen Height        | 5.679 | PL =19                   |  |
| Dry Density, pcf                                                            | 94.6  | Height/diameter ratio  | 1.99  | PL = 18                  |  |
| Saturation, %                                                               | 93.2  | Failure Stress, tsf    | 0.815 | %200=                    |  |
| Void Ratio                                                                  | 0.81  | Strain, %              | 2.0   | Organic=Not Applicable   |  |
| Description: Medium tan lean clay with sand lenses and ferrous nodules (CL) |       |                        |       |                          |  |
| Tested By: S. Campbell                                                      |       | Date Tested: 7/31/2023 |       | Reviewed By: Wendy Allen |  |
|                                                                             |       |                        |       | Date Reviewed: 8/9/2023  |  |



| Soil Boring ID | Depth Interval (ft) | D2488                                                                                | D2216        | D2166/D2850       |       | D4318            |    |    | D422/D1140 /D6913<br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|--------------------------------------------------------------------------------------|--------------|-------------------|-------|------------------|----|----|-----------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description                                                                   | Moisture (%) | Unit Weight (PCF) |       | Atterberg Limits |    |    |                                   | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                                                                      |              | Wet               | Dry   | LL               | PL | PI |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 0.5 - 2.0           | Brown lean clay (CL)                                                                 | 19.4         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 2.5 - 4.0           | Brown lean clay (CL)                                                                 | 16.7         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 4.5 - 6.0           | Brown lean clay (CL)                                                                 | 25.7         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 6.0 - 8.0           | Stiff tan, light gray, and brown lean clay with silt lenses and ferrous nodules (CL) | 24.4         | 125.4             | 100.7 | 38               | 21 | 17 |                                   | 1.155                |                         | 9.4                |                          | MS           |                                |                     |          |
| B-2            | 8.0 - 10.0          | Brown lean clay (CL)                                                                 | 21.0         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 13.0 - 15.0         | Tan and gray fat clay (CH)                                                           | 20.6         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 18.0 - 20.0         | Brown and red lean clay with silt (CL)                                               | 21.5         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-2            | 23.0 - 25.0         | Medium tan and reddish tan lean clay with sand pockets at top (CL)                   | 22.3         | 127.3             | 104.1 | 33               | 18 | 15 |                                   | 0.794                |                         | 3.8                |                          | MS           |                                |                     |          |
| B-2            | 28.0 - 30.0         | Red and gray fat clay with silt (CH)                                                 | 25.6         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |

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Technical Responsibility: Y. H. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



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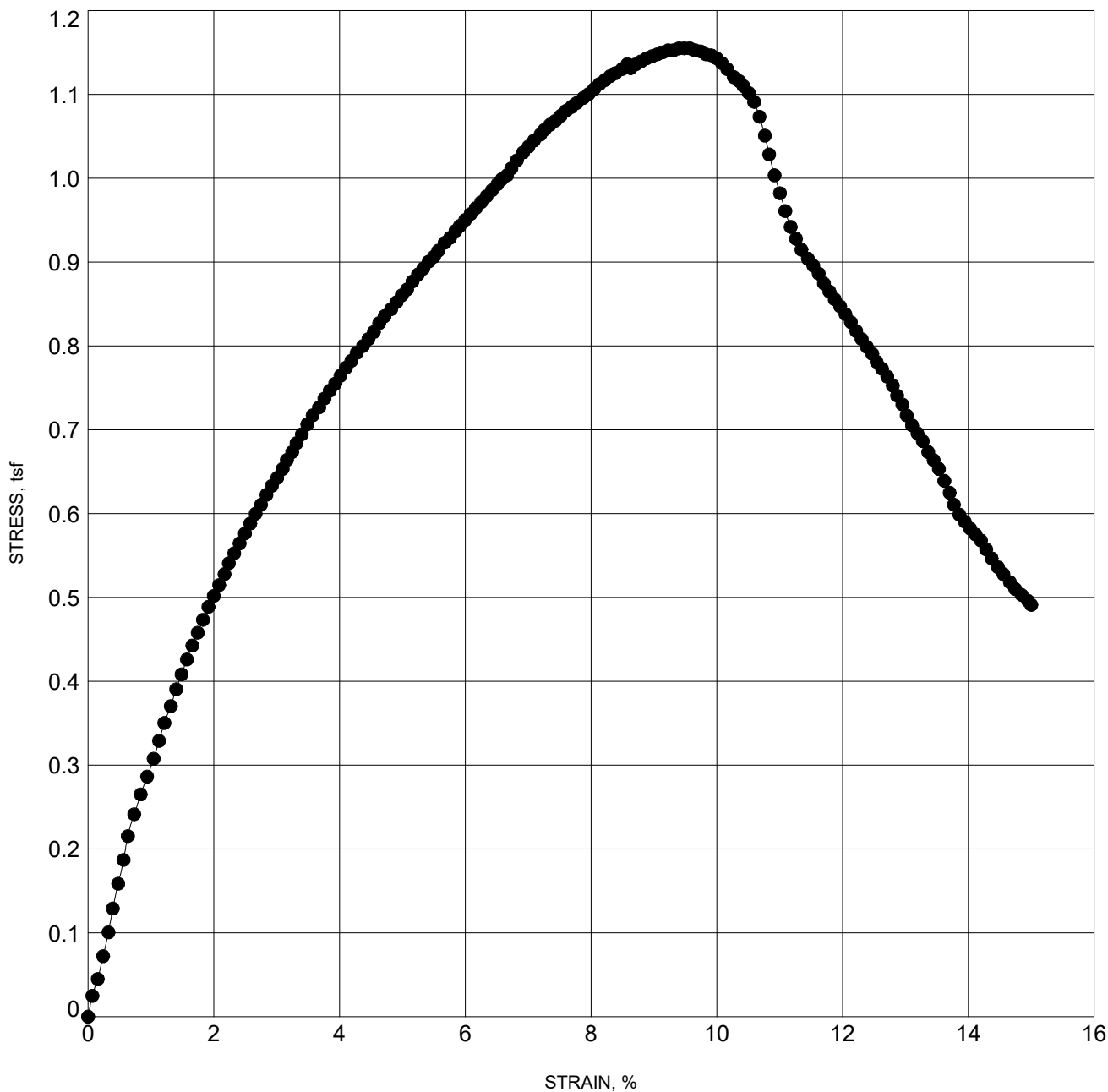
## UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



|                                                                                                   |             |                       |           |                          |
|---------------------------------------------------------------------------------------------------|-------------|-----------------------|-----------|--------------------------|
| Boring ID                                                                                         | B-2         | Depth(ft)             | 6.0 - 8.0 |                          |
| Water Content, %                                                                                  | 24.4        | Specimen Diameter     | 2.784     | LL = 38                  |
| Wet Density, pcf                                                                                  | 125.4       | Specimen Height       | 5.853     | PL = 21                  |
| Dry Density, pcf                                                                                  | 100.7       | Height/diameter ratio | 2.10      | PL = 17                  |
| Saturation, %                                                                                     | 96.1        | Failure Stress, tsf   | 1.155     | %200=                    |
| Void Ratio                                                                                        | 0.70        | Strain, %             | 9.4       | Organic=Not Applicable   |
| Description: Stiff tan, light gray, and brown lean clay with silt lenses and ferrous nodules (CL) |             |                       |           |                          |
| Tested By:                                                                                        | S. Campbell | Date Tested:          | 7/31/2023 | Reviewed By: Wendy Allen |
|                                                                                                   |             |                       |           | Date Reviewed: 8/9/2023  |



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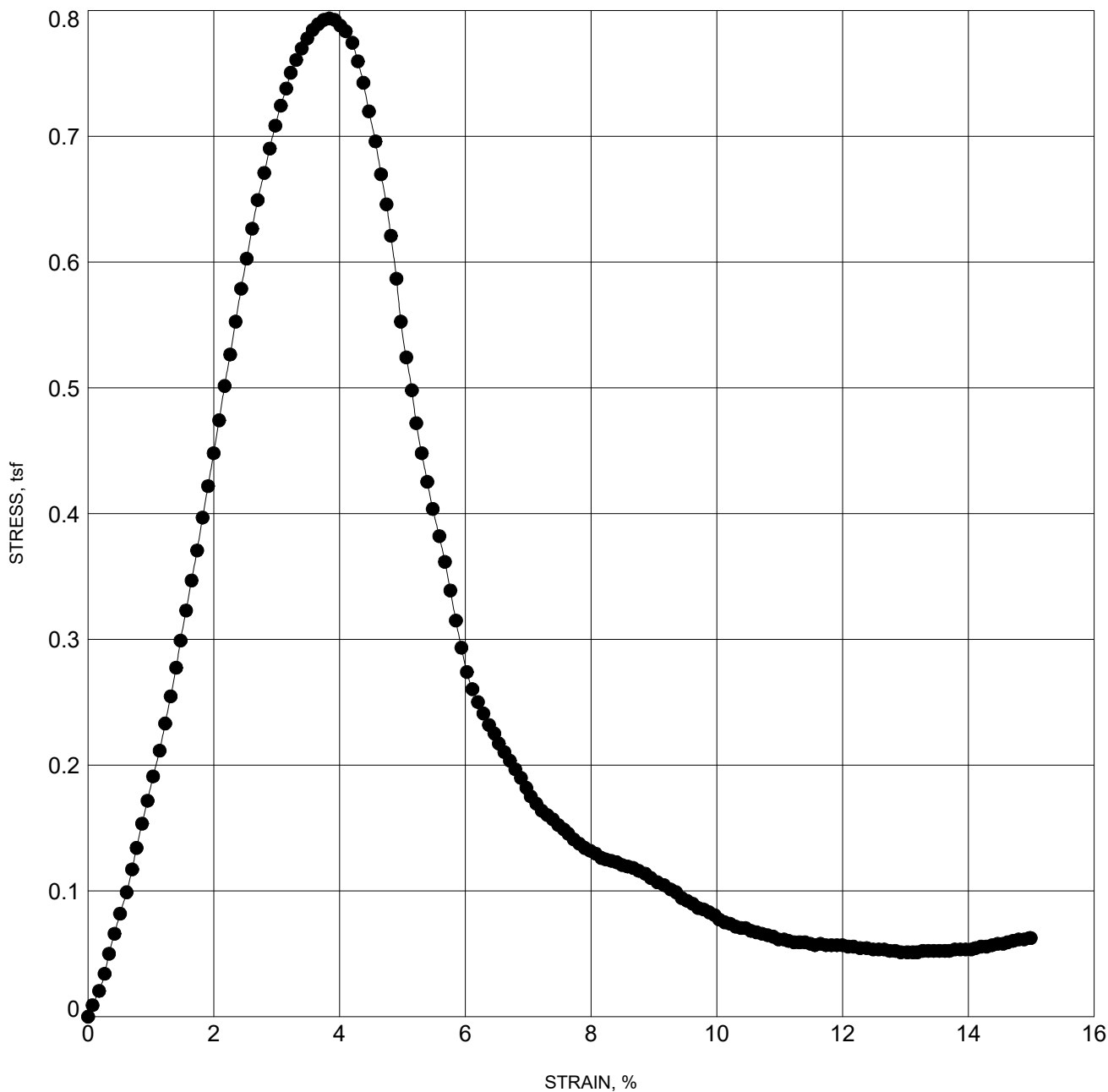
# UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



|                                                                                 |       |                        |                          |                         |
|---------------------------------------------------------------------------------|-------|------------------------|--------------------------|-------------------------|
| Boring ID                                                                       |       | B-2                    | Depth(ft) 23.0 - 25.0    |                         |
| Water Content, %                                                                | 22.3  | Specimen Diameter      | 2.840                    | LL =33                  |
| Wet Density, pcf                                                                | 127.3 | Specimen Height        | 5.710                    | PL =18                  |
| Dry Density, pcf                                                                | 104.1 | Height/diameter ratio  | 2.01                     | PL = 15                 |
| Saturation, %                                                                   | 95.0  | Failure Stress, tsf    | 0.794                    | %200=                   |
| Void Ratio                                                                      | 0.64  | Strain, %              | 3.8                      | Organic=Not Applicable  |
| Description: Medium tan and reddish tan lean clay with sand pockets at top (CL) |       |                        |                          |                         |
| Tested By: S. Campbell                                                          |       | Date Tested: 7/31/2023 | Reviewed By: Wendy Allen | Date Reviewed: 8/9/2023 |

| Soil Boring ID | Depth Interval (ft) | D2488                                                              | D2216        | D2166/D2850       |       | D4318            |    |    | D422/D1140/D6913<br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|--------------------------------------------------------------------|--------------|-------------------|-------|------------------|----|----|----------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description                                                 | Moisture (%) | Unit Weight (PCF) |       | Atterberg Limits |    |    |                                  | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                                                    |              | Wet               | Dry   | LL               | PL | PI |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 0.5 - 2.0           | Tan and brown lean clay (CL)                                       | 14.2         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 2.5 - 4.0           | Brown lean clay (CL)                                               | 20.9         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 4.5 - 6.0           | Brown and gray lean clay (CL)                                      | 19.8         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 6.5 - 8.0           | Tan lean clay (CL)                                                 | 23.2         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 8.5 - 10.0          | Tan and gray lean clay (CL)                                        | 17.5         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 13.0 - 15.0         | Very stiff tan and reddish tan lean clay with ferrous nodules (CL) | 19.9         | 126.0             | 105.1 | 44               | 17 | 27 |                                  | 2.230                |                         | 8.3                |                          | MS           |                                |                     |          |
| B-3            | 18.5 - 20.0         | Tan silty clay (CL-ML)                                             | 20.5         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 23.0 - 25.0         | Tan and gray fat clay (CH)                                         | 24.3         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-3            | 28.5 - 30.0         | Tan fat clay with silt (CH)                                        | 30.0         |                   |       |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |

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Technical Responsibility: W. L. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



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**Baker, Louisiana**



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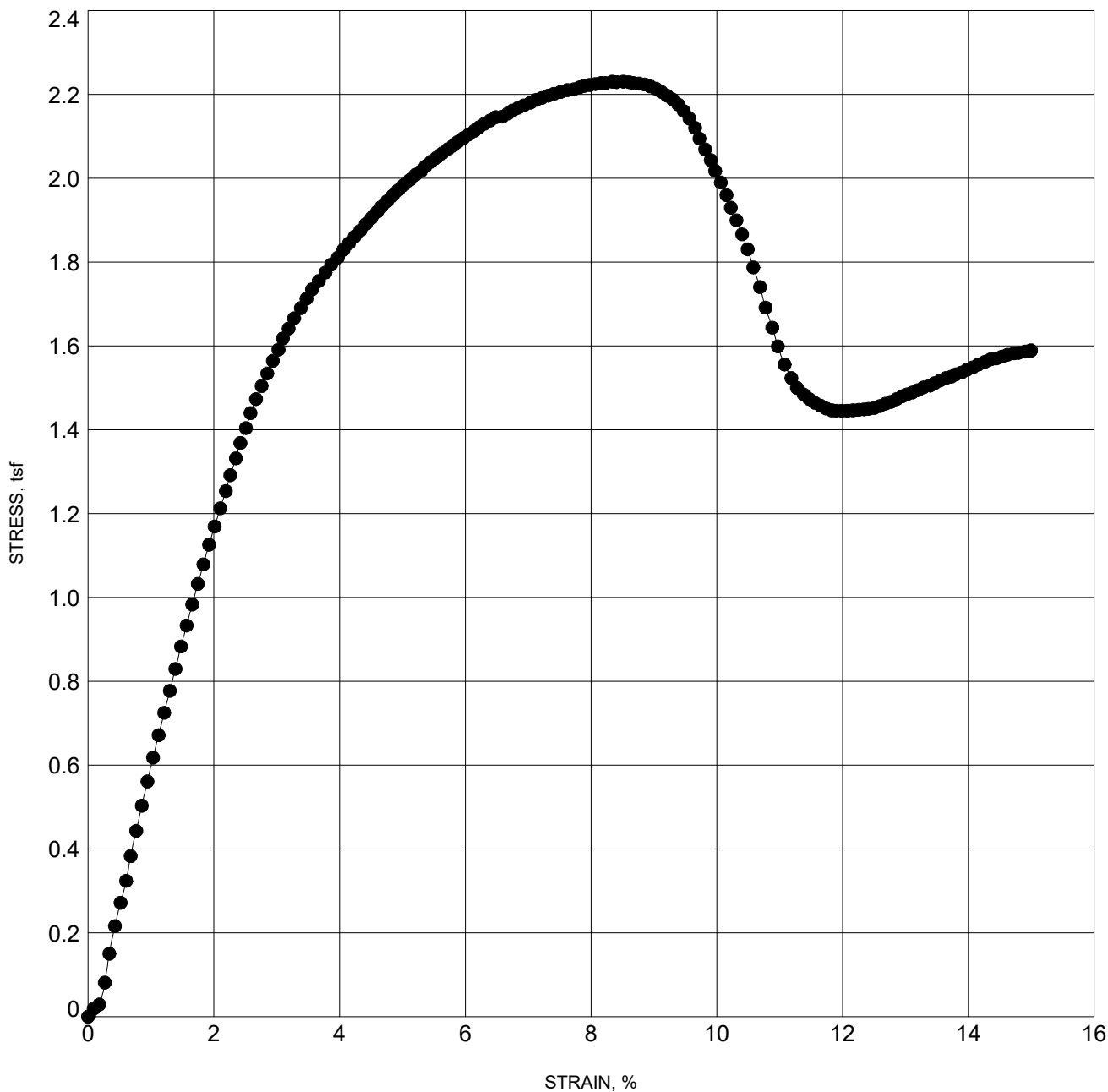
## UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



|                                                                                   |       |                          |  |                            |  |                           |  |
|-----------------------------------------------------------------------------------|-------|--------------------------|--|----------------------------|--|---------------------------|--|
| Boring ID                                                                         |       | B-3                      |  | Depth(ft)                  |  | 13.0 - 15.0               |  |
| Water Content, %                                                                  | 19.9  | Specimen Diameter        |  | 2.870                      |  | LL =44                    |  |
| Wet Density, pcf                                                                  | 126.0 | Specimen Height          |  | 5.615                      |  | PL =17                    |  |
| Dry Density, pcf                                                                  | 105.1 | Height/diameter ratio    |  | 1.96                       |  | PL = 27                   |  |
| Saturation, %                                                                     | 86.8  | Failure Stress, tsf      |  | 2.230                      |  | %200=                     |  |
| Void Ratio                                                                        | 0.63  | Strain, %                |  | 8.3                        |  | Organic=Not Applicable    |  |
| Description:   Very stiff tan and reddish tan lean clay with ferrous nodules (CL) |       |                          |  |                            |  |                           |  |
| Tested By:   S. Campbell                                                          |       | Date Tested:   7/31/2023 |  | Reviewed By:   Wendy Allen |  | Date Reviewed:   8/9/2023 |  |

| Soil Boring ID | Depth Interval (ft) | D2488                         | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913 | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|-------------------------------|--------------|-------------------|-----|------------------|----|----|-------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description            | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                   | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                               |              | Wet               | Dry | LL               | PL | PI |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 0.5 - 2.0           | Brown lean clay (CL)          | 17.1         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 2.5 - 4.0           | Brown lean clay (CL)          | 24.4         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 4.0 - 6.0           | Brown and gray lean clay (CL) | 26.0         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 6.0 - 8.0           | Tan and gray lean clay (CL)   | 20.8         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 8.5 - 10.0          | Tan lean clay (CL)            | 17.1         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 13.5 - 15.0         | Tan and gray lean clay (CL)   | 22.0         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 18.5 - 20.0         | Tan silty clay (CL-ML)        | 17.2         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 23.5 - 25.0         | Brown and tan fat clay (CH)   | 27.0         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |
| B-4            | 28.0 - 30.0         | Brown silty clay (CL-ML)      | 16.3         |                   |     |                  |    |    |                   |                      |                         |                    |                          |              |                                |                     |          |

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Technical Responsibility: W. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



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**Baker, Louisiana**

| Soil Boring ID | Depth Interval (ft) | D2488                          | D2216        | D2166/D2850       |       | D4318            |    |    | D422/D1140 /D6913<br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|--------------------------------|--------------|-------------------|-------|------------------|----|----|-----------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description             | Moisture (%) | Unit Weight (PCF) |       | Atterberg Limits |    |    |                                   | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                |              | Wet               | Dry   | LL               | PL | PI |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 0.0 - 2.0           | Brown fat clay (CH)            | 18.5         |                   |       | 59               | 22 | 37 |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 2.0 - 4.0           | Very stiff brown fat clay (CH) | 21.3         | 127.0             | 104.7 | 59               | 22 | 37 |                                   | 2.934                |                         | 5.6                |                          | MS           |                                |                     |          |
| B-5            | 4.5 - 6.0           | Brown and gray lean clay (CL)  | 22.1         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 6.5 - 8.0           | Brown and gray lean clay (CL)  | 20.3         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 8.5 - 10.0          | Brown lean clay (CL)           | 21.7         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 13.5 - 15.0         | Brown and tan lean clay (CL)   | 20.3         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 18.5 - 20.0         | Brown and tan lean clay (CL)   | 19.4         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 23.5 - 25.0         | Tan lean clay with silt (CL)   | 21.1         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-5            | 28.5 - 30.0         | Tan fat clay (CH)              | 30.7         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |

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Technical Responsibility: W. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



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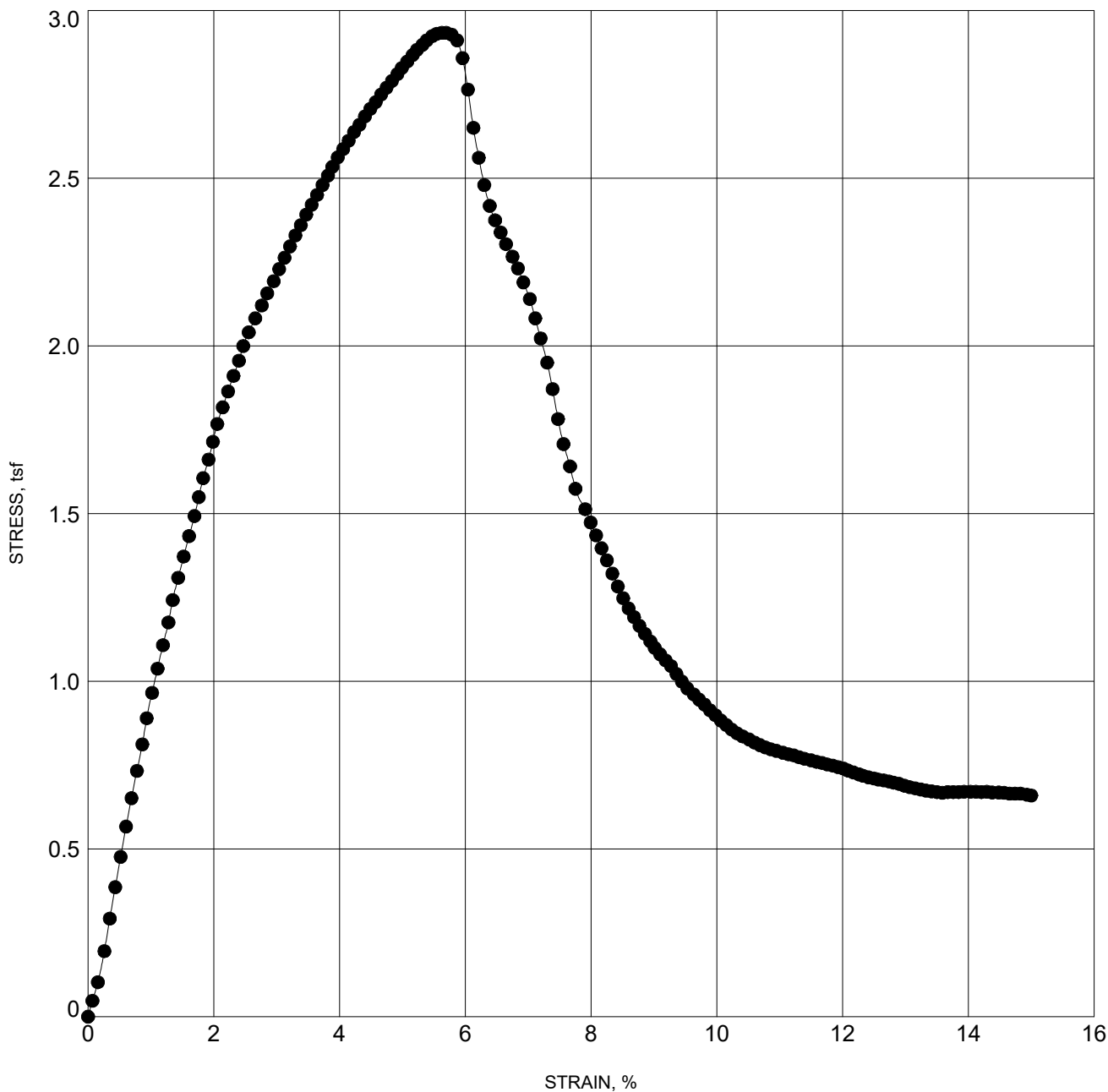
# UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



| Boring ID                                     |       | B-5                      | Depth(ft)             |                            | 2.0 - 4.0              |                           |
|-----------------------------------------------|-------|--------------------------|-----------------------|----------------------------|------------------------|---------------------------|
| Water Content, %                              | 21.3  |                          | Specimen Diameter     | 2.850                      | LL =59                 |                           |
| Wet Density, pcf                              | 127.0 |                          | Specimen Height       | 5.793                      | PL =22                 |                           |
| Dry Density, pcf                              | 104.7 |                          | Height/diameter ratio | 2.03                       | PL = 37                |                           |
| Saturation, %                                 | 92.2  |                          | Failure Stress, tsf   | 2.934                      | %200=                  |                           |
| Void Ratio                                    | 0.63  |                          | Strain, %             | 5.6                        | Organic=Not Applicable |                           |
| Description:   Very stiff brown fat clay (CH) |       |                          |                       |                            |                        |                           |
| Tested By:   S. Campbell                      |       | Date Tested:   7/31/2023 |                       | Reviewed By:   Wendy Allen |                        | Date Reviewed:   8/9/2023 |



| Soil Boring ID | Depth Interval (ft) | D2488                                                        | D2216        | D2166/D2850       |       | D4318            |    |    | D422/D1140 /D6913<br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|--------------------------------------------------------------|--------------|-------------------|-------|------------------|----|----|-----------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description                                           | Moisture (%) | Unit Weight (PCF) |       | Atterberg Limits |    |    |                                   | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                                              |              | Wet               | Dry   | LL               | PL | PI |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 0.5 - 2.0           | Brown lean clay (CL)                                         | 16.0         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 2.5 - 4.0           | Brown lean clay (CL)                                         | 23.3         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 4.5 - 6.0           | Brown lean clay (CL)                                         | 23.6         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 6.5 - 8.0           | Brown fat clay (CH)                                          | 24.8         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 8.0 - 10.0          | Very stiff tan and light gray fat clay with silt lenses (CH) | 18.2         | 125.9             | 106.5 | 50               | 16 | 34 |                                   | 3.573                |                         | 9.5                |                          | MS           |                                |                     |          |
| B-6            | 13.5 - 15.0         | Brown and tan lean clay (CL)                                 | 20.2         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 18.5 - 20.0         | Tan lean clay with silt (CL)                                 | 22.6         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 23.5 - 25.0         | Tan lean clay (CL)                                           | 26.7         |                   |       | 31               | 19 | 12 | 93.6                              |                      |                         |                    |                          |              |                                |                     |          |
| B-6            | 28.5 - 30.0         | Brown fat clay with silt (CH)                                | 26.6         |                   |       |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |

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Multiple Shear = MS    Vertical Shear = VS    Angle Shear = AS  
Slickensided = SLS    Bulge = B    Crumble = C

Technical Responsibility: W. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



ECS Limited  
11211 Industriplex Blvd. Ste. 300  
Baton Rouge, LA 70809  
Telephone: 225.224.2583

**New Jetson Center for Youth**  
**Baker, Louisiana**



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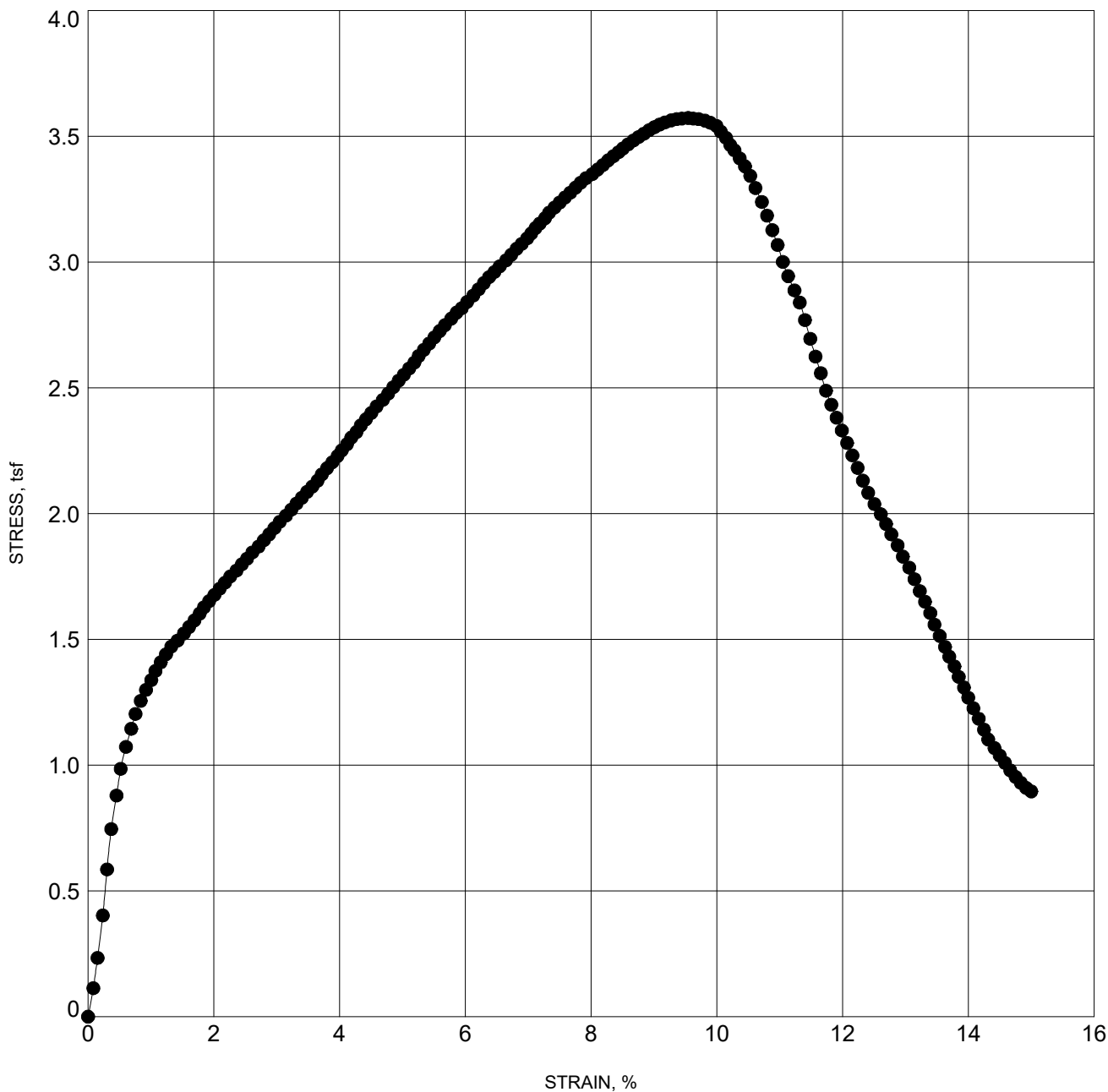
# UNCONFINED COMPRESSION TEST

CLIENT Grace Hebert Architects, LLC

PROJECT NAME New Jetson Center for Youth

PROJECT NUMBER 65-1419

PROJECT LOCATION Baker, Louisiana



| Boring ID                                                                   |       | B-6                      | Depth(ft)             |                            | 8.0 - 10.0             |                           |
|-----------------------------------------------------------------------------|-------|--------------------------|-----------------------|----------------------------|------------------------|---------------------------|
| Water Content, %                                                            | 18.2  |                          | Specimen Diameter     | 2.788                      | LL =50                 |                           |
| Wet Density, pcf                                                            | 125.9 |                          | Specimen Height       | 5.973                      | PL =16                 |                           |
| Dry Density, pcf                                                            | 106.5 |                          | Height/diameter ratio | 2.14                       | PL = 34                |                           |
| Saturation, %                                                               | 82.5  |                          | Failure Stress, tsf   | 3.573                      | %200=                  |                           |
| Void Ratio                                                                  | 0.61  |                          | Strain, %             | 9.5                        | Organic=Not Applicable |                           |
| Description:   Very stiff tan and light gray fat clay with silt lenses (CH) |       |                          |                       |                            |                        |                           |
| Tested By:   S. Campbell                                                    |       | Date Tested:   7/31/2023 |                       | Reviewed By:   Wendy Allen |                        | Date Reviewed:   8/9/2023 |

| Soil Boring ID | Depth Interval (ft) | D2488                            | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913<br><br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|----------------------------------|--------------|-------------------|-----|------------------|----|----|---------------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description               | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                                       | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                  |              | Wet               | Dry | LL               | PL | PI |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 0.5 - 2.0           | Brown lean clay (CL)             | 26.0         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 2.5 - 4.0           | Brown lean clay with roots (CL)  | 36.7         |                   |     |                  |    |    | 91.6                                  |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 4.5 - 6.0           | Brown and gray lean clay (CL)    | 25.4         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 6.5 - 8.0           | Brown and gray lean clay (CL)    | 21.4         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 8.5 - 10.0          | Tan silty clay with sand (CL-ML) | 20.6         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 13.5 - 15.0         | Brown and gray lean clay (CL)    | 21.2         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 18.5 - 20.0         | Tan silty clay (CL-ML)           | 19.7         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 23.5 - 25.0         | Brown fat clay (CH)              | 31.9         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |
| B-7            | 28.5 - 30.0         | Tan fat clay with silt (CH)      | 21.5         |                   |     |                  |    |    |                                       |                      |                         |                    |                          |              |                                |                     |          |

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Slickensided = SLS    Bulge = B    Crumble = C

Technical Responsibility: W.A. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



ECS Limited  
11211 Industriplex Blvd. Ste. 300  
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Telephone: 225.224.2583

**New Jetson Center for Youth**  
**Baker, Louisiana**

| Soil Boring ID | Depth Interval (ft) | D2488                                   | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140/D6913 | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|-----------------------------------------|--------------|-------------------|-----|------------------|----|----|------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description                      | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                  | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                         |              | Wet               | Dry | LL               | PL | PI |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 0.5 - 2.0           | Brown lean clay (CL)                    | 12.5         |                   |     | 48               | 30 | 18 |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 2.5 - 4.0           | Brown lean clay with gravel (CL)        | 21.0         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 4.5 - 6.0           | Brown lean clay (CL)                    | 21.0         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 6.5 - 8.0           | Brown lean clay (CL)                    | 21.1         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 8.5 - 10.0          | Tan fat clay (CH)                       | 22.2         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 13.5 - 15.0         | Brown fat clay (CH)                     | 19.7         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 18.5 - 20.0         | Tan and gray lean clay with gravel (CL) | 30.5         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 23.5 - 25.0         | Tan fat clay with sand (CH)             | 20.8         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| B-8            | 28.5 - 30.0         | Brown fat clay with silt (CH)           | 22.6         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |

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Technical Responsibility: W. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



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**New Jetson Center for Youth**  
**Baker, Louisiana**

| Soil Boring ID | Depth Interval (ft) | D2488                          | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913<br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|--------------------------------|--------------|-------------------|-----|------------------|----|----|-----------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description             | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                                   | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                |              | Wet               | Dry | LL               | PL | PI |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 0.5 - 2.0           | Tan lean clay (CL)             | 13.9         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 2.5 - 4.0           | Tan lean clay (CL)             | 21.4         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 4.5 - 6.0           | Brown lean clay with silt (CL) | 22.7         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 6.5 - 8.0           | Brown and tan lean clay (CL)   | 21.5         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 8.5 - 10.0          | Tan and red lean clay (CL)     | 18.3         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 13.5 - 15.0         | Tan and gray lean clay (CL)    | 18.6         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 18.5 - 20.0         | Tan and gray lean clay (CL)    | 22.9         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 23.5 - 25.0         | Tan fat clay (CH)              | 27.8         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |
| B-9            | 28.5 - 30.0         | Brown and tan lean clay (CL)   | 25.7         |                   |     |                  |    |    |                                   |                      |                         |                    |                          |              |                                |                     |          |

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Multiple Shear = MS    Vertical Shear = VS    Angle Shear = AS  
Slickensided = SLS    Bulge = B    Crumble = C

Technical Responsibility: W. Allen

Title: Laboratory Manager

Date: 8.30.2023

### Summary of Lab Results

Project No.: 65-1419



ECS Limited  
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**New Jetson Center for Youth**  
**Baker, Louisiana**

| Soil Boring ID | Depth Interval (ft) | D2488                | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913 | D2166/D2850  |                      |                         |                    |                          | D4648        | D2974                          | Comments |
|----------------|---------------------|----------------------|--------------|-------------------|-----|------------------|----|----|-------------------|--------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|----------|
|                |                     | Visual Description   | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                   | %<#200 Sieve | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) |          |
|                |                     |                      |              | Wet               | Dry | LL               | PL | PI |                   |              |                      |                         |                    |                          |              |                                |          |
| P-1            | 0.5 - 2.0           | Brown lean clay (CL) | 19.5         |                   |     | 40               | 21 | 19 |                   |              |                      |                         |                    |                          |              |                                |          |
| P-1            | 2.5 - 4.0           | Brown lean clay (CL) | 23.5         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-1            | 4.5 - 6.0           | Brown lean clay (CL) | 24.1         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |

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|                                                                                                         |                                                              |                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Responsibility: <u>W. Allen</u><br>Title: <u>Laboratory Manager</u><br>Date: <u>8.30.2023</u> | <b>Summary of Lab Results</b><br><b>Project No.: 65-1419</b> | <b>New Jetson Center for Youth</b><br><b>Baker, Louisiana</b><br><br>ECS Limited<br>11211 Industriplex Blvd. Ste. 300<br>Baton Rouge, LA 70809<br>Telephone: 225.224.2583 |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Soil Boring ID | Depth Interval (ft) | D2488                | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913 | D2166/D2850  |                      |                         |                    |                          | D4648        | D2974                          | Comments |
|----------------|---------------------|----------------------|--------------|-------------------|-----|------------------|----|----|-------------------|--------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|----------|
|                |                     | Visual Description   | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                   | %<#200 Sieve | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) |          |
|                |                     |                      |              | Wet               | Dry | LL               | PL | PI |                   |              |                      |                         |                    |                          |              |                                |          |
| P-2            | 0.5 - 2.0           | Brown lean clay (CL) | 25.6         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-2            | 2.5 - 4.0           | Brown lean clay (CL) | 17.7         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-2            | 4.5 - 6.0           | Brown lean clay (CL) | 25.0         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |

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|                                                                                                         |                                                              |                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Responsibility: <u>W. Allen</u><br>Title: <u>Laboratory Manager</u><br>Date: <u>8.30.2023</u> | <b>Summary of Lab Results</b><br><b>Project No.: 65-1419</b> | <b>New Jetson Center for Youth</b><br><b>Baker, Louisiana</b><br><br>ECS Limited<br>11211 Industriplex Blvd. Ste. 300<br>Baton Rouge, LA 70809<br>Telephone: 225.224.2583 |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Soil Boring ID | Depth Interval (ft) | D2488                                | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913 | D2166/D2850  |                      |                         |                    |                          | D4648        | D2974                          | Comments |
|----------------|---------------------|--------------------------------------|--------------|-------------------|-----|------------------|----|----|-------------------|--------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|----------|
|                |                     | Visual Description                   | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                   | %<#200 Sieve | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) |          |
|                |                     |                                      |              | Wet               | Dry | LL               | PL | PI |                   |              |                      |                         |                    |                          |              |                                |          |
| P-3            | 0.5 - 2.0           | Brown lean clay (CL)                 | 15.0         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-3            | 2.5 - 4.0           | Brown and reddish tan lean clay (CL) | 23.6         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-3            | 4.5 - 6.0           | Brown lean clay (CL)                 | 25.5         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |

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|                                                                                                         |                                                              |                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Responsibility: <u>W. Allen</u><br>Title: <u>Laboratory Manager</u><br>Date: <u>8.30.2023</u> | <b>Summary of Lab Results</b><br><b>Project No.: 65-1419</b> | <b>New Jetson Center for Youth</b><br><b>Baker, Louisiana</b><br><br>ECS Limited<br>11211 Industriplex Blvd. Ste. 300<br>Baton Rouge, LA 70809<br>Telephone: 225.224.2583 |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



| Soil Boring ID | Depth Interval (ft) | D2488                        | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140/D6913<br>%<#200 Sieve | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|------------------------------|--------------|-------------------|-----|------------------|----|----|----------------------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description           | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                                  | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                              |              | Wet               | Dry | LL               | PL | PI |                                  |                      |                         |                    |                          |              |                                |                     |          |
| P-4            | 0.5 - 2.0           | Tan lean clay (CL)           | 9.8          |                   |     |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| P-4            | 2.5 - 4.0           | Brown and tan lean clay (CL) | 19.4         |                   |     |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |
| P-4            | 4.5 - 6.0           | Brown fat clay (CH)          | 24.8         |                   |     |                  |    |    |                                  |                      |                         |                    |                          |              |                                |                     |          |

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|                                                                                                         |                                                              |                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Responsibility: <u>W. Allen</u><br>Title: <u>Laboratory Manager</u><br>Date: <u>8.30.2023</u> | <b>Summary of Lab Results</b><br><b>Project No.: 65-1419</b> | <b>New Jetson Center for Youth</b><br><b>Baker, Louisiana</b><br><br>ECS Limited<br>11211 Industriplex Blvd. Ste. 300<br>Baton Rouge, LA 70809<br>Telephone: 225.224.2583 |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Soil Boring ID | Depth Interval (ft) | D2488                            | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140 /D6913 | D2166/D2850  |                      |                         |                    |                          | D4648        | D2974                          | Comments |
|----------------|---------------------|----------------------------------|--------------|-------------------|-----|------------------|----|----|-------------------|--------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|----------|
|                |                     | Visual Description               | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    |                   | %<#200 Sieve | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) |          |
|                |                     |                                  |              | Wet               | Dry | LL               | PL | PI |                   |              |                      |                         |                    |                          |              |                                |          |
| P-5            | 0.5 - 2.0           | Brown lean clay with gravel (CL) | 13.5         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-5            | 2.5 - 4.0           | Brown lean clay with gravel (CL) | 16.2         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |
| P-5            | 4.5 - 6.0           | Brown fat clay (CH)              | 21.4         |                   |     |                  |    |    |                   |              |                      |                         |                    |                          |              |                                |          |

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|                                                                                                            |                                                              |                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Responsibility: <u>W. H. Allen</u><br>Title: <u>Laboratory Manager</u><br>Date: <u>8.30.2023</u> | <b>Summary of Lab Results</b><br><b>Project No.: 65-1419</b> | <b>New Jetson Center for Youth</b><br><b>Baker, Louisiana</b><br><br>ECS Limited<br>11211 Industriplex Blvd. Ste. 300<br>Baton Rouge, LA 70809<br>Telephone: 225.224.2583 |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Soil Boring ID | Depth Interval (ft) | D2488                                   | D2216        | D2166/D2850       |     | D4318            |    |    | D422/D1140/D6913 | D2166/D2850          |                         |                    |                          |              | D4648                          | D2974               | Comments |
|----------------|---------------------|-----------------------------------------|--------------|-------------------|-----|------------------|----|----|------------------|----------------------|-------------------------|--------------------|--------------------------|--------------|--------------------------------|---------------------|----------|
|                |                     | Visual Description                      | Moisture (%) | Unit Weight (PCF) |     | Atterberg Limits |    |    | %<#200 Sieve     | Shear Strength (KSF) | Remolded Strength (KSF) | Failure Strain (%) | Confining Pressure (PSI) | Failure Type | Mini Vane Shear Strength (KSF) | Organic Content (%) |          |
|                |                     |                                         |              | Wet               | Dry | LL               | PL | PI |                  |                      |                         |                    |                          |              |                                |                     |          |
| P-6            | 0.5 - 2.0           | Brown lean clay with silt (CL)          | 26.4         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| P-6            | 2.5 - 4.0           | Brown and gray lean clay with silt (CL) | 24.4         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |
| P-6            | 4.5 - 6.0           | Brown fat clay (CH)                     | 25.5         |                   |     |                  |    |    |                  |                      |                         |                    |                          |              |                                |                     |          |

\*The classification symbol and name are based on visual-manual procedures.

Multiple Shear = MS    Vertical Shear = VS    Angle Shear = AS  
 Slickensided = SLS    Bulge = B    Crumble = C

|                                                                                                         |                                                              |                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Responsibility: <u>W. Allen</u><br>Title: <u>Laboratory Manager</u><br>Date: <u>8.30.2023</u> | <b>Summary of Lab Results</b><br><b>Project No.: 65-1419</b> | <b>New Jetson Center for Youth</b><br><b>Baker, Louisiana</b><br><br>ECS Limited<br>11211 Industriplex Blvd. Ste. 300<br>Baton Rouge, LA 70809<br>Telephone: 225.224.2583 |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## **Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects**

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

## **Read this Report in Full**

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

## **You Need to Inform Your Geotechnical Engineer about Change**

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## **This Report May Not Be Reliable**

*Do not rely on this report* if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

## **Most of the "Findings" Related in This Report Are Professional Opinions**

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

## This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

## This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

## Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

## Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

## Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

## Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

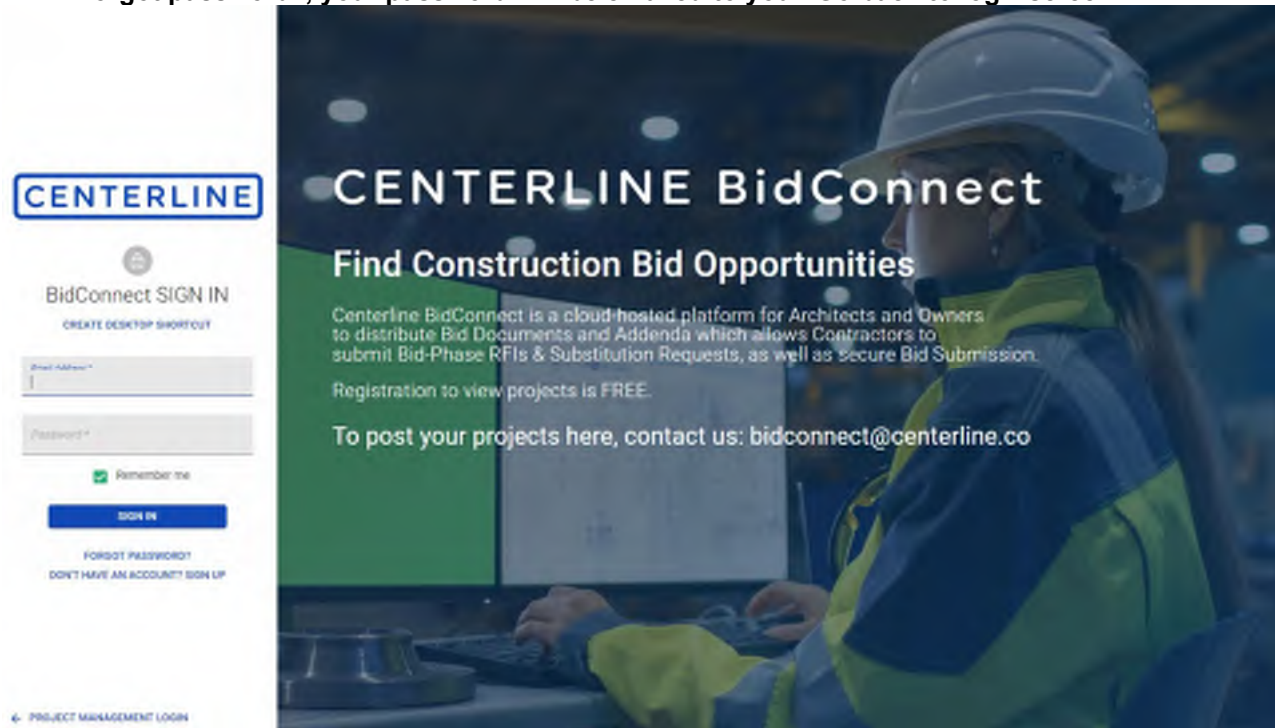
e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

## SECTION 00 0005a - HOW TO ACCESS BIDDING DOCUMENTS - PLAN HOLDER'S LIST

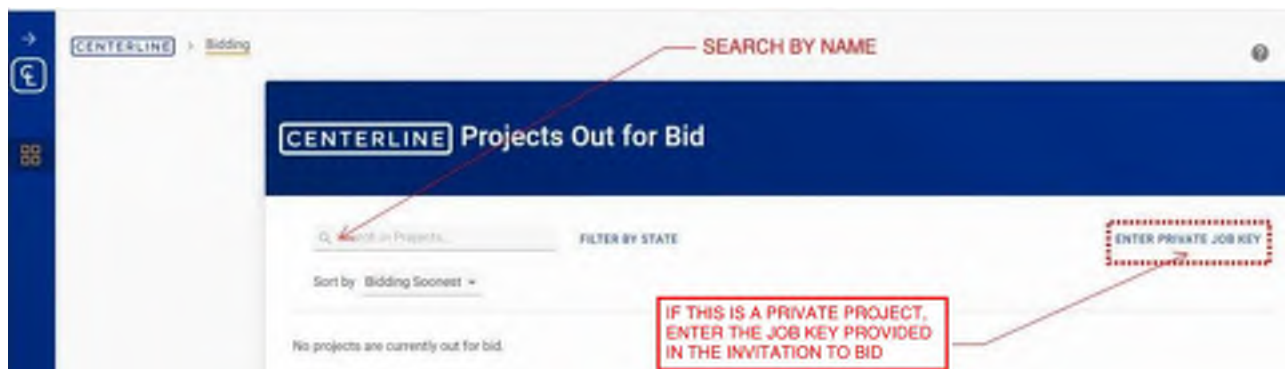
1. Go to the following site:  
[www.centerlinebidconnect.com](http://www.centerlinebidconnect.com)

*If this is your first time to Centerline's bidding module, you will need to go to "Don't have an account? Sign Up" and fill out the form and your password will be emailed to you, then continue with instructions. Sign up if you are a first time user.*

2. Type in your username (complete email address) and password. (if you forgot it, press "forgot password", your password will be emailed to you. Go back to login screen.

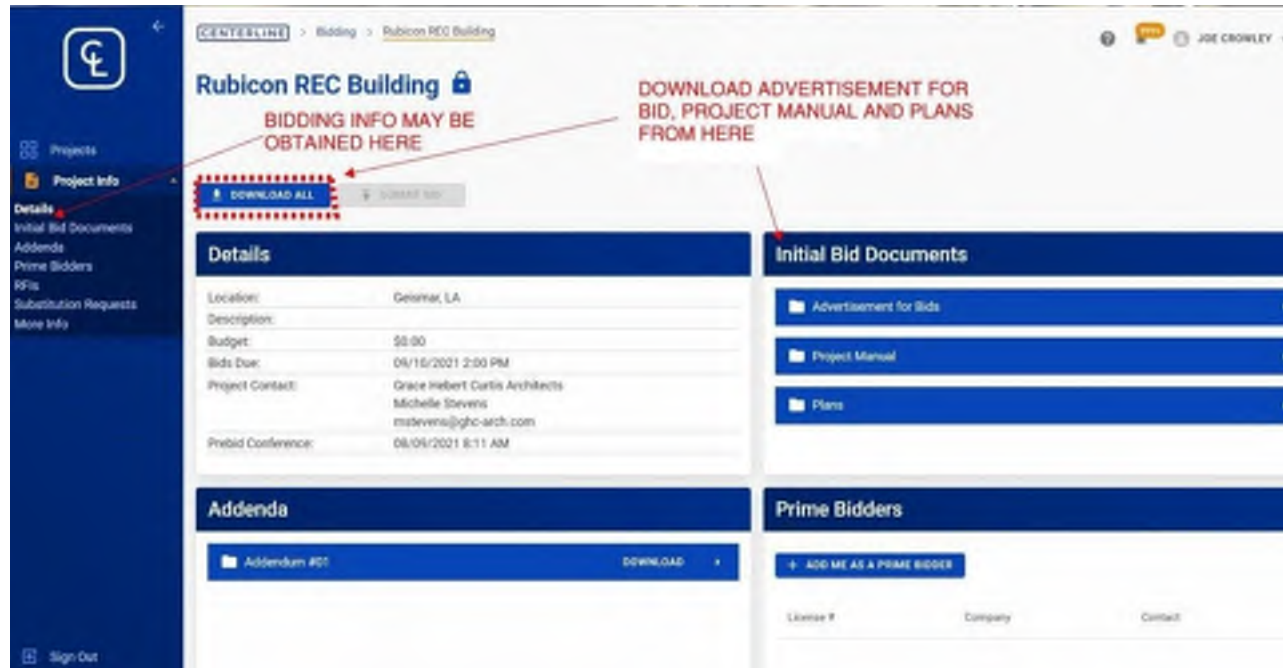


3. The first time you log in, you will be asked to change your password.
4. You will be taken to a page that looks like the screenshot on the next page that reads "Projects Out for Bid".
5. Once in scroll until you will see the project name that you are looking for.
6. Click on the project.
7. The BID MODULE IS ON THE LOWER LEFTHAND SIDE OF THE SCREEN.





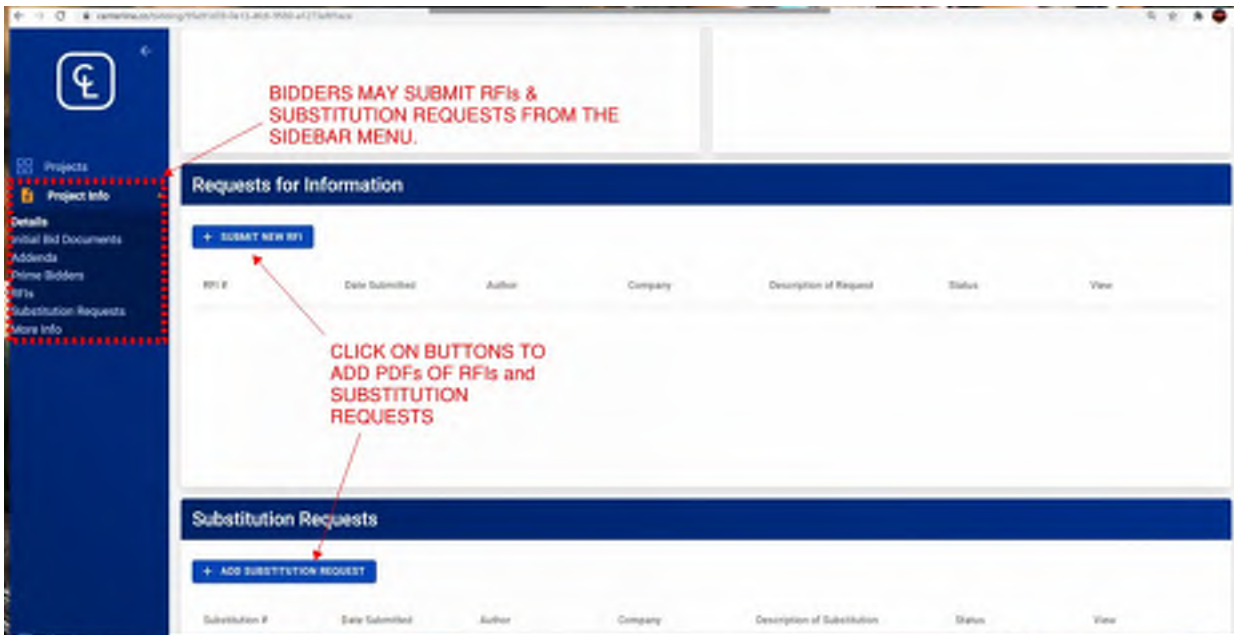
8. Select Project Info and a drop down menu is seen to the left.
9. You may download all Bid Documents, add yourself as a prime bidder and submit a bid on this page. Addenda, Prime Bidders, RFIs, Substitution Requests and More Info are placed here.
10. Print and download any info from this page.



**END OF SECTION**

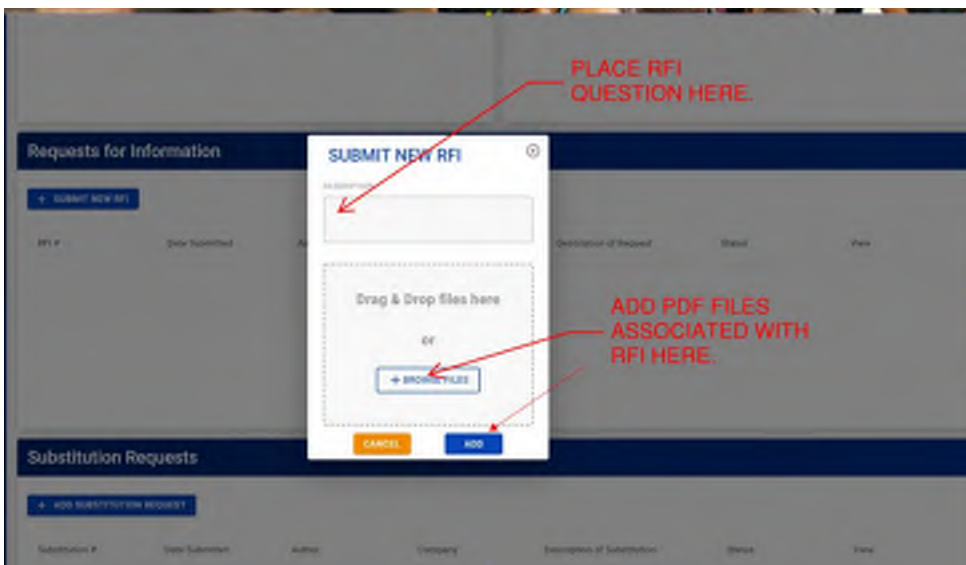
## 00 0005b - HOW TO ENTER REQUEST FOR INFORMATION (RFI) AND SUBSTITUTION REQUESTS FROM BIDDING SIDE

Once the bid is set up, and the User chooses the project and enters the password if a private bid, they will see the Submit buttons for NEW RFI's and SUBSTITUTION REQUESTS.



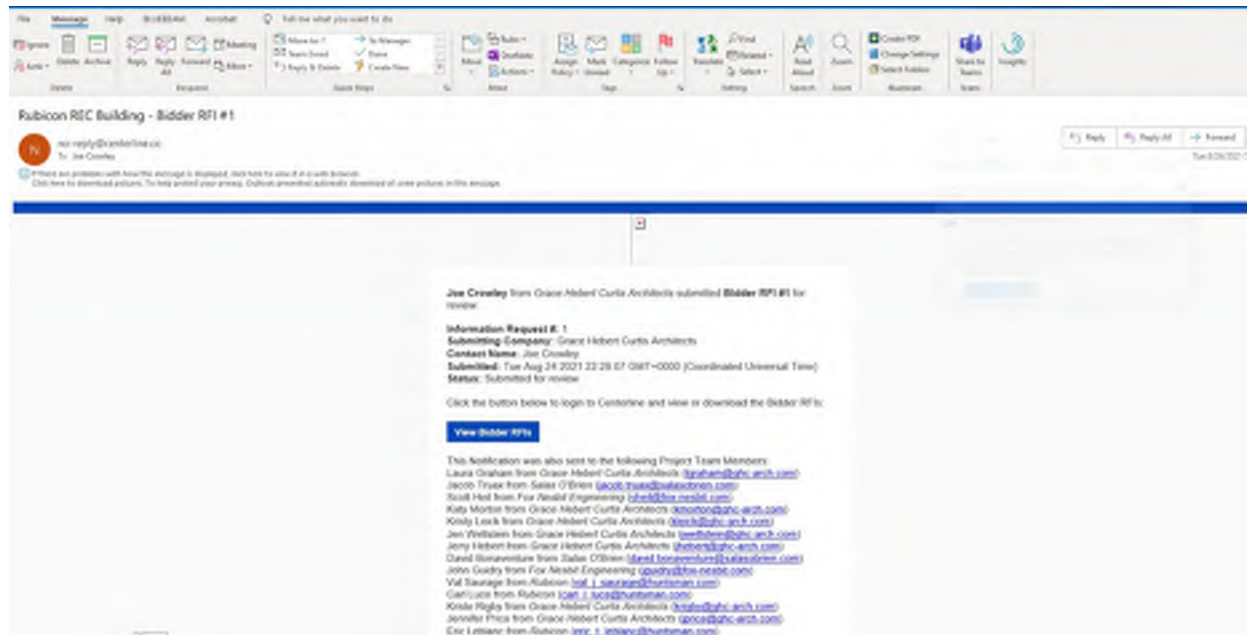
### RFI

This is the SUBMIT NEW RFI form the contractor/sub-contractor will get. **Simply fill in the information and attach files and press SUBMIT RFI. Your RFI will then appear in the log below.**





Once it is submitted, the User will receive an email to the person submitting it that it has been received. The Architect will receive a notification they have received an RFI for his project. You can click on the blue button in the email to take you to the RFI.



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Youth

00 0005b - 2

HOW TO ENTER REQUEST  
FOR INFORMATION (RFI) &  
SUBSTITUTION REQUESTS  
FROM BIDDING SIDE

## SUBSTITUTION REQUEST

This is what the Substitution Request looks like.

**Simply fill in the information, attach necessary files and press **SUBMIT SUBSTITUTION REQUEST**.**

The screenshot shows a software interface with a dark blue sidebar on the left containing navigation links: Projects, Project Info, Details, Bid Documents, Agenda, Bidders, Substitution Requests, and Sign Out. The main content area is divided into two sections. The top section, 'Requests for Information', features a '+ SUBMIT NEW RFI' button and a table with columns 'RFI #', 'Date Submitted', and 'Author'. The bottom section, 'Substitution Requests', features a '+ ADD SUBSTITUTION REQUEST' button and a table with columns 'Substitution #', 'Date Submitted', and 'Author'. A modal window titled 'ADD SUBSTITUTION REQUEST' is open on the right, containing the following fields: 'SPEC SECTION' (text input), 'PAGE NUMBER' (text input with a magnifying glass icon), 'PARAGRAPH NUMBER' (text input with a magnifying glass icon), 'DESCRIPTION OF SUBSTITUTION' (text input), 'PROPOSED SUBSTITUTION' (text input), 'REASON FOR SUBSTITUTION' (text input), 'LIST WAYS BY WHICH THE PROPOSED SUBSTITUTION AFFECTS DIMENSIONS SHOWN ON DRAWINGS' (text input), and 'LIST EFFECTS OF PROPOSED SUBSTITUTION ON OTHER TRADES' (text input).

When you see the Substitution Request appear on the list where you submitted it, your Substitution Request has been submitted; you may VIEW the document and save or print as well from this location by clicking on the VIEW eyeball icon.

Once it is submitted, similar to RFIs, the User will receive an email noting that it has been received and the Architect will receive a notification that there is a Substitution Request for the project.

## END OF SECTION

# AIA<sup>®</sup> Document A133<sup>™</sup> – 2009

## ***Standard Form of Agreement Between Owner and CMAR contractor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price***

### **PART A: PRE-CONSTRUCTION SERVICES**

\*AGREEMENT made as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year **2025**

BETWEEN the Owner:

**State of Louisiana**

**Office of the Governor**

**Division of Administration**

**Claiborne Office Building, 1201 North Third Street, Suite 7-160**

**Baton Rouge, LA 70802**

and the CMAR contractor:

**Arkel Constructors, LLC**

**1048 Florida Street**

**Baton Rouge, LA 70802**

for the following Project:

**Jetson Center for Youth**

**Office of Juvenile Justice**

**Baker, Louisiana**

**Project No. 08-403-04-02, Part 09 (F.08000078), 08-403-24-01, F.08000165**

The Designer:

**Grace Hebert Curtis Architects, APAC**

**501 Government Street, Suite 200**

**Baton Rouge, LA 70802**

The Owner's Designated Representative:

**Office of Facility Planning and Control**

**DOA / State of Louisiana**

CMAR Contractor's Designated Representative:

**Derek Fife**

The Designer's Designated Representative:

**Jerry Hebert**

The Owner and CMAR contractor agree as follows.

### **ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201<sup>™</sup>-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

**ELECTRONIC COPYING** of any portion of this AIA<sup>®</sup> Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 The Contract Documents**

The Contract Documents consist of this Agreement, AIA A133-2009 Standard Form of Agreement Between Owner and Construction Manager at Risk Contractor (CMAR contractor) where the CMAR contractor is also the Constructor, as modified by the Owner; AIA A201-2017 General Conditions of the contract for construction, as modified by the Owner; the Owner's construction documents, which include the drawings, addenda issued during the proposal period and acknowledged by the Proposers, project manuals, including the specifications, all exhibits, instructions, provisions, amendments and post-bid addenda attached thereto or referenced herein; the Owner's Request for Qualifications (RFQ) for Part A: Pre-Construction Services and Part B: Construction Services; the CMAR contractor's Proposal (Statement of Qualifications) issued in response to the Owner's RFQ; the CMAR contractor's Cost Proposal (pertains to Part B: Construction Services Agreement only); the CMAR contractor's construction phase critical path method schedule, and the CMAR contractor's Guaranteed Maximum Price (GMP) Proposal (pertains to Part B: Construction Services Agreement only) described herein, hereinafter collectively referred to as the "Contract Documents" are hereby incorporated by reference and are made part of this Agreement Between the Owner and the CMAR contractor, hereinafter referred to as the "Parties" and individually as a "Party".

### **§ 1.2 Relationship of the Parties**

The CMAR contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Designer and exercise the CMAR contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient construction administration, management services and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish or approve, in a timely manner, information required by the CMAR contractor and to make payments to the CMAR contractor in accordance with the requirements of the contract documents.

### **§ 1.3 General Conditions**

For pre-construction services, or in the event that the pre-construction and construction proceed concurrently, A201-2017, as modified by the Owner, shall apply to the pre-construction services as provided in this Agreement. For construction services, the General Conditions of the contract shall be the AIA® Document A201-2017, General Conditions of the Contract for Construction, as modified by the Owner, which is incorporated herein by reference. The term "Contractor" as used in A201-2017 shall mean the CMAR contractor.

## **ARTICLE 2 CMAR CONTRACTOR'S RESPONSIBILITIES**

The CMAR contractor's pre-construction services responsibilities are set forth in Sections 2.1 and 2.2. The CMAR contractor's construction services responsibilities are set forth in Section 2.3. The Owner and CMAR contractor may agree, in consultation with the Designer, for construction to commence prior to completion of the pre-construction services, in which case, both phases may proceed concurrently. The CMAR contractor shall identify a representative authorized to act on behalf of the CMAR contractor with respect to the Project.

CMAR contractor and its subcontractors shall perform all Part A: Pre-Construction Services and Part B: Construction Services as described in the Owner's Request for Qualifications (RFQ), Owner / CMAR contractor Agreement AIA A133-2009, as modified by Owner, and General Conditions AIA A201-2017, as modified by Owner for Part A: Pre-Construction Services and Part B: Construction Services for this project, hereinafter referred to as the "Agreement (contract)". The Owner's RFQ and all addenda are hereby incorporated by reference as if fully set forth herein. CMAR contractor shall provide all necessary personnel, supplies, and equipment required to perform the pre-construction and construction services as generally described herein.

The Parties understand and agree that the project consists of, but is not necessarily limited to, the following:

**Part B: Construction Services - CMAR Contractor Responsibility Items**

A summary of program elements is included in Exhibit C – (Program being posted separately)

**Part B: Construction Services – CMAR Contractor Coordination / Integration Only Items**

The following are anticipated / required CMAR contractor coordination / integration scope items included in Part B: Construction Services

Independent Testing (any testing not made a requirement of the CMAR contract where required by the construction documents)

FF&E (non-fixed furnishings / equipment)

Surveys (Geotechnical / Topographic)

Photo-Documentation

Independent Commissioning Services

The Owner may consider the delivery of the Project in subparts / phases with certain portions amended into the Part A: pre-construction services contract as advanced construction start activities and the remainder included in the Part B: construction services contract. The CMAR contractor shall be required to provide a 100% Performance and Payment Bond for the full value of construction activities contracted under the Part B: construction services contract and/or amended into the Part A: pre-construction services contract. The associated construction documents may be issued in smaller construction packages. This shall not control or dictate the CMAR contractor's combination of the Work into subcontractor bid packages or the award of subcontract agreements.

A Notice to Proceed will be issued separately for Part A: pre-construction services and the Part B: construction services contracts. An amendment will be issued to the Part A: pre-construction services contract for any Advanced Construction Start (ACS). A Partial Occupancy shall be issued upon completion of that ACS.

CMAR contractor understands that time is of the essence and agrees to take all reasonable steps to avoid delays in the construction and delivery of the Project.

**§ 2.1 PRE-CONSTRUCTION SERVICES**

**§ 2.1.1 Preliminary Evaluation**

Upon commencement of the contract, the CMAR contractor shall review in-progress design documents and assist the Designer with the development of the design through completion of 100% Construction Documents and complete a comprehensive review of plans and specifications for each phase of design with the specific intent to (1) identify and eliminate conflicts, discrepancies, errors, and omissions within the documents prior to completion of the documents and/or release of the documents for subcontractor pricing, (2) implement and conduct a constructability program to identify and document project costs and schedule savings opportunities, (3) develop a validation estimate of project costs, and (4) develop a baseline schedule for construction of the Project. The CMAR contractor shall submit its written reports from the above referenced plan reviews to the Owner and Designer at the various phases of design where referenced in 2.1.7 and participate in meetings with the Owner and Designer to review the above referenced reports in detail.

**§ 2.1.2 Coordination**

The CMAR contractor shall complete a preliminary assessment of the program requirements, project budget and site conditions, including but not limited to, existing structures and surface topography, surface and subsurface utilities, access and staging opportunities and limitations in order to offer recommendations regarding the approach to construction. Upon completion of this assessment, the CMAR contractor shall



submit recommendations and information to the Owner and Designer regarding site usage and site improvements; building systems, equipment and construction feasibility; and selection and availability of materials and labor; time requirements for installation and construction; assignment of responsibilities for safety measures and programs; temporary Project facilities; equipment, materials and services for common use of the CMAR contractor and Owner's representatives and/or separate contractors, if any; cost factors, including costs of alternative materials or designs, preliminary budgets, and possible cost savings; recognizing and tracking the resolution of conflicts in the proposed drawings and specifications; methods of delivery of materials, systems, and equipment; and any other matters necessary to accomplish the Project in accordance with the work progress schedule and the AFC. Notwithstanding the above, the CMAR contractor shall not be required to provide A/E services unless specifically required by the construction documents. CMAR contractor's recommendations and information provided shall be furnished solely in its capacity as a Contractor.

### **§ 2.1.3 Constructability Program**

The CMAR contractor shall provide a "Constructability Report" at the various phases of design where referenced in 2.1.7. The constructability program shall follow accepted industry practices and be reviewed by the Owner and Designer at the various design milestones. The CMAR contractor shall prepare a "Constructability Report" that identifies items that may, in the CMAR contractor's opinion, negatively impact construction of the Project. The "Constructability Report" shall address the overall coordination of project drawings, specifications and details and identify discrepancies that may potentially generate changes in the work or claims once Project construction commences. CMAR contractor shall update the report at least once monthly during the pre-construction phase. CMAR contractor shall also implement a system for tracking questions, resolutions, decisions, directions and other informational matters that arise during the development of the drawings and specifications for the Project. The decision tracking system shall be in a format approved by the Owner and Designer and shall be updated by the CMAR contractor at least once monthly during the pre-construction phase.

### **§ 2.1.4 Consultation**

The CMAR contractor shall jointly schedule and attend regular meetings with the Owner and Designer to discuss such matters as procedures, progress, coordination, and scheduling of the Work. The CMAR contractor shall advise the Owner and the Designer on proposed site use and improvements, selection of materials, and building systems and equipment. The CMAR contractor shall also provide recommendations consistent with the Project requirements to the Owner and Designer on constructability; availability of materials and labor; time requirements for procurement; installation, and construction; and factors related to construction costs including, but not limited to, costs of alternative designs or materials, preliminary budgets, life-cycle data, and possible cost reductions.

The CMAR contractor shall make recommendations to the Owner and Designer regarding organization of the construction documents to facilitate the bidding and awarding of construction subcontracts in a manner that promotes the interest of the Project and Owner. These recommendations may include, but are not limited to, phased or staged construction or multiple, separate contracts. These recommendations shall take into consideration such factors as time of performance, type and scope of work, availability of labor and materials, overlapping trade jurisdictions, provision for temporary facilities, comparisons of factory and on-site production costs, shipping costs, code restrictions, Owner's goal for local subcontractor participation, and other related goals.

The CMAR contractor shall review the construction documents with the Owner and Designer to eliminate areas of conflict and overlap in the work to be performed by the various subcontractors and/or Owner's separate contractors. The CMAR contractor shall review the construction documents to ensure that they contain adequate provision for jobsite areas required for construction, all temporary facilities necessary for the performance of the Work, and provisions for all of the jobsite facilities necessary to manage, inspect, and supervise construction of the Project.



### **§ 2.1.5 Project Schedule**

Within thirty (30) days of the Owner's Notice To Proceed with Part A: pre-construction services, the CMAR contractor shall evaluate the proposed Project schedule and sequence of Work, and prepare, and periodically update the Project schedule in accordance with the requirements of Section 3.10 of AIA A201-2017, as modified by Owner, for the Owner and Designer's review and approval. The CMAR contractor shall coordinate and integrate the Project schedule with the services and activities of the Owner, Designer and CMAR contractor. As design proceeds, the Project schedule shall be updated to indicate proposed activity sequences and durations, milestone dates for receipt and approval of pertinent information, submittal of a GMP proposal, preparation and processing of shop drawings and samples, delivery of materials or equipment requiring long-lead-time procurement, Owner's occupancy requirements showing portions of the Project having occupancy priority, and proposed date of substantial completion. If Project schedule updates indicate that previously approved schedules may not be met, the CMAR contractor shall make appropriate recommendations to the Owner and Designer.

### **§ 2.1.6 Phased Construction Where Applicable**

The CMAR contractor shall make recommendations to the Owner and Designer regarding the merits associated with the phased issuance of drawings and specifications to facilitate construction of the Work, taking into consideration such factors as economies, time of performance, availability of labor and materials, and provisions for temporary facilities.

### **§ 2.1.7 Preliminary Cost Estimates**

Within thirty (30) days of receipt of the Owner's Notice to Proceed with Part A: pre-construction services, the CMAR contractor shall prepare for the review and approval of the Owner and Designer a control estimate of Project costs, utilizing quantity survey, unit cost, volume, or other appropriate cost estimating techniques. The CMAR contractor's control estimate(s) shall be based on the most current plans and specifications for each phase of the Project. Allowances and estimates may be included within the control estimate for elements of the Work for which the design is yet to be completed. The cost estimate reports shall be completed at the one-hundred percent (100%) completion of Design Development phase, sixty percent (60%) completion of the Construction Documents phase, ninety percent (90%) completion of the Construction Documents phase, and one hundred percent (100%) completion of the Construction Documents phase of design. The CMAR contractor shall submit the GMP Proposal based on the ninety percent (90%) Construction Documents.

### **§ 2.1.8 Preliminary Estimate Reconciliation**

Following reconciliation of the control estimate with the Owner and Designer, if the reconciled control estimate prepared by the CMAR contractor exceeds the Owner's Available Funds for Construction (AFC), the CMAR contractor shall prepare and submit written recommendations to the Owner and Designer regarding appropriate actions to be taken to reduce the Project costs to an amount within the Owner's AFC.

The CMAR contractor is solely responsible for the construction budget and for preparing and updating all procurement and control estimates and distributing them to the Owner and Designer throughout the duration of the Project. The CMAR contractor shall provide continuous cost consultation services throughout the duration of the Project, including identification and tracking of decisions that affect the scope and/or quality of the project while providing ongoing updates of their cost and budget impact. The CMAR contractor shall advise the Owner and Designer immediately if the CMAR contractor has reason to believe that the most current control estimate will exceed the GMP or not meet the Owner's requirements and will as a result recommend reasonable strategies for bringing the Project in line with the control estimate and the GMP.

### **§ 2.1.9 Subcontractors and Suppliers**

The CMAR contractor shall seek to develop subcontractor interest in the Project and, in accordance with Section 5.2.2. of AIA Document A201-2017, as modified by the Owner, shall furnish to the Owner and Designer for their review and approval, a list of potential subcontractors, accompanied by a summary of the qualifications, relevant experience, and financial status of each potential subcontractor, including

suppliers who are proposed by the CMAR contractor to furnish materials or equipment fabricated to a special design, from whom bids and/or proposals may be requested for each principal portion of the Work. The Designer will promptly reply in writing to the CMAR contractor if the Designer or Owner knows of any objection to such subcontractor or supplier. The receipt of such list shall not require the Owner or Designer to investigate the qualifications of proposed subcontractors or suppliers, nor shall it waive the right of the Owner or Designer to later object to or reject any proposed subcontractor or supplier. The pre-qualification of subcontractors and/or suppliers may continue into the construction phase of the Project.

The CMAR contractor shall develop a bid / proposal package strategy in coordination with the Designer that addresses the entire scope of each phase and stage of the Project. Self-performance by the CMAR contractor may be allowed, not to exceed 20% of the GMP, providing the CMAR contractor can demonstrate that self-performance represents the best value to the Project based on current subcontractor market conditions. The scope of any and all self-performance is subject to Owner approval. The bid / proposal package strategy shall be reviewed with the Owner and Designer on a regular basis and revised throughout the buyout of the Project in order to best promote the interests of the Project and Owner. The CMAR contractor shall provide an analysis of the types and quantities of labor required for the Project and review the appropriate categories of labor required for critical phases or stages and make recommendations that minimize the adverse effects of labor shortages.

The CMAR contractor shall refine, implement and monitor required subcontractor procurement to promote equal employment opportunity in the provision of goods and services to the Owner for the Project.

The CMAR contractor shall consult with and make recommendations to the Owner and Designer on the acquisition schedule for fixtures, furniture and equipment, and coordinate with Owner as may be required to meet the overall construction program.

#### **§ 2.1.10 Obtaining Bids / Proposals**

The CMAR contractor shall solicit competitive lump sum proposals from trade contractors or subcontractors for the performance of all elements of the Project, establish criteria for determining the bid or proposal that provides the best value to the Owner, and consult with Owner and Designer on strategy for procurement. A minimum of three (3) bids / proposals shall be solicited. The CMAR contractor shall notify the Owner and Designer in writing in advance of the date in which bids / proposals are due for the various bid packages as well as facilitate transparency through Owner oversight of the bid / proposal process and CMAR contractor receipt of subcontract bids.

The CMAR contractor shall schedule and conduct pre-bid / pre-proposal conferences with interested proposers, subcontractors, material suppliers, equipment suppliers, and record minutes of the conferences. The CMAR contractor shall provide sufficient notice to Owner and Designer of all such conferences.

The CMAR contractor shall review the proposals in a manner that does not disclose the contents of any proposal to persons outside the Owner and Designer during this selection process. Based on the selection criteria included in the proposals process, the CMAR contractor shall recommend to the Owner the bid / proposal that provides the best value to the Owner for the Project. Upon Owner's written concurrence in the recommendation, the CMAR contractor may negotiate the terms of the subcontract with the apparent best value bidder / proposer.

#### **§ 2.1.11 Long-Lead-Time Items**

The CMAR contractor shall be solely responsible for and identify and recommend to the Owner a schedule for procurement of materials and/or equipment requiring extended delivery times and advise Owner on expedited procurement of those items to meet the project schedule and minimize risk of cost escalation. The CMAR contractor shall advise Owner and Designer on the preparation of performance specifications and requests for technical proposals for the procurement and installation of systems and components and for the procurement of long lead items. If requested by Owner and subject to the Owner's prior written

approval, issue requests for technical proposals to qualified sources and receive proposals and assist in their evaluation.

If such long-lead-time items are procured by the Owner, they shall be procured on terms and conditions mutually acceptable to the CMAR contractor and Owner. Upon the Owner's acceptance of the CMAR contractor's GMP proposal, the Owner shall assign all contracts for such items to the CMAR contractor, who shall accept responsibility for such items as if procured by the CMAR contractor. The CMAR contractor shall expedite the delivery of long-lead-time items and assume all risk associated with on-site storage and cost escalation.

With the specific written approval of the Owner and/or Designer, the CMAR contractor shall, when reasonably required to maintain the Project schedule, be permitted to contract with subcontractors and to enter into contracts to secure long-lead time items prior to the Owner's acceptance of the CMAR contractor's GMP proposal for the Project.

#### **§ 2.1.12 Extent of Responsibility**

The CMAR contractor does not warrant or guarantee estimates and schedules except as may be included as part of the GMP. The recommendations and advice of the CMAR contractor concerning design alternatives shall be subject to the review and approval of the Owner and Designer. It is not the CMAR contractor's responsibility to ascertain that the drawings and specifications are in accordance with applicable laws, statutes, ordinances, building codes, rules and regulations. However, if the CMAR contractor recognizes that portions of the drawings and specifications are at variance therewith, the CMAR contractor shall immediately notify the Owner in writing.

#### **§ 2.2 Guaranteed Maximum Price (GMP) Proposal and Contract Time**

**§ 2.2.1** The CMAR contractor shall submit / propose a GMP consisting of the sum of the subcontractor bids/proposals mutually selected by the CMAR contractor and Designer for all portions of the Work submitted for subcontractor pricing, and/or the CMAR contractor's estimates of the costs for all portions of the Work not yet submitted for subcontractor pricing for the cost of the Work; all General Conditions costs; the CMAR contractor fee, the CMAR contractor staffing and site office costs, and the Owner and CMAR contractor Contingencies accompanied by the proposed contract time.

**§ 2.2.2** Not Used.

#### **§ 2.2.3 Basis of Guaranteed Maximum Price (GMP)**

The CMAR contractor shall include with the GMP proposal, a written statement of its basis, which shall include:

- .1 A list of the drawings and specifications, including all addenda thereto and the conditions of the contract, which were used in preparation of the GMP proposal.
- .2 A list of allowances and estimates and a statement of their basis. Any allowances included within the accepted GMP shall be subject to prior approval by the Owner.
- .3 A list of the clarifications and assumptions made by the CMAR contractor in the preparation of the GMP proposal to supplement the information contained in the drawings and specifications.
- .4 The proposed GMP, including a statement of the estimated cost organized by trade categories, allowances, Owner and CMAR contractor Contingencies, and the fee that comprise the GMP.
- .5 The CMAR contractor's baseline Project schedule indicating the dates of commencement and acceptance (substantial completion) for the whole and/or various parts / phases of the Project upon which the proposed GMP is based.
- .6 A list of subcontractor trade categories the CMAR contractor plans to self-perform, if applicable.

§ 2.2.4 In preparing the GMP price proposal, the CMAR contractor shall include its Contingency for the CMAR contractor's exclusive use to cover those costs considered reimbursable as the Cost of the Work but not included in an Amendment to Contract.

§ 2.2.5 The CMAR contractor shall meet with the Owner and Designer to review the GMP proposal. In the event that the Owner and Designer discover any inconsistencies or inaccuracies in the information presented, they shall promptly notify the CMAR contractor, who shall make appropriate adjustments to the GMP proposal, its basis, or both.

§ 2.2.6 Not Used

§ 2.2.7 Prior to the Owner's acceptance of the CMAR contractor's GMP proposal and issuance of a Notice to Proceed for Part B: construction services, the CMAR contractor shall not incur any cost to be reimbursed as part of the cost of the Work, except as the Owner may specifically authorize in writing.

§ 2.2.8 Upon acceptance by the Owner of the GMP proposal, the GMP and its basis shall be set forth in the Part B: construction services contract. The GMP shall be subject to additions and deductions by a change in the Work or amendment to contract and the date of acceptance (substantial completion) subject to adjustment as provided in the contract documents.

§ 2.2.9 The Owner shall authorize and cause the Designer to revise the drawings and specifications to the extent necessary to reflect the agreed-upon assumptions and clarifications contained in the GMP proposal. Such revised drawings and specifications shall be furnished to the CMAR contractor in accordance with the schedules agreed to by the Owner, Designer, and CMAR contractor. The CMAR contractor shall promptly notify the Designer and Owner if such revised drawings and specifications are materially inconsistent with the agreed-upon assumptions and clarifications.

§ 2.2.10 The GMP shall include in the cost of the Work only those taxes which are enacted at the time the GMP is established. Should the CMAR contractor and Owner be unsuccessful at arriving at an agreed to GMP, in accordance with State of Louisiana revised statute RS 38:2225.2.4 subparagraph G.(6):

***“If Owner and the CMAR contractor are not able to agree upon constructability, construction phasing and sequencing, the GMP for the project, the maximum number of contract days to complete the project, and to reach a negotiated agreement, then the project shall be readvertised and publicly bid utilizing the design-bid-build delivery method, provided the CMAR contractor shall be prohibited from bidding on the project.”***

Accordingly, the Owner shall be required to terminate this agreement. Prior to termination, CMAR contractor shall provide Owner with all documents, reports, memos, estimates, spreadsheets, schedules, electronic documents, drawings, details, submittals and meeting minutes (hereinafter referred to within this paragraph as “records”) created or obtained by CMAR contractor relating to its scope of services for this Project, which records shall be the property of the Owner along with all copyrights therein.

## § 2.3 CONSTRUCTION SERVICES

### § 2.3.1 General

§ 2.3.1.1 Construction Services shall commence on the earlier of:

- (1) the Owner's written acceptance of the CMAR contractor's GMP proposal and issuance of a Notice to Proceed, or
- (2) the Owner's first authorization to the CMAR contractor to:
  - a) Award a subcontract, or
  - b) Issue a purchase order for materials or equipment required for the Work.

### **§ 2.3.2 Administration**

**§ 2.3.2.1** Self-performance by the CMAR contractor may be allowed, not to exceed 20% of the GMP, providing the CMAR contractor can demonstrate that self-performance represents the best value to the Project based on current subcontractor market conditions. The scope of any and all self-performance is subject to Owner approval.

The CMAR contractor shall organize and maintain a competent, full-time staff at the project site with clearly defined lines of authority and communication as necessary to coordinate construction activities, monitor and direct the progress of the work and further the project goals of the Owner and Designer.

**§ 2.3.2.1.1.** The CMAR contractor shall obtain a minimum of three (3) bids from subcontractors and from suppliers of materials or equipment fabricated to a special design for the Work from the list of potential bidders previously accepted by the Owner and Designer in accordance with Section 2.1.6. After analyzing such bids, CMAR contractor shall deliver such bids to the Owner and Designer. By mutual agreement between the Owner and CMAR contractor, and with the input of the Designer, bids will be reviewed and accepted. The CMAR contractor shall not be required to contract with anyone to whom the CMAR contractor has reasonable objection. Positive variances between the cost of the Work included within the CMAR contractor's GMP proposal accepted by the Owner and the actual cost of the Work established through subcontractor pricing shall remain within the CMAR contractor controlled portion of the GMP until such time as 90% of the Project cost of the Work has been established through subcontractor agreements, upon which time the positive variances shall be transferred to the Owner's contingency.

**§ 2.3.2.1.2** Following acceptance by the Owner, the contract and/or GMP may be modified either by an authorization request or amendment to contract only for the following reasons:

- a) If the scope of Work is changed by the Owner.
- b) If unforeseen or hidden conditions are encountered for which the CMAR contractor has no responsibility.
- c) If there are latent errors or omissions found within the contract documents for which the CMAR contractor could not have reasonably anticipated nor bears responsibility.
- d) The approval of claims by the Owner for additional compensation or additional time in accordance with Article 15 of AIA Document A201-2017, as modified by Owner.

**§ 2.3.2.2** Not Used.

**§ 2.3.2.3** Subcontracts and agreements with suppliers furnishing materials or equipment fabricated to a special design shall conform to the payment provisions of Sections 7.1.8 and 7.1.9 and shall not be awarded on the basis of cost plus a fee without the prior consent of the Owner.

**§ 2.3.2.4** Not Used

**§ 2.3.2.5** The CMAR contractor shall schedule and conduct meetings at which the Owner, Designer, CMAR contractor, and if appropriate, subcontractors, can discuss the status of the Work. A meeting shall be held where the phases of the Project can be discussed on no less than a weekly basis in the CMAR contractor's on-site Project office. As mutually agreed by the parties, the CMAR contractor shall prepare meeting minutes in a Prolog Project Management Systems format agreeable to the Owner and Designer and distribute minutes from the previous meeting no less than three (3) consecutive workdays in advance of the next scheduled meeting date. ”

**§ 2.3.2.6** Within 14 days after the Owner's acceptance of the GMP proposal, the CMAR contractor shall prepare, and submit for review and approval by the Owner and Designer, a detailed Project schedule in accordance with Section 3.10 of AIA Document A201-2017, as modified by Owner, including the Owner's occupancy requirements.



**§ 2.3.2.7** The CMAR contractor shall provide one copy of each report of daily construction activities to the Owner and Designer on a daily basis. The CMAR contractor shall submit said reports by the next work day following the performance of the Work. Reports of Work performed on Friday, Saturday or Sunday shall be provided the following Monday. The CMAR contractor's daily report shall contain a record of weather, subcontractors working on the site, number of workers, work accomplished, problems encountered and other similar relevant data as the Owner and/or Designer may reasonably require. The log shall be available to the Owner and Designer.

**§ 2.3.2.8** The CMAR contractor shall develop a system of cost control for the Work, including regular monitoring of actual costs for activities in progress and estimates for uncompleted tasks and proposed changes. The CMAR contractor shall identify variances between actual and estimated costs and report the variances to the Owner and Designer at regular intervals. The CMAR contractor shall adhere to the requirements regarding the administration of the contract as contained in the Project manuals.

**§ 2.3.2.9** The Owner shall contract separately and provide all required services of testing laboratories for these services required by the contract. The CMAR contractor shall include within its GMP, the cost for, and provide, all required services of testing laboratories to perform the third-party testing services required by the contract documents where such tests or services must be repeated due to a failure of the Work to meet the requirements of the contract documents. In cases where tests indicate the Work does not conform to the requirements of the contract documents, the CMAR contractor shall bear the cost of retesting such non-conforming Work, as well as the cost of all corrective measures, unless the failure is due to circumstances beyond the control of the CMAR contractor. In such cases, and unless the failure is due to circumstances beyond the control of the CMAR contractor, as determined by the Designer, neither the costs of such retesting nor the costs of corrective measures shall be included as a reimbursable cost, as defined in Article 6 of this Agreement, within the GMP. In addition, the GMP shall not be increased due to the cost of such tests, or the cost of any corrective measures that may be necessary due to the failure of the Work to conform to the contract requirements, unless the failure is due to circumstances beyond the control of the CMAR contractor, as determined by the Designer.

**§ 2.3.2.9.1** If the CMAR contractor determines the services of a geotechnical engineer are required in addition to the geotechnical report included within the Project manuals, the CMAR contractor shall advise the Designer in writing that such services are required and shall include a justification for those services. If the Designer agrees such additional services are necessary and are not included in the scope of the Work on which the GMP is based, the Owner shall provide such services at no additional cost to the CMAR contractor.

## **§ 2.4 Professional Services**

Section 3.12.10 of AIA A201–2017, as modified by Owner, shall apply to both pre-construction and construction services.

## **§ 2.5 Hazardous Materials**

Section 10.3 of AIA A201–2017, as modified by Owner, shall apply to both pre-construction and construction services.

# **ARTICLE 3 OWNER'S RESPONSIBILITIES**

## **§ 3.1 Information and Services**

**§ 3.1.1** Upon written request by the CMAR contractor, the Owner shall provide information in a timely manner regarding the requirements of the Project.

**§ 3.1.2** Not Used

§ 3.1.3 The Owner shall establish and update an overall budget for the Project which shall include contingencies for Owner changes in the Work and other costs which are the responsibility of the Owner.

#### **§ 3.1.4 Structural and Environments Tests, Surveys and Reports**

During pre-construction services, the Designer, on behalf of the Owner, shall furnish services specified in Article 3, Sections 3.1.4.1- 3.1.4.5 with reasonable promptness and at the Owner's expense. Except to the extent that the CMAR contractor knows of any inaccuracy, the CMAR contractor shall be entitled to rely upon the accuracy of any such information, reports, surveys, drawings and tests described in sections 3.1.4.1 through 3.1.4.5 but shall exercise customary precautions relating to the performance of the Work.

§ 3.1.4.1 Reports, surveys, drawings and tests concerning the conditions of the site where required by law.

§ 3.1.4.2 Surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; adjacent drainage; right-of-ways, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and necessary data pertaining to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All information on the survey shall be referenced to a project benchmark.

§ 3.1.4.3 Subject to the Designer's prior written approval, the services of a geotechnical engineer when such services are requested by the CMAR contractor to perform percolation tests, evaluations of hazardous materials, ground corrosion and resistivity tests, including necessary operations for anticipated subsoil conditions, with reports and appropriate professional recommendations.

§ 3.1.4.4 Structural, mechanical, chemical, air and water pollution tests, tests for hazardous materials, and other laboratory and environmental tests, inspections and reports which are required by law.

§ 3.1.4.5 The services of other consultants when, in the opinion of the Designer, such services are reasonably required by the scope of the Project.

#### **§ 3.2 Owner's Designated Representative**

The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. This representative shall have the authority to make decisions on behalf of the Owner concerning estimates and schedules, construction budgets, and changes in the Work, and shall render such decisions promptly and furnish information expeditiously, so as to avoid unreasonable delay in the services or Work of the CMAR contractor. The Owner's designated representative is the Office of Facility Planning and Control. All authority by the Owner's representative must be in writing and signed by the Representative. No oral approval, directive, or authorization is binding on the Owner.

##### **§ 3.2.1 Legal Requirements**

The Owner shall advise the Designer and CMAR contractor of any special legal requirements relating specifically to the Project that differ from those generally applicable to construction in the jurisdiction of the Project. The Owner shall furnish such legal services as are necessary to provide the information and services required under Section 3.1.

#### **§ 3.3 Architect / Engineer (Designer)**

The Owner shall retain a licensed architect or engineer (Designer) to provide basic services as described in its Contract Between Owner and Designer, current as of the date of this agreement and as modified by the Owner. The Owner shall authorize and cause the Designer to provide only those pre-construction and construction phase additional services approved by the Owner in writing in advance. Such services shall be

provided in accordance with time schedules agreed to by the Owner and Designer. Upon request of the CMAR contractor, the Owner shall furnish to the CMAR contractor a copy of the Owner's Agreement with the Designer, from which compensation provisions may be deleted.

#### ARTICLE 4 COMPENSATION AND PAYMENTS FOR PRE-CONSTRUCTION SERVICES

The Owner shall compensate and make payments to the CMAR contractor for Part A: pre-construction services as follows:

##### § 4.1 Compensation

§ 4.1.1 For the services described in Section 2.1, Section 2.2, and the Owner's Request for Qualifications, the CMAR contractor shall be compensated the fixed, lump sum pre-construction services fee of **one hundred thousand Dollars (\$100,000.00)**. The GMP for all phases of the project shall be delivered on or prior to day **240** of the overall 270 day Part A: pre-construction services contract (i.e. 90% Construction Documents). Should actual labor and/or expenses exceed the man-hours and stipulated fixed contract amount, there shall be no fee adjustment for Part A: pre-construction services.

§ 4.1.2 Not Used

§ 4.1.3 Not Used

##### § 4.2 Payments

§ 4.2.1 Payments shall be due upon invoicing following completion of deliverables / services rendered for the various phases of basic design as follows:

|                                    |            |
|------------------------------------|------------|
| 100% DESIGN DEVELOPMENT            | 20%        |
| 60% CONSTRUCTION DOCUMENTS         | 35%        |
| 90% CONSTRUCTION DOCUMENTS         | 35%        |
| <u>100% CONSTRUCTION DOCUMENTS</u> | <u>10%</u> |
| TOTAL = 100%                       |            |

§ 4.2.2 Progress payments for pre-construction services earned are due and payable thirty (30) days from the date the Owner receives the CMAR contractor invoice bearing the Designer's approval for payment.

#### ARTICLE 5 COMPENSATION FOR CONSTRUCTION SERVICES

Should the CMAR contractor be awarded Part B: construction services, the Owner shall compensate the CMAR contractor for construction services as follows:

##### § 5.1 Compensation

§ 5.1.1 For Part B: construction services and the CMAR contractor's performance of the Work as described in Section 2.3, the Owner shall pay the CMAR contractor in current funds the contract sum consisting of the cost of the Work, as defined in Article 6, the CMAR contractor fee, the CMAR contractor construction phase site office and staffing costs, and the Owner and CMAR contractor Contingencies where earned, as defined herein and as described in the Owner's RFQ and below. The fixed amounts enumerated herein are based on the current Available Funds for Construction (AFC) in the amount of **\$60,000,000.00** exclusive of 4% Owner Contingency, 1% CMAR contractor Contingency and a construction duration of **550 days** consistent with the Project schedule. Should there be a mutually agreed to adjustment (increase or reduction) in work scope and/or construction duration, the CMAR contractor fee and construction phase site office and staffing costs shall be adjusted proportionately.

##### 5.2 Guaranteed Maximum Price (GMP)

Should CMAR contractor be awarded Part B: construction services for performance of the Work described in Article 2.3 and the Owner's RFQ, CMAR contractor shall be compensated the not-to-exceed sum of

      TBD       Dollars (\$       TBD      .00) for the cost of the Work including General Conditions,  
      TBD       Dollars (\$       TBD      .00) for the CMAR contractor fee,       TBD       Dollars



(\$ TBD.00) for the CMAR contractor site office and staffing costs, as described in the Owner's RFQ and below, and TBD **Dollars** (\$ TBD.00) or five percent (5%) Construction Contingency, as described herein.

### **Contingencies**

As indicated above, the Part B Construction Services contract shall include a total Construction Contingency of five percent (5%) based on the Cost of the Work including General Conditions, CMAR contractor fee and CMAR contractor Site Office and Staffing Costs or the sum of TBD **Dollars** (\$ TBD.00). Said Construction Contingency shall consist of (1) the Owner Contingency and (2) the CMAR contractor Contingency.

#### Owner Contingency

The Owner Contingency shall be established by multiplying the Cost of the Work, as first established within this Agreement, including General Conditions, CMAR contractor fee and CMAR contractor Site Office and Staffing costs by four percent (4.0%) or the sum of TBD **Dollars** (\$ TBD.00). The Owner is under no obligation to increase the value of the Owner's Contingency beyond the dollar value first established due to adjustments to the Contract Sum by Authorization Request or Amendment. With the prior written consent of the Owner, said Owner's Contingency may be used to compensate the CMAR contractor for additional costs which are the results of:

- (1) Increases in the Cost of the Work due to the Designer's reasonable interpretation of the Contract Documents per Article 1.2.3 of the AIA Document A201-2017, as modified by the Owner;
- (2) Portions of the Work having been inadvertently omitted from the Cost of the Work by the CMAR contractor. However, in no event shall the Owner's Contingency be awarded to a subcontractor who, following the establishment of the GMP, notifies the CMAR contractor that costs for portions of its scope were omitted from the subcontractor's firm fixed bid/proposal due to causes beyond the control of the CMAR contractor or the Owner,
- (3) Other conditions affecting the Cost of the Work for which the CMAR contractor bears no responsibility, and
- (4) Other conditions which, in the sole discretion of the Owner, warrant the award of additional compensation to the CMAR contractor from the Owner's Contingency.

#### CMAR contractor Contingency

The CMAR contractor Contingency shall be established by multiplying the Cost of the Work, including General Conditions, CMAR contractor Fee and CMAR contractor Site Office and Staffing costs by one percent (1.0%) or the sum of TBD **Dollars** (\$ TBD.00). Said Contingency may be used by the CMAR contractor for Work which is reasonably required to complete the Project but which was not indicated in the Contract Documents and could not have been reasonably anticipated by the CMAR contractor prior to establishment of the Cost of the Work. The CMAR contractor's use of this Contingency shall not exceed **fifty thousand dollars (\$50,000.00)** per occurrence without the prior written consent of the Owner. The CMAR contractor agrees to exercise its responsibility to the Owner in its use of this Contingency. The CMAR contractor further agrees to maintain and submit an accounting of its use (in a form agreeable to the Owner) with its monthly Application for Payment and report its use of this Contingency to the Owner at the weekly Project Meetings.

The Owner and CMAR contractor Contingencies shall be the property of the Owner and may be approved for use by the CMAR contractor only upon the prior written consent of the Owner. Any unused Contingency remaining at the completion of the Project shall be returned to the Owner and the GMP decreased accordingly by Amendment to contract.

**Guaranteed Maximum Price (GMP)**

The Guaranteed Maximum Price for this Project is the amount of (\$ TBD Dollars (\$ TBD.00) and is the sum of the following components and values:

**Part B: Advanced Construction Start**

\$                     .00 – Selective Demolition (where applicable)  
\$                     .00 – Mold Remediation (where applicable)  
\$                     .00 – Long-Lead Item Procurement (where applicable)  
\$                     .00 – Site Clearing and Utilities Infrastructure (where applicable)  
\$                     .00 – **TOTAL**

**Part B: Construction Services (this Agreement)**

\$                     .00 – Cost of the Work, including General Conditions Costs  
\$                     .00 – CMAR contractor Fee  
\$                     .00 – CMAR contractor Site Office and Staffing Costs  
\$                     .00 – Owner's Contingency (4%)  
\$                     .00 – CMAR contractor Contingency (1%)

\$                     .00 – **TOTAL CONTRACT AMOUNT**

\$                     .00 – Allowance for Optional / Alternate Scope Items where applicable  
(Items that may be amended into Part B: Construction Services)

\$ TBD.00 – **GUARANTEED MAXIMUM PRICE (GMP)**

§ 5.2.1 The sum of the cost of the Work, the CMAR contractor site office and staffing costs, and the CMAR contractor fee are guaranteed by the CMAR contractor not to exceed the amount provided above and in the GMP proposal, subject to additions and deductions by changes in the Work as provided in the contract documents. Such maximum sum as adjusted by approved changes in the Work is referred to in the contract documents as the GMP. Costs that would cause the GMP to be exceeded due to no fault of the Owner shall be paid by the CMAR contractor without reimbursement by the Owner.

§ 5.2.2 Following approval of the CMAR contractor's schedule of values for the Project, underruns of costs on line items within the GMP, with the exception of the Owner contingency and the CMAR contractor Contingency lines, may be used to offset overruns of the same, with the net amount of the total underruns being returned to the Owner by the CMAR contractor at the completion of the Project. However, following the approval of the CMAR contractor's schedule of values, the contract values of specific line items may be adjusted within the GMP only by prior written approval of the Owner. For this Article 5, an "underrun" is defined as a cost which is less than the dollar amount of that cost as provided for herein, and an "overrun" is defined as a cost in excess of the dollar amount of that cost as provided for herein. No provision for shared savings between the Owner and CMAR contractor is included in this Agreement or elsewhere.

**§ 5.3 Changes in the Work**

§ 5.3.1 Adjustments to the GMP on account of changes in the Work subsequent to the execution of the Part B: Construction Services Agreement may be determined by any of the methods listed in Section 7.3.3 of A201–2017.

§ 5.3.2 In calculating adjustments to subcontracts (except those awarded with the Owner's prior consent on the basis of cost plus a fee), the terms "cost" and "fee" as used in Section 7.3.3.3 of A201™–2017 and the terms "costs" and "a reasonable allowance for overhead and profit" as used in Section 7.3.7 of A201™–2017 shall have the meanings assigned to them in that document and shall not be modified by this Article

5. Adjustments to subcontracts awarded with the Owner's prior consent on the basis of cost plus a fee shall be calculated in accordance with the terms of those subcontracts.

**§ 5.3.3** In calculating adjustments to the Contract, the terms "cost" and "costs" as used in the above-referenced provisions of A201™–2017 shall mean the Cost of the Work as defined in Article 6 of this Agreement, and the term "and a reasonable allowance for overhead and profit" shall mean the CMAR contractor's fee as defined in Section 5.1.1 of this Agreement.

**§ 5.3.4**

If no specific provision is made in Section 5.1.1 for adjustment of the Construction Manager's Fee in the case of changes in the Work, or if the extent of such changes is such, in the aggregate, that application of the adjustment provisions of Section 5.1.1 will cause substantial inequity to the Owner or Construction Manager, the Construction Manager's Fee shall be equitably adjusted on the basis of the Fee established for the original Work. However, the Construction Manager shall be due no increase in its stipulated Fee until such time as the Cost of the Work, as indicated above, is increased by five percent (5.0%) as the result of scope adjustments to the Contract amount, or the added value of the Cost of the Work exceeds       TBD       Dollars (\$       TBD      .00).

**ARTICLE 6 COST OF THE WORK FOR CONSTRUCTION SERVICES**

**§ 6.1 Costs to be Reimbursed**

**§ 6.1.1** The term "Cost of the Work" shall mean costs necessarily incurred by the CMAR contractor in the proper performance of the Work. Such costs shall be at rates not higher than those customarily paid at the place of the Project except with prior consent of the Owner. The Cost of the Work shall include only the items set forth in Sections 6.2.1-6.7.1.

**§ 6.1.2** Not Used

**§ 6.2 Labor Costs**

- .1** Base pay wages of construction workers directly employed by the CMAR contractor to perform the construction of the Work at the site or, with the Owner's agreement, at off-site workshops.
- .2** Base pay wages or salaries of the CMAR contractor's supervisory and administrative personnel when stationed at the site with the Owner's agreement.
- .3** Base pay wages and salaries of the CMAR contractor's supervisory or administrative personnel engaged, at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.
- .4** Costs paid or incurred by the CMAR contractor for taxes, insurance, contributions, assessments and benefits required by law, provided that such costs are based on wages and salaries included in the Cost of the Work under Sections 6.2.1 through 6.2.3.

**§ 6.2.1 through 6.2.4** included in 6.2 as reformatted

**§ 6.2.5** Not Used

**§ 6.3 Subcontract Costs**

Payments made by the CMAR contractor to subcontractors in accordance with the requirements of the subcontracts.

**§ 6.4 Costs of Materials and Equipment Incorporated in the Completed Construction**

- .1** Costs, including transportation, of materials and equipment incorporated in the completed construction.

- .2 Costs of materials described in the preceding Section 6.4.1 in excess of those actually installed but required to provide reasonable allowance for waste and for spoilage. Unused excess materials, if any, shall be handed over to the Owner at the completion of the Work or, at the Owner's option, shall be sold by the CMAR contractor; amounts realized, if any, from such sales shall be credited to the Owner as a deduction from the cost of the Work.

§ 6.4.1 through 6.4.2 included in 6.4 as reformatted

#### § 6.5 Costs of Other Materials and Equipment, Temporary Facilities and Related Items.

- .1 Costs, including transportation, installation, maintenance, dismantling and the removal of materials, supplies, temporary facilities, machinery, equipment, and hand tools not customarily owned by the construction workers, which are provided by the CMAR contractor at the site and fully consumed in the performance of the Work; and cost less salvage value on such items if not fully consumed, whether sold to others or retained by the CMAR contractor. Cost for items previously used by the CMAR contractor shall mean fair market value. Owner shall participate in the decision to purchase or rent the machinery, equipment, or hand tools. If Owner decides that such items are to be purchased rather than rented, these items will be the property of Owner and will be returned to and retained by the Owner after completion of the work. Costs shall be consistent with current prevailing market rates and shall not exceed the current costs that a willing and prudent purchaser would be expected to pay for such goods, services, materials, equipment, labor, tools, supplies, machinery, or temporary facilities in East Baton Rouge Parish, Louisiana.
- .2 Rental charges for temporary facilities, machinery, equipment and hand tools not customarily owned by the construction workers, which are provided by the CMAR contractor at the site, whether rented from the CMAR contractor or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rates and quantities of equipment rented shall be subject to the Owner's prior approval. Rental rates of Contractor's own equipment shall not exceed the current Associated Equipment Distributors (AED) Manual charges, as adjusted for the location of the Project, or the lowest rental rate reasonably available for the equipment from commercial rental companies within the area of the project, without Owner's prior written approval, and in no event shall the total of such rental charges exceed the depreciated fair market value of the equipment when first put into service in connection with the Work. Operating costs (per AED), if any, are to be billed at actual cost.
- .3 Costs of removal of debris from the site.
- .4 Reproduction costs, costs of telegrams, facsimile transmissions and long-distance telephone calls, postage and express delivery charges, telephone at the site and reasonable petty cash expenses of the site office.
- .5 That portion of the reasonable travel and subsistence expenses of CMAR contractor personnel incurred while traveling in discharge of duties related to the Work. All such travel and subsistence expenses of CMAR contractor's personnel shall be in accordance with the Division of Administration's Policy and Procedure Memorandum No. 49.

§ 6.5.1 through 6.5.5 included in 6.5 as reformatted

§ 6.5.6 Not Used

#### § 6.6 Miscellaneous Costs

- .1 That portion directly attributable to this contract of premiums for insurance and bonds. Cost of the required insurance coverages, performance and payment bonds, builder's risk insurance and other insurance policies required by this Agreement, are all included in the General Condition costs as referenced in paragraphs 5.1.1 and 5.2 above. All insurance and bond costs are to be at actual and auditable cost inclusive of all premium adjustments.

- .2 Sales, use or similar taxes imposed by a governmental authority which are related to the Work and for which the CMAR contractor is liable.
- .3 Fees and assessments for the building permit and for other permits, licenses and inspections for which the CMAR contractor is required by the contract documents to pay.
- .4 Fees of testing laboratories for tests required by the contract documents and Article 2.3.2.8. of this Agreement, except those related to nonconforming Work other than that for which payment is permitted by Section 6.1.8.2.
- .5 Royalties and license fees paid for the use of a particular design, process or product required by the contract documents
- .6 Data processing costs related to the Work. (Note: Only for costs expended on the site as part of the general condition costs. Home office data processing costs of any nature are not reimbursable under this Agreement.)
- .7 Deposits lost for causes other than the CMAR contractor's negligence or failure to fulfill a specific responsibility to the Owner set forth in this Agreement.
- .8 Each party shall be responsible for its own legal fees, costs and expenses relating to this Agreement.
- .9 Expenses for relocation and temporary living allowances for the CMAR contractor's personnel shall only be reimbursed by the Owner if the Owner approves such costs in writing beforehand.

§ 6.6.1 through 6.6.9 included in 6.6 as reformatted

#### § 6.7 Other Costs

- .1 That other costs incurred in the performance of the Work if and to the extent approved in advance in writing by the Owner.

#### § 6.7.1 Emergencies and Repairs to Damaged or Nonconforming Work

The cost of the Work shall also include costs described in Section 6.1.1. which are incurred by the CMAR contractor in taking action to prevent threatened damage, injury or loss in case of an emergency affecting the safety of persons and property, as provided in Section 10.4. of AIA A201–2017.

#### § 6.7.2 through 6.7.3 Not Used

§ 6.7.4 The costs described in Sections 6.2.1 through 6.7.1 shall be included in the cost of the Work notwithstanding any provision of A201™–2017 or other conditions of the contract which may require the CMAR contractor to pay such costs, unless such costs are excluded by the provisions of Section 6.8.

#### § 6.8 Costs not to be Reimbursed

§ 6.8.1 The cost of the Work shall not include:

- .1 Salaries and other compensation of the CMAR contractor's personnel stationed at the CMAR contractor's principle office or offices other than the site office, except as specifically provided in Section 6.2.1.
- .2 Expenses of the CMAR contractor's principle office and offices other than the site office, except as specifically provided in Section 6.2.1.
- .3 Overhead and general expenses, except as may be expressly included in Section 6.2.1.
- .4 The CMAR contractor's capital expenses, including interest on the CMAR contractor's capital employed for the Work.
- .5 Rental costs of machinery and equipment, except as specifically provided in Section 6.5.
- .6 Costs due to the negligence of the CMAR contractor or to the failure of the CMAR contractor to fulfill a specific responsibility to the Owner set forth in this Agreement.
- .7 Costs incurred in the performance of pre-construction phase services
- .8 Any cost not specifically and expressly described in Sections 6.2 through 6.7.
- .9 Costs that would cause the GMP to be exceeded.

- .10 Bonuses and other discretionary expenses unless specifically approved in writing by the Owner.
- .11 Costs to correct CMAR contractor's or any subcontractor's defective work.
- .12 Any acceleration costs incurred by CMAR contractor to overcome unexcused delays to the work.

### **§ 6.9 Discounts, Rebates and Refunds**

**§ 6.9.1** Cash discounts obtained on payments made by the CMAR contractor shall accrue to the Owner. Trade discounts, rebates, refunds and amounts received from sales of surplus materials and equipment shall accrue to the Owner, and the CMAR contractor shall make provisions so that they can be secured.

**§ 6.9.2** Amounts that accrue to the Owner in accordance with the provisions of Section 6.9.1 shall be credited to the Owner as a deduction from the cost of the Work.

### **§ 6.10 Not Used**

### **§ 6.11 Accounting Records**

**§ 6.11.1** The CMAR contractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under this contract. The Owner and its accountants shall be afforded access to the CMAR contractor's records, books, correspondence, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda and other data relating to this Project, and the CMAR contractor shall preserve these for a period of three years after final payment, or for such longer period as may be required by law.

a) The CMAR contractor shall keep full and detailed accounts in accordance with Generally Accepted Accounting Principles (GAAP) and exercise such cost controls as may be necessary for proper financial management under this Agreement. Owner's accountants, Owner's agent, its authorized representative, and auditors for the State of Louisiana shall be afforded reasonable access, at reasonable times, to the CMAR contractor's detailed cost reports, time sheets, payroll burden calculations, insurance rates (workers compensation and general liability) and the support therefore, insurance contracts, invoices, bills, reimbursable expenses reports, records, books, foreman's reports, superintendent daily logs, correspondence, instructions, as-built record drawings, receipts, subcontracts, purchase orders, vouchers, memoranda and other records, drawings or data relating to the Work performed in accordance with this Agreement, and the CMAR contractor shall preserve these for a period of three (3) years after final payment, or for such longer period as may be required by law.

b) CMAR contractor's records which shall include accounting records (hard copy, as well as computer readable data if reasonably available), written policies and procedures, subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets correspondence; change proposal files (including documentation); and any other supporting evidence necessary to substantiate charges related to this Agreement (all foregoing hereinafter referred to as "records") shall be opened to inspection and subject to audit by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of (1) CMAR contractor's compliance with this Agreement, and (2) compliance with provisions for authorization requests, payments or claims submitted by the CMAR contractor or any of its subcontractors or other payees.

c) Such audits may require inspection from time-to-time and at reasonable times and places of any and all such information, materials and data as set forth above of every kind and character. Such records subject to audit shall also include those records necessary to evaluate and verify direct costs (including overhead allocations) as they may apply to costs associated with this Agreement.



d) Owner's agent or its authorized representative shall have reasonable access at reasonable times to the CMAR contractor's facilities, shall be allowed to interview current or former employees that have direct involvement with the performance of this Agreement, shall have access to all necessary records, shall be provided adequate and appropriate work space in order to conduct audits in compliance with this Article, and will be provided support from the CMAR contractor's staff as required. CMAR contractor shall provide such access and/or all necessary records or support upon 14 calendar day notice by Owner to CMAR contractor.

e) The CMAR contractor shall provide the Owner and Designer with an executed copy of all subcontracts, (with subcontractors, materialmen, suppliers or other vendors of services, supplies or materials) including authorization requests or other contracts and/or any document required under this Agreement entered into in furtherance of the Work, if specifically requested by the Owner or Designer.

## **ARTICLE 7 CONSTRUCTION SERVICES PAYMENTS**

### **§ 7.1 Progress Payments**

**§ 7.1.1** Based upon applications for payment submitted to the Designer by the CMAR contractor and certificates for payment certified by the Designer, the Owner shall make progress payments on account of the contract sum to the CMAR contractor as provided below and elsewhere in the contract documents.

**§ 7.1.2** The period covered by each application for payment shall be one calendar month ending on the last day of the month, or as follows:

Applications for payment shall only be made for Work completed during the period covered by the application. Applications for payment shall not be for Work projected to be completed after the application for payment is submitted. The CMAR contractor shall make its best effort, and shall require the same of its sub-contractors, to include within each application for payment all costs incurred by the CMAR contractor and sub-contractors within the period covered by the application for payment. Costs in excess of ninety (90) days old included within applications for payment may be subject to disapproval by the Owner.

**7.1.3** When an application for payment is received by the Designer, payment shall be made by the Owner not later than forty-five (45) days after Designer's documented submittal of the application for payment to the Owner, unless the application for payment is rejected due to errors or ineligible billing.

**§ 7.1.4** With each application for payment, the CMAR contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached and any other evidence required by the Owner or Designer to demonstrate that cash disbursements already made by the CMAR contractor on account of the cost of the Work equal or exceed (1) progress payments already received by the CMAR contractor; less (2) that portion of those payments attributable to the CMAR contractor's fee; plus (3) payrolls for the period covered by the present application for payment.

**§ 7.1.5** Each application for payment shall be based upon the schedule of values approved by the Owner and Designer in accordance with the contract documents. The schedule of values shall allocate the entire GMP among the various portions of the Work, except that the CMAR contractor's fee shall be shown as a single separate item. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Designer may require. This schedule, unless objected to by the Owner or Designer, shall be used as a basis for reviewing the CMAR contractor's applications for payment.

**§ 7.1.6** Applications for payment shall show the percentage completion of each portion of the Work as of the end of the period covered by the application for payment. The percentage completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed or (2) the percentage obtained by dividing (a) the expense which has actually been incurred by the CMAR contractor on account of that portion of the Work for which the CMAR contractor has made or intends to make actual payment

prior to the next application for payment by (b) the share of the GMP allocated to that portion of the Work in the schedule of values.

**§ 7.1.7** Subject to other provisions of the contract documents, the amount of each progress payment shall be computed as follows (and within FPC Certificate/Application for Payment form):

- .1 Take that portion of the GMP properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the GMP allocated to that portion of the Work in the schedule of values. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute may be included as provided in Section 7.3.9 of A201™–2017, even though the GMP has not yet been adjusted by amendment.
- .2 Add that portion of the GMP properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing.
- .3 Add the CMAR contractor's fee, less retainage of five (5.0%). The CMAR contractor's fee shall be an amount that bears the same ratio to that fixed-sum fee as the cost of the Work in the two preceding sections bears to a reasonable estimate of the probable cost of the Work upon its completion.
- .4 Subtract the aggregate of previous payments made by the Owner.
- .5 Subtract the shortfall, if any, indicated by the CMAR contractor in the documentation required by Section 7.1.4 to substantiate prior applications for payment, or resulting from errors subsequently discovered by the Owner's accountants in such documentation.
- .6 Subtract amounts, if any, for which the Owner or Designer has withheld or nullified a certificate for payment as provided in Section 9.5 of A201™–2017.
- .7 Due to construction phasing and Owner occupancy requirements, where applicable, certificates of substantial completion for each Phase, or the combination of Phases may be issued by mutual agreement upon the CMAR contractor's completion and the Owner's occupancy of each portion or phase of the Project. Therefore, with the exception of amounts to be withheld to in accordance with, retainage shall be released by completed and Owner occupied portion of the Project part. In no event shall the retainage for an individual Phase be reduced to below five percent (5%) of the approved schedule of values cost of the Work for that phase, including an appropriately allocated portion of the CMAR contractor's Fee, prior to substantial completion of that Project phase.

**§ 7.1.8** Except with the Owner's prior approval, payments to Subcontractors shall be subject to retention of not less than five percent (5.0%). The procedure for the Designer's review and approval of the CMAR contractor's payments is defined in Article 9 of AIA Document A201-2017.

**§ 7.1.9** Except with the Owner's prior approval, the Owner will not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

**§ 7.1.10** In taking action on the CMAR contractor's applications for payment, the Designer shall be entitled to rely on the accuracy and completeness of the information furnished by the CMAR contractor and shall not be deemed to represent that the Designer has made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Section 7.1.4 or other supporting data, that the Designer has made exhaustive or continuous on-site inspections or that the Designer has made examinations to ascertain how or for what purposes the CMAR contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's accountants acting in the sole interest of the Owner.



## **§ 7.2 Final Payment**

**§ 7.2.1** Final payment shall be made by the Owner to the CMAR contractor when (1) the Contract has been fully performed by the CMAR contractor except for the Constructor's responsibility to correct nonconforming Work, as provided in Section 12.2.2 of A201™–2017, as modified by Owner, and to satisfy other requirements, if any, which necessarily survive final payment; (2) a final application for payment and a final accounting for the cost of the Work have been submitted by the CMAR contractor and reviewed and approved by the Designer recommending payment by the Owner, (3) at the Owner's discretion its accountants have reviewed the final accounting report provided by the CMAR contractor; and (4) the expiration of the 45 day lien notice period and the CMAR contractor's delivery of a clear lien certificate and consent of surety.

**§ 7.2.1.1** The amount of the final payment shall be calculated as follows:

- .1** Take the sum of the cost of the Work substantiated by the CMAR contractor's final accounting and the CMAR contractor's fee, but not more than the GMP.
- .2** Subtract amounts, if any, for which the Designer withholds, in whole or in part, a final certificate for payment as provided in Section 9.5.1 of A201–2017 or other provisions of the contract documents.
- .3** Subtract the aggregate of previous payments made by the Owner.

If the aggregate of previous payments made by the Owner exceeds the amount due the CMAR contractor, the CMAR contractor shall reimburse the difference to the Owner.

**§ 7.2.2** Per the transparency in oversight provisions associated with the CMAR delivery of this contract, the Owner reserves its right to engage its accountants in a review of the CMAR contractor's final accounting of project costs within 30 days following receipt of the final accounting report delivered to the Owner by the CMAR contractor. Based upon such cost of the Work as the Owner's accountants report to be substantiated by the CMAR contractor's final accounting, and provided the other conditions of Section 7.2.1 have been met, the Designer will, within seven days after receipt of the written report of the Owner's accountants, either issue to the Owner a final certificate for payment with a copy to the CMAR contractor or notify the CMAR contractor and Owner in writing of Designer's reasons for withholding a certificate as provided in Section 9.5.1 of A201–2017, as modified by Owner. The time periods stated in this Section 7.2 supersede those stated in Section 9.4.1 of A201–2017.

**§ 7.2.3** If the Owner's accountants report the cost of the Work, as substantiated by the CMAR contractor's final accounting, to be less than claimed by the CMAR contractor, the CMAR contractor shall be entitled to proceed in accordance with Article 9.

**§ 7.2.4** Not Used

## **ARTICLE 8 INSURANCE AND BONDS**

### **§ 8.1 Insurance Required of the CMAR contractor**

**§ 8.1.1** Using its own funds, the CMAR contractor shall provide and maintain from inception of the contract to the date of final payment insurance and bond coverage in the amounts required by Article 11 of AIA Document A201-2017, as modified by Owner. CMAR contractor shall be responsible for payment of any and all deductibles.

### **§ 8.2 Performance Bond and Payment Bond**

**§ 8.2.1** The Owner shall require the CMAR contractor to furnish performance and payment bonds covering the faithful performance of the Work (construction activities) required by the contract documents and payment of obligations arising thereunder. The amount of the performance and payment bond shall be equal to one-hundred percent (100%) of the value of the Part B: construction services Agreement (contract inclusive of cost of the Work including General Conditions, CMAR contractor fee, CMAR contractor site

office and staffing costs, and 4% Owner and 1% CMAR contractor Contingencies). The CMAR contractor is not required to bond the value of its pre-construction services fee but would be required to provide a performance and payment bond equal to one-hundred percent (100%) of the value of any advanced construction start activities amended into the Part A: pre-construction services agreement.

**§ 8.2.2** The CMAR contractor shall deliver the required performance and payment bond(s) to the Owner prior to the execution of the Part B: construction services agreement and/or amendment(s) to the Part A: pre-construction services agreement should advanced construction start activities be applicable.

## **ARTICLE 9 MISCELLANEOUS PROVISIONS**

### **§ 9.1 Dispute Resolution**

**§ 9.1.1** The Parties shall use their best good faith efforts to resolve all disputes between them. No dispute shall be submitted to arbitration or mediation unless expressly agreed to in writing by the Owner and CMAR contractor.

### **§ 9.2 Other Provisions**

**§ 9.2.1** Unless otherwise noted, the terms used in this Agreement shall have the same meaning as those in AIA Document A201-2017, General Conditions of the Contract for Construction, as modified by Owner.

### **§ 9.2.2 Extent of Contract**

This Contract, which includes this Agreement and the other documents incorporated herein by reference, represents the entire and integrated Agreement between the Owner and the CMAR contractor and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Owner and CMAR contractor. If anything in any document incorporated into this Agreement is inconsistent with this Agreement, this Agreement shall govern.

### **§ 9.2.3 Ownership and Use of Documents**

All designs, drawings, specifications, details, documents, models, data, electronic documents and information, and all other work products of the CMAR contractor and Designer relating to the Project are instruments of service for the Project, whether or not the Project is completed, and are the property of the Owner along with all copyrights therein. The CMAR contractor shall obtain grants from its subcontractors consistent with this Agreement. The Owner is entitled to the possession of all such instruments of service specifically developed for the Project upon completion of the Project, termination of this Agreement, or upon the Owner's request, whichever occurs first, and upon payment of all amounts due to CMAR contractor under this Agreement. The Owner may reuse any of the instruments of service created by the CMAR contractor and its subcontractors for the Project or any addition or modification to any portion of the Project, or for any other project, including new projects, as the Owner desires without the permission of or compensation to the CMAR contractor or Project Designer. The CMAR contractor shall not be liable for any injury or damages resulting from the reuse of the instruments of service by the Owner if the CMAR contractor is not involved in the reuse project.

### **§ 9.2.4 Governing Law**

This Agreement and all other contract documents referenced herein and elsewhere, shall be construed and enforced in accordance with the laws of the State of Louisiana. The sole venue for any legal action arising under this Agreement shall be the Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana. This provision shall survive the termination of this Agreement.

### **§ 9.2.5 Assignment**

CMAR contractor shall not assign, pledge, or transfer its duties, rights or obligations in this Agreement, in whole or in part, without first obtaining the prior written consent of the Owner. Any attempt by CMAR contractor to assign this Agreement, in whole or in part, without the prior written consent of the Owner shall render the assignment null and void.

## **ARTICLE 10 TERMINATION OR SUSPENSION**

### **§ 10.1 Termination Prior to Establishing Guaranteed Maximum Price (GMP)**

**§ 10.1.1** Prior to execution of Part B: construction services Agreement establishing the GMP, the Owner may terminate this Contract at any time without cause, and the CMAR contractor may terminate this Contract, for any of the reasons described in Section 14.2 of AIA A201–2017, as modified by Owner. The Owner may, at any time, terminate this Agreement, in whole or in part, for the Owner's convenience and without cause. Termination by the Owner under this subparagraph shall be by notice of termination delivered to the CMAR contractor specifying the extent of termination and the effective date thereof.

**§ 10.1.2** If the Owner or CMAR contractor terminates this Contract pursuant to this Section 10.1 prior to commencement of construction services, the CMAR contractor shall be equitably compensated for Part A: pre-construction services performed prior to receipt of notice of termination; provided, however, that the compensation for such services shall not exceed the compensation set forth in Section 4.1.1 and shall not include unrealized profit and/or overhead.

**§ 10.1.3** If the Owner or CMAR contractor terminates this Contract pursuant to this Section 10.1 after commencement of the Part B: construction services, the CMAR contractor shall, in addition to the compensation provided in Section 10.1.2, be paid an amount calculated as follows:

- .1** Take the cost of the Work, including General Conditions, incurred by the CMAR contractor.
- .2** Add the CMAR contractor's fee computed upon the cost of the Work to the date of termination at the rate stated in Section 5.1 or, if the CMAR contractor's fee is stated as a fixed sum in that Section, an amount which bears the same ratio to that fixed-sum fee as the cost of the Work at the time of termination bears to a reasonable estimate of the probable cost of the Work upon its completion.
- .3** Subtract the aggregate of previous payments made by the Owner on account of the construction phase.

The Owner shall also pay the CMAR contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the CMAR contractor which the Owner elects to retain and which is not otherwise included in the cost of the Work under Section 10.1.3.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the CMAR contractor shall, as a condition of receiving the payments referred to in this Article 10, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the CMAR contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the CMAR contractor under such subcontracts or purchase orders.

Subcontracts, purchase orders and rental agreements entered into by the CMAR contractor with the Owner's written approval prior to the execution of Part B: construction services Agreement shall contain provisions permitting assignment to the Owner as described above. If the Owner accepts such assignment, the Owner shall reimburse or indemnify the CMAR contractor with respect to all costs arising under the subcontract, purchase order or rental agreement except those which would not have been reimbursable as cost of the Work if the contract had not been terminated. If the Owner elects not to accept the assignment of any subcontract, purchase order or rental agreement which would have constituted a cost of the Work had this agreement not been terminated, the CMAR contractor shall terminate such subcontract, purchase order or rental agreement and the Owner shall pay the CMAR contractor the costs necessarily incurred by the CMAR contractor by reason of such termination.

### **§ 10.2 Termination Subsequent to Establishing Guaranteed Maximum Price (GMP)**

Subsequent to execution of Part B: construction services Agreement, the contract may be terminated as provided in Article 14 of A201–2017, as modified by Owner.

**§ 10.2.1** In the event of such termination by the Owner, the amount payable to the CMAR contractor pursuant to Section 14.1 of A201-2017, as modified by Owner, shall not exceed the pro-rated and documented amount the CMAR contractor would have been entitled to receive pursuant to Sections 10.1.2 and 10.1.3 of this Agreement.

**§ 10.2.2** In the event of such termination by the CMAR contractor, the amount to be paid to the CMAR contractor under Section 14.2 of A201-2017, as modified by Owner, shall not exceed the pro-rated and documented amount the CMAR contractor would have been entitled to receive under Sections 10.1.2 and 10.1.3 of this Agreement. The CMAR contractor fee shall be calculated based on the percentage of Work completed.

### **§ 10.3 Suspension**

The Work may be suspended by the Owner as provided in Article 14 of A201-2017, as modified by Owner; in such case, the GMP, if established, shall be increased as provided in Section 14.3.2 of A201-2017, as modified by Owner, except that the term "cost of performance of the Contract" in that Section shall be understood to mean the cost of the Work and the term "profit" shall be understood to mean the CMAR contractor's fee as described in Sections 5.1.1 and 5.3.4 of this Agreement.

## **ARTICLE 11 OTHER CONDITIONS AND SERVICES**

### **§11.1 Services to be Performed**

CMAR contractor shall perform Part A: pre-construction services in accordance with the terms and conditions of this Agreement and the other contract documents. CMAR contractor shall perform Part B: construction services with its subcontractors including all Work and services necessary to complete the Project in accordance with the Owner's construction documents (drawings, specifications, addenda, instructions, approved authorization requests, etc). CMAR contractor shall provide all necessary labor, materials, equipment, tools and services required to complete the Project in accordance with the contract documents. CMAR contractor agrees that time is of the essence and further agrees to take all reasonable steps to avoid delays.

### **§ 11.2 Review of Site and Drawings**

CMAR contractor shall inspect jobsite, all reasonably observable existing conditions, and review carefully all construction documents (drawings, specifications, addenda, instructions, surveys and test results) prior to commencement of the Work. CMAR contractor shall take field measurements of reasonably observable existing conditions and compare the reasonably observable existing conditions with the information contained in the drawings and specifications. CMAR contractor shall promptly notify the Owner and Designer of any errors or discrepancies in the drawings or specifications which may affect the Work. CMAR contractor shall not receive any additional payments or compensation for Work or services which reasonably could have been avoided by reviewing carefully all construction documents or by inspecting the Project sites and the reasonably observable existing conditions.

### **§ 11.3 Work Area**

CMAR contractor shall ensure that the job site and surrounding area are kept reasonably free from trash and waste building material. CMAR contractor shall ensure that the job site and surrounding areas are cleaned at least daily in accordance with the Owner's requirements. If, after receiving written notice of its failure to maintain a clean work site, CMAR contractor fails to adhere to the requirements of the Owner regarding trash removal and clean-up, the Owner may use its own or contracted personnel to clean the site and surrounding area at the CMAR contractor's sole expense. Such amounts may be deducted from CMAR contractor's payment.

### **§ 11.4 Safety Responsibility**

CMAR contractor shall be solely responsible for job site safety and shall report any and all job site accidents, including both injury accidents and non-injury accidents, to the Owner immediately after the accident becomes known to the CMAR contractor. CMAR contractor shall have full and sole authority for

all safety programs and precautions in connection with the Work. CMAR contractor shall use all reasonable efforts to protect the Owner, students, faculty, employees and other staff, and visitors from personal injury and property damage. CMAR contractor shall have full authority to take any action whatsoever on the site regarding safety precautions and procedures. CMAR contractor shall adhere to all construction safety requirements, the Owner's Interim Life Safety Measures and Minimum Contractor Requirements, incorporated into this Agreement by reference, and the Owner's Infection Control Risk Assessments (ICRA) policies and procedures when performing Work pursuant to this Agreement. The Owner maintains a tobacco free environment. **CMAR contractor shall ensure its personnel and subcontractors observe this tobacco free requirement at all times** whenever on the Project site.

**§ 11.5 OSHA:** All work, services, materials, supplies and equipment performed and/or furnished under the terms of this Agreement shall comply with the requirements and standards specified in the Williams-Steiger Occupational Safety and Health Act of 1970 (Public Law 91-596), as amended, as well all other applicable federal, state and local laws, codes and regulations. All services performed herein must comply with all State of Louisiana Codes.

### **§ 11.6 Key Personnel**

Concurrent with the execution of this Agreement (contract), the CMAR contractor shall furnish to the Owner a list of the project team personnel that will have a principle role in administering this project. The following are considered "Key Personnel". The CMAR contractor shall ensure that these individuals are assigned to this Project as principle representatives / participants in the delivery of Part A: pre-construction services and Part B: construction services until project acceptance (substantial completion):

- Project Executive
- Project Manager
- General Superintendent
- Estimator
- Scheduler
- BIM Coordinator (where required by contract)
- MEP Coordinator

If for any reason reassignment of Key Personnel becomes necessary, any such reassignment shall be subject to Owner approval.

### **§ 11.7 Compliance with Laws and Regulations**

CMAR contractor shall comply strictly with all local, state, and federal laws, orders and regulations applicable with its operation and the performance of the Work. This includes the obligation to comply with all regulations promulgated by state and local authorities and made applicable to the site. CMAR contractor shall comply with all rules, regulations, and policies regarding access to site or construction at the site. Should a change to a code or regulations after award of this Agreement (contract) affect the cost to perform the Work, the contract sum shall be adjusted consistent with the provisions of this Contract, including all notices to and approvals by Owner.

**§ 11.7.1** The CMAR contractor shall not pay for any licenses, permits, inspections, and approvals required by any governmental authority for any part of the Work unless required due to the defective performance by CMAR contractor or subcontractors. CMAR contractor shall properly notify the Owner if the construction documents are at variance with requirements of any applicable law, ordinance, rule or regulation. The CMAR contractor shall require that its subcontractors comply with the provisions of this paragraph.

### **§ 11.8 Inconsistent Acts Not Waived**

The failure of the Owner to insist in any one or more instances upon the strict performance of any of the CMAR contractor's obligations shall not constitute a waiver of its right to insist on that performance at any future time. The failure of the Owner to exercise any option it may possess under this Contract shall not waive the Owner's right to exercise that option at any time. An act or omission by the Owner that may be



inconsistent with any of the Owner rights under this Contract shall not waive the Owner's right to exercise such rights. No waiver or modifications of any of the Owner right's under this Contract shall be construed as a waiver or modification of any other of the Owner's right under this Contract. If the Owner makes any payment to the CMAR contractor in a situation where the Owner knows or could reasonable have known that the CMAR contractor has breached any of its obligations under this Contract, that payment will not constitute a waiver of any of the Owner's rights with respect to that breach. No waiver, modification, or discharge or any provision of this Contract shall be deemed to have been made unless expressed in writing and signed by authorized representatives of both Parties.

#### **§ 11.9 Prohibition on Hiring/Contracting with Illegal Aliens**

In accordance with the provisions mandated by Louisiana R.S. §23.992 *et seq.*, CMAR contractor hereby certifies that it shall not: (1) knowingly employ or contract with an illegal alien to perform work under this Agreement; or (2) enter into a contract with a subcontractor that fails to certify to the CMAR contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Agreement.

**§ 11.9.1** CMAR contractor certifies that it has verified or attempted to verify through participation in the Basic Employment Verification Program ("Basic Pilot Program") administered by the United States Department of Homeland Security, Citizenship and Immigration Services, that its employees who are performing work under this Agreement are not illegal aliens (<https://www.vis-dhs.com/EmployerRegistration>). If CMAR contractor is not accepted into the Basic Pilot Program prior to entering into this Agreement, CMAR contractor shall apply to participate in the Basic Pilot Program every three (3) months until CMAR contractor is accepted or this Agreement terminates, whichever is earlier. If the Basic Pilot Program is discontinued during the term of this Agreement, this requirement to participate in the Basic Pilot Program shall become null and void.

**§ 11.9.2** CMAR contractor shall not use the Basic Pilot Program as a tool for pre-employment screening of job applicants while performing services under this Agreement.

**§ 11.9.3** If CMAR contractor obtains actual knowledge that a subcontractor performing work under this Agreement knowingly employs or contracts with an illegal alien who is performing work under this Agreement, CMAR contractor shall be required to: (1) notify the Owner and the subcontractor within three (3) days that CMAR contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien who is performing work under this Agreement; and (2) terminate the subcontract with the subcontractor if within three (3) days of receiving the notice, the subcontractor does not stop employing or contracting with the illegal alien who is performing work under this Agreement; except that CMAR contractor shall not terminate the contract with the subcontractor if during such three (3) days, the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien to perform work under this Agreement.

**§ 11.9.4** CMAR contractor shall comply with any reasonable request by the Louisiana Department of Labor ("Department") made in the course of an investigation that the Department is undertaking pursuant to its authority under Louisiana R.S. §23.992.

#### **§ 11.10 Equal Opportunity**

CMAR contractor agrees not to discriminate in its employment practices, and will render services under this Contract without regard to race, color, religion, sex, and national origin, veteran's status, political affiliation, disabilities, or in accordance with an individual's sexual orientation.

**§ 11.10.1** Any act of discrimination committed by the CMAR contractor, or failure to comply with these statutory obligations when applicable, shall be grounds for termination of this Contract.

### **§ 11.11 Warranty**

CMAR contractor agrees to warrant the quality of the Work, materials and equipment provided for a period of twelve (12) months from the date(s) of substantial completion, except where longer periods for certain items are provided in the Project manuals or where a manufacturer's warranty is for a longer period. CMAR contractor agrees to make all necessary repairs to the Work and to replace or repair any defective material and equipment during the warranty period. CMAR contractor agrees to transfer all equipment and manufacturer's warranties to Owner for all equipment, material and products provided as part of the Project. Nothing in this paragraph shall be construed to waive or limit any other claims, actions or warranties as may be made or brought on behalf of the Owner. This paragraph shall not require CMAR contractor to repair or replace any Work, material or equipment damaged as a result of the negligence of the Owner.

### **§ 11.12 Discharge of Claims and Liens**

CMAR contractor agrees to maintain a lien-free Project for the benefit of the Owner. CMAR contractor shall take all action necessary to obtain the prompt discharge of any lien or claim, including a verified statement of claim, filed against the Owner or Project. If any lien or claim is filed against the Owner or Project, the CMAR contractor shall promptly, but in no event more than fifteen (15) consecutive calendar days after request and at its own cost, obtain the discharge and full release of the lien or claim by providing payment or filing a surety bond sufficient to discharge said lien or claim. If the CMAR contractor fails to take the action required by this Agreement to discharge a lien or claim, the Owner shall have the right, after consultation with the CMAR contractor, to initiate a concursus proceeding in a court of competent jurisdiction.

### **§ 11.13 CMAR Contractor is Not an Employee**

It is understood and agreed by and between the Parties that the status of the CMAR contractor shall be that of an independent contractor and it is not intended, nor shall it be construed, that the CMAR contractor or its employees, officers, subcontractors, or other personnel are to be considered employees or officers of Owner for any purpose whatsoever. CMAR contractor is a corporation and as such is responsible for the operational management, errors and omissions of its officers and employees. CMAR contractor shall at all times maintain control of and appropriately supervise its employees, officers and agents. The parties intend to act and perform as independent entities and the provisions hereof are not intended to create any partnership, joint venture, agency or employment relationship between the parties or between a party and the employees, agents or independent contractors of the other Party.

**§ 11.13.1** CMAR contractor understands that it and its employees, officers, suppliers, and subcontractors are not entitled to unemployment benefits, workers compensation benefits or any fringe benefits from Owner. CMAR contractor is obligated to pay federal, state and local income taxes on any monies earned pursuant to this Agreement.

### **§ 11.14 Severability**

In the event any one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or non-enforceability shall not affect any other provision of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained in this Agreement and this Agreement shall be enforced to the fullest extent permitted by law. The Parties agree to renegotiate in good faith those provisions of the Agreement invalidated so that an appropriate agreement may be maintained between the Parties.

### **§ 11.15 Authorization**

Each party represents to the other that the execution and delivery of this Agreement has been duly authorized by all necessary corporate or other action, and that all approvals and consents necessary to enter into this Agreement have been obtained, and that this Agreement is signed on its behalf by its duly authorized officer, agent or representative.

### **§ 11.16 Debarment**

By signing this Agreement, CMAR contractor hereby represents and warrants to the Owner that neither it nor its directors, officers or employees are currently excluded, debarred, proposed for debarment, or otherwise ineligible to participate in general construction projects; nor have they been convicted of a criminal offense related to the provision of general construction services. CMAR contractor further agrees to notify the Owner within three (3) days should it or any of its directors, officers or employees becomes a debarred person during the term of this Agreement.

### **§ 11.17 Survival of Certain Agreement Provisions**

The Parties agree that all terms, conditions and covenants of this Agreement, together with any exhibits and attachments hereto, which reasonably contemplate continued performance or compliance beyond the termination of this Agreement (by expiration of the term or otherwise) shall survive such expiration or termination and shall continue to be enforceable as provided herein.

### **§ 11.18 Affiliated Entity**

The CMAR contractor shall not enter into any subcontract, contract, agreement, purchase order or any other arrangement of any kind ("Arrangement") for the furnishing of any portion of the materials, services, equipment rented for use on the project, equipment, tools, or any portion of the Work with any party or entity if such party or entity is an "Affiliated Entity", as defined below, unless prior to entering into such Arrangement it has been approved in writing by the Owner, after full written disclosure by the CMAR contractor to the Owner of such affiliation or relationship and all details relating to the proposed Arrangement. The term "Affiliated Entity" means any entity having common ownership or management with the CMAR contractor or with respect to which the CMAR contractor has direct or indirect ownership or control, including, without limitation, any entity owned in whole or part by the CMAR contractor wherein the CMAR contractor has a direct or indirect interest, which interest includes, but is not limited to, that of a partner, employee, agent, or shareholder.

### **§ 11.19 Construction**

Each party has had the opportunity to review and negotiate this Agreement as part of an arms-length transaction, and therefore this Agreement shall be interpreted and construed according to its fair meaning without consideration as to which party drafted it.

### **§ 11.20 Louisiana Law Applicable / Exclusive Venue 19th Judicial District**

This Contract shall be governed by and interpreted pursuant to the laws of the State of Louisiana. The Nineteenth Judicial District Court in and for the Parish of East Baton Rouge, State of Louisiana shall be the exclusive venue for bringing any action involving disputes arising under or otherwise involving the work of this Contract or any subcontract executed pursuant to this Contract. It is explicitly agreed that this Contract does not grant either party the right to demand arbitration or mediation.

## **ARTICLE 12 SCOPE OF THE AGREEMENT**

### **§ 12.1 Entire Agreement**

This document, together with all other contract documents as first defined above, constitute this Agreement and the full understanding of the Parties with respect to the subject matter hereof, and a complete and exclusive statement of the terms of their agreement, and no terms, conditions, understandings or agreement purporting to amend, modify, vary or waive the terms of this Agreement shall be binding unless made in writing and signed by an authorized representative of each Party. This Agreement supersedes all prior written and oral agreements regarding the subject matter hereof. In the event of a conflict between the terms and conditions of this Agreement and the terms and conditions of any other contract document or attachment or exhibit thereto, including any AIA Document, the terms and conditions of this Agreement shall govern and control.



## § 12.2 Anti-Boycott Provisions

In accordance with Executive Order Number JBE 2018-15, effective May 22, 2018, for any contract for \$100,000 or more and for any contractor with five or more employees, CMAR contractor, or any subcontractor, shall certify it is not engaging in a boycott of Israel, and shall for the duration of this contract, refrain from a boycott of Israel. The State reserves the right to terminate this contract if the CMAR contractor, or any subcontractor, engages in a boycott of Israel during the term of the contract.

## § 12.3 Prohibition of Companies That Discriminate Against Firearm and Ammunition Industries

In accordance with La. R.S. 39:1602.2, the following applies to any competitive sealed bids, competitive sealed proposals, or contract(s) with a value of \$100,000 or more involving a for-profit company with at least fifty full-time employees:

Unless otherwise exempted by law, by submitting a response to this solicitation or entering into this contract, the Bidder, Proposer or Contractor certifies the following:

1. The company does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association based solely on the entity's or association's status as a firearm entity or firearm trade association;
1. The company will not discriminate against a firearm entity or firearm trade association during the term of the contract based solely on the entity's or association's status as a firearm entity or firearm trade association.

The State reserves the right to reject the response of the Bidder, Proposer or Contractor if this certification is subsequently determined to be false, and to terminate any contract awarded based on such a false response or if the certification is no longer true.

This Agreement entered into as of the day and year first written above.

**WITNESSES:**

**STATE OF LOUISIANA  
DIVISION OF ADMINISTRATION**

\_\_\_\_\_  
Owner Witness #1

BY: \_\_\_\_\_

ROGER E. HUSSER, JR.  
ASSISTANT COMMISSIONER

\_\_\_\_\_  
Owner Witness #2

\_\_\_\_\_  
CMAR Contractor Witness #1

BY: \_\_\_\_\_

ARKEL CONSTRUCTORS, LLC

\_\_\_\_\_  
CMAR Contractor Witness #2

# AIA<sup>®</sup> Document A201<sup>™</sup> – 2017

## *General Conditions of the Contract for Construction*

March 31, 2025

### **For the following PROJECT:**

**Jetson Center for Youth  
Office of Juvenile Justice**

Baker, Louisiana

Project No. 08-403-04-02, Part 09 (F.08000078), 08-403-24-01, F.08000165

### **The OWNER:**

**State of Louisiana**

**Division of Administration**

**Office of Facility Planning and Control**

Claiborne Office Building, 1201 North Third Street, Suite 7-160

Baton Rouge, LA 70802

### **The DESIGNER:**

**Grace Hebert Curtis Architects, APAC**

501 Government Street, Suite 200

Baton Rouge, LA 70802

### **The CMAR CONTRACTOR:**

**Arkel Constructors, LLC**

1048 Florida Street

Baton Rouge, LA 70802

#### **ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503<sup>™</sup>, Guide for Supplementary Conditions.

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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

The Contract Documents are enumerated in the Agreement between the Owner and CMAR contractor at Risk contractor (CMAR contractor) as a Constructor (Part A: Pre-Construction Services and Part B: Construction Services) where the basis of payment is the Cost of the Work plus a Fee with a Guaranteed Maximum Price (GMP), AIA Document A133-2009 as modified by Owner (hereinafter referred to as the Agreement). The Contract Documents consist of the Agreement Between Owner and CMAR contractor as Constructor - AIA A133-2009 as modified by the Owner; General Conditions of the Contract for Construction - AIA Document A201-2017 as modified by Owner; Owner's Documents which include the Drawings, Project Manuals including Specifications, all Exhibits, Supplementary Instructions, and Provisions; the Owner's Request for Qualifications (RFQ); Addenda issued during the RFQ proposal period and acknowledged by the Proposers; Addenda and post-proposal Addenda; the CMAR contractor's Proposal (Statement of Qualifications) including all Attachments and Exhibits issued in response to the RFQ; the CMAR contractor's Guaranteed Maximum Price (GMP) Proposal accepted by the Owner; and the CMAR contractor's Project Schedule as described in Section 9.2 herein, hereinafter collectively referred to as the "Contract Documents," are hereby incorporated by reference and are made a part of this Construction Management Agreement Between the Owner and the CMAR contractor.

#### **§ 1.1.2 The Contract**

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract can only be modified by Authorization Request, Construction Change Directive, or Amendment. A modification to the Contract is (1) a written Amendment to the Contract signed by both parties, (2) an Authorization Request, (3) a Construction Change Directive resulting in an Authorization Request or Amendment to Contract, or (4) a written order or Supplemental Instruction for a minor change in the Work issued by the Designer. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the CMAR contractor and the Designer or the Designer's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Designer or the Designer's consultants, or (4) between any persons or entities other than the Owner and the CMAR contractor. The Designer shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Designer's duties.

#### **§ 1.1.3 The Work**

The term "Work" means the construction and services required by the, Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the CMAR contractor to fulfill the CMAR contractor's obligations. The Work may constitute the whole or a part of the Project.

#### **§ 1.1.4 The Project**

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

#### **§ 1.1.5 The Drawings**

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

### **§ 1.1.6 The Specifications**

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

### **§ 1.1.7 Instruments of Service**

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Designer and the Designer's consultants under their respective professional services agreements, the CMAR contractor and the CMAR contractor's Subcontractors of any level or tier, under their respective agreements. Instruments of Service include, but are not limited to, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

### **§ 1.1.8 The Project Manual(s)**

The Project Manual(s) are volumes assembled for the Work that include, but are not limited to, these General Conditions (AIA Document A201, 2017 edition as modified by the Owner), the specifications, medical equipment lists, furniture specifications, information technology specifications, signage specifications and all addenda, exhibits and supplements issued prior to the execution of the Agreement. When specified by the Contract, the Project Manual(s) will additionally include bidding requirements, bidding documents, and sample forms.

### **§ 1.1.9 Other Definitions**

For all other definitions refer to the RFQ.

### **§ 1.1.8 Initial Decision Maker**

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or CMAR contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

## **§ 1.2 Correlation and Intent of the Contract Documents**

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the CMAR contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the CMAR contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

### **§ 1.2.1.1 Resolution of Ambiguities**

In the event of any inconsistency, ambiguity, or incompatible provisions within the Contract Documents, the provision and interpretation containing the most inclusive items of work, and the provision and interpretation most favorable to the Owner shall control. Any dispute regarding the interpretation of this provision will be decided by the Designer and that decision will be final and binding on the parties.

**§ 1.2.2** Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the CMAR contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. The CMAR contractor and each Subcontractor shall evaluate and satisfy themselves as to the conditions and limitations under which the Work is to be performed, including, without limitation:

1. The location, condition, layout and nature of the Project site and surrounding areas,
2. Generally prevailing climatic conditions,
3. Anticipated labor supply and costs,
4. Availability and costs of materials, tools and equipment,
5. Anticipated material and labor costs escalation, and
6. Other similar issues.

The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site, notwithstanding Article 15 which permits claims for unknown conditions. Except as set forth in Paragraph 10.3.1 herein, the CMAR contractor shall be solely responsible for providing a safe place for the performance of the Work, notwithstanding Article 15 which permits claims for unknown conditions. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time in connection with any failure by the CMAR contractor or any Subcontractor of any level or tier to comply with the requirements of this Paragraph 1.2.2.

**§ 1.2.3** Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. In the event of inconsistencies within or between parts of the Contract Documents, the CMAR contractor shall (1) provide the higher quality or the greater quantity of Work, or (2) comply with the more stringent requirement; either or both, in accordance with the Designer's interpretation. If the Designer's interpretation of the Contract Documents causes an increase in the Cost of the Work, the CMAR contractor shall be entitled to file a claim for such additional costs in accordance with Paragraph 15.1.4 herein. The terms and conditions of this Paragraph 1.2.3 shall not relieve the CMAR contractor of any obligations set forth in Sections 3.2 and 3.7 herein.

### **§ 1.3 Capitalization**

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

### **§ 1.4 Interpretation**

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

### **§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service**

**§ 1.5.1** The Owner shall own the Contract Documents and all Instruments of Service, including all rights thereto.

**§ 1.5.2** The CMAR contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers, are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work executed under this contract. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The CMAR contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner.

#### **§1.5.3 CONFIDENTIALITY**

The CMAR contractor warrants and represents to the Owner that he shall not knowingly or negligently communicate or disclose at any time to any person or entity any information in connection with the Work or the Project, except: (1) with the prior written consent of the Owner, (2) information that was in the public domain prior to the date of this Agreement, (3) information which becomes part of the public domain by publication or otherwise not due to any unauthorized act or omission of the CMAR contractor, or (4) as may be required to perform the Work or by any applicable law.

**§1.5.4** The CMAR contractor, at any time upon the request of the Owner, shall immediately return and surrender to the Owner all, with the exception of one (1) photocopy of each document referenced within this paragraph which the CMAR contractor may retain for its files, copies of any materials, records, notices, memoranda, drawings, recordings, specifications and mockups and any other documents furnished by the Owner or the Designer to the CMAR contractor. In allowing the CMAR contractor to retain these

documents, no rights of ownership or use of these documents are conveyed to the CMAR contractor by the Owner.

**§1.5.5** The CMAR contractor shall specifically cause all Subcontractors of any level or tier or any other person or entity performing any services, or furnishing any materials or equipment, for the Work, to warrant and represent all items as set forth in this Section 1.5.

**§1.5.6** The representations and warranties contained in this Section 1.5 shall survive the complete performance of the Work and/or termination of this Agreement

## **§ 1.6 Notice**

**§ 1.6.1** Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

**§ 1.6.2** Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

## **§ 1.7 Digital Data Use and Transmission**

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties may choose to use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, or other mutually agreed to means to establish the protocols for the development, use, transmission, and exchange of digital data.

## **§ 1.8 Building Information Models Use and Reliance**

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202–2013, Project Building Information Modeling Protocol Form, or other mutually agreed to means, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

# **ARTICLE 2 OWNER**

## **§ 2.1 General**

**§ 2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Designer does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

**§ 2.1.2** The Owner shall furnish to the CMAR contractor, within fifteen days after receipt of a written request, information necessary and relevant for the CMAR contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

## **§ 2.2 Not Used**



### **§ 2.3 Information and Services Required of the Owner**

**§ 2.3.1** Except for permits and fees that are the responsibility of the CMAR contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

**§ 2.3.2** The Owner shall retain a Designer lawfully licensed to practice Architecture or Engineering, or an entity lawfully practicing Architecture or Engineering, in the jurisdiction where the Project is located. That person or entity is identified as the Designer in the Agreement and is referred to throughout the Contract Documents as if singular in number.

**§ 2.3.3** If the employment of the Designer terminates, the Owner shall employ a successor whose status under the Contract Documents shall be that of the Designer.

**§ 2.3.4** The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The CMAR contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

**§ 2.3.5** The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the CMAR contractor's performance of the Work with reasonable promptness after receiving the CMAR contractor's written request for such information or services.

**§ 2.3.6** Unless otherwise provided in the Contract Documents, the Owner shall furnish to the CMAR contractor one electronic copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

### **§ 2.4 Owner's Right to Stop the Work**

If the CMAR contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the CMAR contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the CMAR contractor or any other person or entity, except to the extent required by Section 6.1.3.

### **§ 2.5 Owner's Right to Carry Out the Work**

If the CMAR contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the CMAR contractor are both subject to prior approval of the Designer and the Designer shall, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Designer's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the CMAR contractor shall pay the difference to the Owner within ten (10) consecutive calendar days. If the CMAR contractor disagrees with the actions of the Owner or the Designer, or the amounts claimed as costs to the Owner, the CMAR contractor may file a Claim pursuant to Article 15.



## **ARTICLE 3 CMAR CONTRACTOR**

### **§ 3.1 General**

**§ 3.1.1** The CMAR contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The CMAR contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The CMAR contractor shall designate in writing a representative who shall have express authority to bind the CMAR contractor with respect to all matters under this Contract. The term “CMAR contractor” means the CMAR contractor or the CMAR contractor’s authorized representative.

**§ 3.1.2** The CMAR contractor shall perform the Work in accordance with the Contract Documents.

**§ 3.1.3** The CMAR contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Designer in the Designer’s administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the CMAR contractor.

### **§ 3.2 Review of Contract Documents and Field Conditions by CMAR contractor**

**§ 3.2.1** Execution of the Contract by the CMAR contractor is a representation that the CMAR contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. No increase in the Contract Sum will be made on the CMAR contractor’s behalf due to any errors or negligence of the CMAR contractor, or due to the failure of the CMAR contractor to fulfill these requirements represented by its execution of the Contract.

**§ 3.2.2** Because the Contract Documents are complementary, the CMAR contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the CMAR contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the CMAR contractor shall promptly report to the Designer any errors, inconsistencies or omissions discovered by or made known to the CMAR contractor as a request for information in such form as the Designer may require. It is recognized that the CMAR contractor’s review is made in the CMAR contractor’s capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. CMAR contractor shall be responsible for recognizing and reporting to the Designer and Owner any obvious errors, inconsistencies, or omissions in the Contract Documents which a reasonable CMAR contractor should have observed or discovered under similar circumstances.

**§ 3.2.3** The CMAR contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the CMAR contractor shall promptly report to the Designer any nonconformity discovered by or made known to the CMAR contractor as a request for information in such form as specified in Paragraph 3.2.5 herein.

**§ 3.2.4** If the CMAR contractor believes that additional cost or time is involved because of clarifications or instructions the Designer issues in response to the CMAR contractor’s notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the CMAR contractor shall submit Claims as provided in Article 15. If the CMAR contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the CMAR contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the CMAR contractor had performed such obligations. If the CMAR contractor performs those obligations, the CMAR contractor shall not be liable to the Owner or Designer for damages resulting from errors,

inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

**§3.2.5** Requests for clarification or additional information shall be in writing and shall be on the "Request for Information" form by mutually agreed to means.

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The CMAR contractor shall supervise and direct the Work, using the CMAR contractor's best skill and attention. The CMAR contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the CMAR contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the CMAR contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the CMAR contractor shall give timely notice to the Owner and Designer, and shall propose alternative means, methods, techniques, sequences, or procedures. The Designer shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Designer objects to the CMAR contractor's proposed alternative, the CMAR contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures. In laying out the Work, the CMAR contractor shall verify all dimensions and immediately notify the Designer of any errors or discrepancies in dimensions.

**§ 3.3.2** The CMAR contractor shall be responsible to the Owner for acts and omissions of the CMAR contractor's employees, Subcontractors of any level or tier and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the CMAR contractor or any of its Subcontractors.

**§ 3.3.3** The CMAR contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

### **§ 3.4 Labor and Materials**

**§ 3.4.1** Unless otherwise provided in the Contract Documents, the CMAR contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

**§ 3.4.2** The CMAR contractor is prohibited from making substitutions unless deemed acceptable by the Owner, after evaluation by the Designer and in accordance with an Authorization Request or Construction Change Directive.

**§ 3.4.3** The CMAR contractor shall enforce strict discipline and good order among the CMAR contractor's employees and other persons carrying out the Work. The CMAR contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

**§ 3.4.4** CMAR contractor and its employees, officers, agents, representatives, and Subcontractors shall conduct themselves in an appropriate and professional manner, in accordance with the Owner's requirements, at all times while working on the Project site. Any such individual who behaves in an inappropriate manner or who engages in the use of inappropriate language or conduct while on Owner's property, as determined by the Owner or CMAR contractor, shall be removed from the Project. Such individual shall not be permitted to return without the written permission of the Owner. The Owner shall not be responsible or liable to CMAR contractor or any Subcontractor of any level or tier for any additional

costs, expenses, losses, claims, or damages incurred by CMAR contractor or its Subcontractor of any level or tier as a result of the removal of an individual from the Owner's property pursuant to this Paragraph.

### **§ 3.5 Warranty**

**§ 3.5.1** The CMAR contractor warrants to the Owner and Designer that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The CMAR contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The CMAR contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the CMAR contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Designer, the CMAR contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.—The CMAR contractor agrees to assign to the Owner at the time of final completion of the Work, any and all manufacturers' warranties relating to equipment, materials and labor used in the Work and further agrees to perform the Work in such a manner so as to preserve any and all manufacturers' warranties. CMAR contractor agrees to warrant the quality of the Work, materials, and equipment provided for a period of one year from the date of Substantial Completion, or for such longer period as provided by the manufacturer or required by the Contract Documents. CMAR contractor agrees to make all necessary repairs to the Work and to replace or repair any defective material or equipment during the warranty period. Nothing in this paragraph shall modify or affect the statutory time period for correcting nonconforming or defective work.

### **§ 3.6 Taxes**

The CMAR contractor shall pay sales, consumer, use and similar taxes for the Work provided by the CMAR contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

### **§ 3.7 Permits, Fees, Notices and Compliance with Laws**

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the CMAR contractor shall secure and pay for relevant permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. Given that the State of Louisiana is the Owner, there are certain permits (Building Permit) and fees that are not applicable to the Project. CMAR contractor and Owner agree to conduct a review of required permits, fees, and other related agency required costs prior to CMAR contractor's submission of its GMP Proposal to the Owner. Final determination of applicability of permits and fees and responsibility for payment thereof shall be determined prior to submission of the GMP Proposal and costs determined to be the CMAR contractor's responsibility shall be included in the GMP Proposal.

**§ 3.7.2** The CMAR contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

**§ 3.7.3** If the CMAR contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the CMAR contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

#### **§ 3.7.4 Concealed or Unknown Conditions**

If the CMAR contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the CMAR contractor shall promptly provide notice to the Owner and the Designer before conditions are disturbed and in no event later than 15 calendar days after first observance of the conditions. The Designer will promptly investigate such conditions and, if the Designer determines that they differ materially and cause an increase or decrease in the CMAR contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Designer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Designer shall promptly notify the Owner and CMAR contractor, stating the reasons. The Designer may be consulted by either the CMAR contractor or Owner regarding a claim; however, the Owner will be the final decision maker regarding claims made by the CMAR contractor and its Subcontractors of any level or tier.

**§ 3.7.5** If, in the course of the Work, the CMAR contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the CMAR contractor shall follow all procedures mandated by State and Federal law, including but not limited to sections 401 and 404 of the Federal Clean Water Act. The CMAR contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features shall be submitted in writing to the Owner in accordance with the Contract Documents.

#### **§ 3.8 Allowances**

**§ 3.8.1** Allowances shall not be included within the Guaranteed Maximum Price unless specifically approved by Owner during the Preconstruction Services planning phase.

#### **§ 3.9 Construction Management Staff**

**§ 3.9.1** The CMAR contractor shall employ a competent Construction Management Staff who shall be in attendance at the Project site during performance of the Work and represent the CMAR contractor. Communications given to the Construction Management Staff shall be as binding as if given to the CMAR contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed upon written request in each case.

**§ 3.9.2** Within its response to the Owner's RFQ, the CMAR contractor shall submit the names and qualifications of its proposed Key Personnel. After notice of award of Part A: Pre-Construction Services and approval of the proposed Key Personnel by the Owner, these individuals shall be listed as Key Individuals within the Part A: Pre-Construction Services Agreement, and shall not be replaced or removed from the Project without the consent of the Owner, which consent shall not be unreasonably withheld or delayed. In the event the Owner gives its consent to the replacement of, or requests the replacement of, the previously approved Key Personnel during the life of the Project, the CMAR contractor, shall, within 15 days of the Owner's approval or request for such replacement, submit in writing to the Owner and Designer the name and qualifications of the proposed replacement Key Personnel. The Owner may reply within 15 days to the CMAR contractor in writing stating (1) whether the Owner or the Designer has reasonable objection to the proposed replacement personnel or (2) that the Owner requires additional time to review the information submitted by the CMAR contractor. Failure of the Owner to reply within the 15 day period shall constitute notice of no reasonable objection to the proposed replacement personnel. The CMAR contractor shall not employ Key Personnel on the Project to whom the Owner or Designer has made a reasonable and timely objection.

§ 3.9.3 Not Used.

§ 3.10 CMAR contractor's Construction and Submittal Schedules

§ 3.10.1 Preliminary Construction Schedule

§ 3.10.1.1 Within thirty (30) days of receipt of the Owner's Notice To Proceed (NTP) with Part A: Pre-Construction Services, the CMAR contractor shall complete an evaluation of the Owner's proposed Project Schedule and sequence of Work, and submit its Preliminary Project Schedule for the Owner and Designer's review, and approval by the Owner. The CMAR contractor's Preliminary Schedule shall employ Critical Path Method logic and be prepared in the manner and format, and in the level of detail, as required by the Owner. The Preliminary CPM Schedule shall coordinate and integrate the responsibilities, activities, and requirements of the Owner, Designer, and CMAR contractor, including but not limited to, the CMAR contractor's Pre-Construction Services tasks and deliverables, milestone dates for the receipt and approval of pertinent information, submission of a Guaranteed Maximum Price (GMP) Proposal, proposed Construction Phase activity sequences and durations, delivery of materials or equipment requiring long-lead-time procurement, Owner's occupancy requirements showing portions of the Project having occupancy priority, and proposed dates of formal Acceptance (Substantial Completion) for all Parts or Phases of the Project, as identified in Article 1 of the Part A: Pre-Construction Services Agreement. Following approval by the Owner, the CMAR contractor shall update its Preliminary Project Schedule as necessary during the Pre-Construction Services phase of the Project to reflect revised designs or new information. If updates of the CMAR contractor's Preliminary Project Schedule indicate that previously approved schedules may not be met, the CMAR contractor shall make appropriate recommendations to the Owner and Designer. The CMAR contractor's Preliminary Construction Schedule shall reflect the Owner's milestone dates and Time for Completion of the Project as set forth in Exhibit 5 of the Owner's RFQ, including any subsequent adjustments to the Preliminary Project Schedule issued by the Owner.

§3.10.1.2 As a component of its GMP Proposal, the CMAR contractor shall submit its baseline CPM Schedule for completion of the Project. This baseline schedule, which shall be based on the Project duration established in the Owner's Preliminary Project Schedule included within Exhibit 5 of the RFQ, as adjusted, shall include all elements as required in 3.10.1.1 above. Following the Owner's acceptance of the CMAR contractor's GMP Proposal, and execution of Amendment to Contract for the Part B – Construction services, the CMAR contractor shall update its baseline CPM Schedule to reflect the Date of Commencement and Date of Acceptance (Substantial Completion) established within the Owner's Notice to Proceed with Part B: Construction Services. The Date of Acceptance (Substantial Completion) shall be the date after which Liquidated Damages would be assessed if the CMAR contractor fails to complete the Project within the allowable time, as stipulated in the "Project Scope, Cost, and Time Summary".

§3.10.1.3 This base line CPM Schedule shall be cost loaded at the Level 3 summary level consistent with the CMAR contractor's GMP Schedule of Values to reflect Subcontractor pricing previously obtained, its estimates of the Cost of the Work for which Subcontractor pricing has not yet been obtained, and its previously accepted fixed Staffing and Site Office Costs and Fee, organized and properly allocated by trade category and Part of the Project.

§3.10.2 Construction Schedules

§3.10.2.1 Within 30 days of the Owner's acceptance of the CMAR contractor's GMP Proposal, execution of the Part B: Construction Services Agreement, and receipt of the Owner's Notice to Proceed (NTP) with Construction Services, the CMAR contractor shall further develop, complete, and submit to the Owner for approval, its fully cost and manpower loaded Level 4 CPM Schedule meeting the requirements of the Contract Documents. The CMAR contractor shall routinely, but in no case less than monthly, update its approved CPM schedule to reflect changes in logic and sequence, progress, the buy-out of Subcontractor trade/bid packages, and the award of Subcontractor Agreements, in accordance with Section 5.2 herein.



**§3.10.2.2** The CMAR contractor's CPM Schedule shall include a submittal schedule component which, at a minimum, shall include dates for the submission, review, and approval of all required Submittals, including mock-ups, shop drawings, samples, and product data. The submittal schedule component only of the CMAR contractor's CPM Schedule shall require review and approval by the Designer; such approval shall not be unreasonably delayed or withheld. The submittal schedule component of the CMAR contractor's CPM Schedule shall allow the Owner and Designer reasonable time for the review and appropriate action on submittals. If the CMAR contractor fails to achieve and maintain the submission dates for Submittals as established in the submittal component of its CPM Schedule approved by the Designer, the CMAR contractor shall not be entitled to any increase in the Contract Sum, or extension of the Contract Time, based on the time required for review of submittals.

**§3.10.2.3** The CMAR contractor shall submit its most current progressed and updated schedule to the Owner and Designer with each monthly Application for Payment. No payment shall be made to the CMAR contractor until its updated CPM Schedule is received and approved by the Owner.

**§3.10.2.4** The CMAR contractor shall perform the Work in general accordance with the most recent progressed and updated CPM Schedule approved by the Owner and in accordance with the Contract Documents. If the Work is not being completed in accordance with the approved CPM Schedule, as determined by the Owner and Designer, and the CMAR contractor fails to take timely and appropriate action to bring the performance of the Work into compliance with the approved CPM Schedule, upon written notice by the Owner, the CMAR contractor shall be required to submit to the Owner for approval a Recovery Schedule to bring the progress of the Work into compliance with the approved CPM Schedule. The CMAR contractor shall be responsible for all costs incurred by its implementation of the required Recovery Schedule without adjustment of the Contract Sum. If the CMAR contractor fails to bring the progress of the Work into compliance with the approved CPM Schedule through implementation of the required Recovery Schedule, the CMAR contractor may be deemed in default under this Contract and the progress of the Work shall be deemed unsatisfactory. Such default may be considered grounds for termination by the Owner for cause in accordance with Section 14.2 herein.

**§3.10.2.5** The CMAR contractor's CPM Schedule or other documentation indicating a completion date for the Project, or portion thereof, in advance of the contractual completion date stated in the Agreement shall not impose any obligation, responsibility, or liability, including, but not limited to, additional cost, on the Owner or Designer due to the earlier completion date or inability to meet an earlier completion date.

**§ 3.10.3** The CMAR contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Designer.

### **§ 3.11 Documents and Samples at the Site**

The CMAR contractor shall make available, at the Project site, the Contract Documents, including Authorization Requests, Construction Change Directives, and other Modifications, and State Fire Marshal review documents, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Designer and Owner, and delivered to the Designer for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

### **§ 3.12 Shop Drawings, Product Data and Samples**

**§ 3.12.1** Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the CMAR contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the CMAR contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged. In some cases Mock Ups of rooms or assemblies may be required by the Contract Documents. Mock ups will be treated as samples for the purpose of review and approval by the Owner and Designer.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the CMAR contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Designer is subject to the limitations of Section 4.2.7. Informational submittals upon which the Designer is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Designer without action.

§ 3.12.5 The CMAR contractor shall review for compliance with the Contract Documents, approve, and submit to the Designer, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Designer or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate CMAR contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the CMAR contractor represents to the Owner and Designer that the CMAR contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The CMAR contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the Designer approves, or takes other appropriate action on, the respective submittal.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the CMAR contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Designer's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the CMAR contractor has specifically notified the Designer of such deviation at the time of submittal and (1) the Designer has given written approval to the specific deviation as a minor change in the Work, or (2) an Authorization Request or Construction Change Directive has been issued authorizing the deviation. The CMAR contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Designer's approval thereof.

§ 3.12.9 The CMAR contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Designer on previous submittals. In the absence of such notice, the Designer's approval of a resubmission shall not apply to such revisions. The Designer's revision to a submittal shall not constitute a change to the Contract Documents nor authorization for the CMAR contractor to proceed with Work not required by the Contract Documents. In the event the CMAR contractor believes the Designer's revision of a submittal will create a change to a Contract Document, or will causes a change to the Contract Sum or Contract Time, the CMAR contractor shall promptly notify the Owner and Designer in writing and submit its claim for such additional cost and/or time in accordance with Article 15. If the CMAR contractor proceeds with such revisions which it believes will impact the Contract Sum or Contract Time prior to gaining the written approval of the Owner

to do so, the CMAR contractor shall be solely responsible for any additional cost or time caused by the Designer's revisions to a submittal.

**§ 3.12.10** The CMAR contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the CMAR contractor needs to provide such services in order to carry out the CMAR contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The CMAR contractor shall not be required to provide professional services in violation of applicable law.

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the CMAR contractor by the Contract Documents, the Owner and the Designer will specify all performance and design criteria that such services must satisfy. The CMAR contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The CMAR contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Designer. The Owner and the Designer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Designer have specified to the CMAR contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Designer will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The CMAR contractor shall not be responsible for adequacy of the performance and design criteria specified in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the CMAR contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the CMAR contractor shall furnish such certifications to the Designer at the time and in the form specified by the Designer.

### **§ 3.13 Use of Site**

The CMAR contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. The CMAR contractor's use of the Project site shall be in accordance with the requirements of this Section and related paragraphs, and the CMAR contractor's most current Site Logistics Plan approved by the Owner, as referenced below in Paragraph 3.13.2 and required by Part A and Part B of the Construction Management Agreement. In addition, the CMAR contractor shall maintain unobstructed, clean, and appropriately marked pathways to means of emergency exit egress in all portions of the Work for its employees, Subcontractors, and others throughout the duration of the Project.

**§3.13.1** CMAR contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. Without limitation of any other provision of the Contract Documents, CMAR contractor shall ensure that (1) all public ways, streets, sidewalks, walkways, right of ways, alleys, and private property adjacent to, or in the vicinity of, the Project site, and (2) all portions of the Project completed and occupied by the Owner in advance of the completion of the entire Project, remain safe and clean at all times, free of dirt, dust, debris, trash, liquids, and/or any other materials or substances created by, or originating from, the construction activities for which it is responsible on the Project Site. Such requirement shall be at no additional cost to the Owner.



### **§3.13.2 Site Logistics Plan(s)**

Pursuant to Part A: Pre-Construction Services Agreement, the CMAR contractor shall develop and submit as a Pre-Construction phase deliverable for the Owner and Designer's review and approval by the Owner, the CMAR contractor's Preliminary Site Logistics Plan. As a deliverable to be included within the CMAR contractor's GMP Proposal, the CMAR contractor shall submit its updated Site Logistics Plan to the Owner and Designer. The CMAR contractor agrees to revise and update its Site Logistics Plan as required through the duration of the Project at no additional cost to the Owner.

### **§ 3.14 Cutting and Patching**

**§ 3.14.1** The CMAR contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

**§ 3.14.2** The CMAR contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate CMAR contractors by cutting, patching, or otherwise altering such construction, or by excavation. The CMAR contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor; such consent shall not be unreasonably delayed or withheld. The CMAR contractor shall not unreasonably withhold from the Owner or a Separate Contractor its consent to cutting or otherwise altering the Work.

### **§ 3.15 Cleaning Up**

**§ 3.15.1** The CMAR contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the CMAR contractor shall remove waste materials, rubbish, the CMAR contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

**§ 3.15.2** If the CMAR contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the CMAR contractor.

### **§ 3.16 Access to Work**

The CMAR contractor shall provide the Owner and Designer with access to the Work in preparation and progress wherever located.

### **§ 3.17 Royalties, Patents and Copyrights**

The CMAR contractor shall pay all royalties and license fees. The CMAR contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Designer harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Designer. However, if the CMAR contractor has reason to believe that the required design, process, or product is an infringement of a copyright or a patent, the CMAR contractor shall be responsible for such loss unless such information is promptly furnished to the Owner and Designer.

## **ARTICLE 4 DESIGNER**

### **§ 4.1 General**

**§ 4.1.1** The Designer is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Designer as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, CMAR contractor and Designer. Consent shall not be unreasonably delayed or withheld.

§4.1.3 If the employment of the Designer is terminated, the Owner shall employ a successor Designer whose status under the Contract Documents shall be that of the Designer.

## **§ 4.2 Administration of the Contract**

§ 4.2.1 The Designer will provide administration of the Contract as described in the Contract Documents and will advise and assist the Owner during construction until the date the final payment is due and as required during the one year period for warranty/correction of Work as described Section 12.2 herein. The Designer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Designer will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, to endeavor to guard the Owner against defects and deficiencies in the Work, and to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Designer will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the CMAR contractor's rights and responsibilities under the Contract Documents, except as provided in Paragraph 3.3.1 herein.

§ 4.2.3 On the basis of the site visits, the Designer will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the CMAR contractor, and (3) defects and deficiencies observed in the Work. The Designer will not be responsible for the CMAR contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Designer will not have control over or charge of, and will not be responsible for acts or omissions of, the CMAR contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

## **§ 4.2.4 Communications**

The Owner and CMAR contractor shall include the Designer in all communications that relate to or affect the Designer's services or professional responsibilities. The Owner may communicate directly with the CMAR contractor and/or Designer about any matter involving the Project or the Contract Documents. The Owner and CMAR contractor shall involve the Designer in all discussions relating to the Project or Contract Documents. The Owner shall promptly notify the Designer of the substance of any direct communications between the Owner and the CMAR contractor otherwise relating to the Project. Communications by and with the Designer's consultants shall be through the Designer. Communications by and with Subcontractors of any level or tier and suppliers shall be through the CMAR contractor. Communications by and with Separate Contractors shall be through the Owner.

§ 4.2.5 The Owner and Designer shall review all of the CMAR contractor's Applications for Payment. In the case of a dispute or disagreement regarding an Application for Payment, the Designer may be consulted; however, the Owner shall make the final determination regarding payment.

§ 4.2.6 The Designer has authority to reject Work that does not conform to the Contract Documents. Whenever the Designer considers it necessary or advisable, the Designer will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Designer nor a decision made

in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Designer to the CMAR contractor, Subcontractors of any level or tier, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

**§ 4.2.7** The Designer will review and approve, or take other appropriate action upon, the CMAR contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Designer's actions will be taken in accordance with the Submittal Schedule component of the CMAR contractor's CPM Schedule approved by the Designer and with reasonable promptness while allowing sufficient time in the Designer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the CMAR contractor as required by the Contract Documents. The Designer's review of the CMAR contractor's submittals shall not relieve the CMAR contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Designer's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Designer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

**§ 4.2.8** The Designer will review and recommend to the Owner actions related to Authorization Request Proposals prepared by the CMAR contractor. The Designer may prepare Authorization Requests or Construction Change Directives for the Owner's approval and may authorize minor changes in the Work as provided in Section 7.4 herein. The Designer will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Paragraph 3.7.4 herein.

**§ 4.2.9** The Designer will conduct inspections to determine the date or dates of Acceptance (Substantial Completion) and the date of final completion; issue Recommendation(s) of Acceptance pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the CMAR contractor pursuant to Section 9.10 and issue a final Certificate for Payment pursuant to Section 9.10. Due to varying needs for occupancy dates targeted in the Owner's activation plans for various Phases of this Project, it is anticipated that Notices of Acceptance, including partial Notices of Acceptance or Partial Occupancy, may be issued upon the CMAR contractor's completion and the Owner's occupancy of the individual phases, or portions thereof, of the Project as identified within the Contract Documents. Warranties for Work completed by the CMAR contractor shall commence upon the dates indicated in the Notices of Acceptance executed by the CMAR contractor, Owner, and Designer for each portion or Part of the Project as it is completed and occupied by the Owner.

**§ 4.2.10** The Designer will provide project representatives to assist in carrying out the Designer's responsibilities at the site. Upon the request of the CMAR contractor, the duties, responsibilities, and limitations of authority of such project representatives shall be set forth in an exhibit to the Contract Documents. There will be no restriction on the Owner's having Representatives on the Project Site.

**§ 4.2.11** The Designer will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or CMAR contractor. The Designer's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretation required of the Designer or shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Designer to furnish such interpretation until 15 days after written request is made.

§ 4.2.12 Interpretations and decisions of the Designer will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Designer will endeavor to secure faithful performance by both Owner and CMAR contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Designer's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Designer will review and respond to requests for information about the Contract Documents. The Designer's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretation required of the Designer or shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Designer to furnish such interpretation until 15 days after written request is made. If appropriate, the Designer will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the CMAR contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.1.3 The Costs included within a Subcontractor's or Sub-subcontractor's Cost of the Work shall be in accordance with Articles 4 and 5 of the Part B: Construction Services Agreement, as modified by the Owner.

### **§5.2 Award Of Subcontracts For Performance Of The Work**

#### **§5.2.1 Trade / Bid Strategy**

During Part A: Pre-Construction Services, the CMAR contractor shall develop, and submit for approval by the Owner, a comprehensive Trade/Bid Strategy which divides the Work into Subcontractor bid packages, maximizes the opportunities for Louisiana contractors to participate in the Project, develops Subcontractor interest in the Project, includes the solicitation of competitive pricing from pre-qualified Subcontractors, and provides for the award of Subcontractor agreements for the performance of the Work.

#### **§5.2.2 Elements of the Trade / Bid Strategy**

The CMAR contractor's Trade/Bid Strategy shall include, but not necessarily be limited to, the following:

1. The division of the entire Work into Subcontractor trade/bid packages specifically designed to maximize the opportunity for qualified Louisiana contractors and subcontractors of all trades and sub-trades, and of any size contracting entity, from small to large, to compete for the award of Work of the Project;
2. The development of comprehensive, scope/bid packages that will allow qualified contractors and subcontractors to provide competitive pricing for the individual scopes of work with minimal qualifications, exceptions, and scope exclusions;

3. A plan for the advertisement of the availability of the Work and the development of maximum contractor/subcontractor interest in the Project;
4. The development of minimum contractor/subcontractor qualifications appropriate to individual bid/scope packages and the complexity of the Project;
5. A strategy for the solicitation of competitive pricing from those contractors and subcontractors pre-qualified to submit pricing for each scope/bid package;
6. A contractor/subcontractor protest procedure allowing a two-stage administrative review of pre-qualification and/or award decisions; and
7. A schedule for the development and implementation of the Trade/Bid Strategy, and the award of subcontractor agreements, for each bid/scope package.

### **§5.2.3 Implementation of the Approved Trade / Bid Strategy**

Following acceptance of the CMAR contractor's Trade/Bid Strategy by the Owner, the CMAR contractor shall implement its Strategy in accordance with the agreed upon schedule.

### **§5.2.4 Solicitation of Subcontractor Pricing**

The CMAR contractor shall not be required to contract with, or solicit bids from, any Subcontractor or entity with whom it has a reasonable objection. In addition, the CMAR contractor shall not contract with, or solicit bids from, a proposed person or entity with whom the Owner or Designer has a reasonable objection. Therefore, following mutual agreement between the Owner and CMAR contractor regarding the pool of pre-qualified prospective bidders for individual bid/scope packages, the CMAR contractor shall solicit pricing from the pool of pre-qualified bidders for each respective bid/scope package.

### **§5.2.5 Award of Subcontracts**

Following receipt of competitive pricing for bid/scope package, the CMAR contractor shall review the results of the bid solicitation with the Owner and award the work for each bid package to the pre-qualified bidder who submits the lowest net cost responsive bid. Upon notice of award to the successful contractor/subcontractor, the CMAR contractor shall immediately execute a Subcontractor Agreement with the awarded Subcontractor. However, should new information not previously known be discovered regarding a Subcontractor's history, experience, or capability to perform the Work of any trade/bid package following receipt of Subcontractor bids, the CMAR contractor shall not be required to contract with any Subcontractor or entity with whom it has a reasonable objection. In addition, the CMAR contractor shall not contract with a proposed person or entity with whom the Owner or Designer has a reasonable objection.

**§5.2.6** The CMAR contractor shall not be entitled to claims for additional time and/or an increase in the Contract Sum due to the alleged poor performance or non-performance of an awarded Subcontractor who was previously deemed qualified to submit competitive pricing on any bid/scope package. Owner and Designer shall not be responsible for a Subcontractor's failure to comply with the Contract Documents. The CMAR contractor shall provide a copy of each Subcontractor Agreement, with all exhibits and attachments including certificates of insurance and bonds, if applicable, to the Owner within seven (7) days of its execution.

### **§5.2.7 Substitution**

The CMAR contractor shall notify the Owner in writing whenever it is unable to execute an agreement with an awarded Subcontractor, or whenever it deems it necessary to terminate a Subcontractor Agreement, and the Subcontractor substituted with another Subcontractor. Written approval of the proposed successor Subcontractor shall be obtained from the Owner prior to the CMAR contractor's execution of a Subcontract Agreement with a successor Subcontractor. Such approval by the Owner shall not unreasonably be delayed or withheld.



### **§ 5.3 Subcontractual Relations**

By appropriate written agreement, the CMAR contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the CMAR contractor by terms of the Contract Documents, and to assume toward the CMAR contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the CMAR contractor, by these Contract Documents, assumes toward the Owner and Designer. Each subcontract agreement shall preserve and protect the rights of the Owner and Designer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the CMAR contractor that the CMAR contractor, by the Contract Documents, has against the Owner. Where appropriate, the CMAR contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The CMAR contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

### **§ 5.4 Contingent Assignment of Subcontracts**

**§ 5.4.1** Each subcontract agreement for a portion of the Work is assigned by the CMAR contractor to the Owner, provided that

1. assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and CMAR contractor; and
2. assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the CMAR contractor's rights and obligations under the subcontract.

**§ 5.4.2** Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

**§ 5.4.3** Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor CMAR contractor or other entity. If the Owner assigns the subcontract to a successor CMAR contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor CMAR contractor's obligations under the subcontract.

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

### **§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts**

**§ 6.1.1** The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and subrogation. If the CMAR contractor claims that delay or additional cost is involved because of such action by the Owner, the CMAR contractor shall make such Claim as provided in Article 15.

**§ 6.1.2** When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "CMAR contractor" in the Contract Documents in each case shall mean the CMAR contractor who executes each separate Owner-CMAR contractor Agreement.

**§ 6.1.3** The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the CMAR contractor, who shall cooperate with them. The CMAR contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The CMAR contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the CMAR contractor, Separate Contractors, and the Owner until subsequently revised. All construction schedules must be coordinated with and approved by the Owner.

## **§ 6.2 Mutual Responsibility**

**§ 6.2.1** The CMAR contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the CMAR contractor's construction and operations with theirs as required by the Contract Documents.

**§ 6.2.2** If part of the CMAR contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the CMAR contractor shall, prior to proceeding with that portion of the Work, promptly notify the Designer of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the CMAR contractor's Work. Failure of the CMAR contractor to notify the Designer of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the CMAR contractor's Work, except as to defects not then reasonably discoverable.

**§ 6.2.3** The CMAR contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the CMAR contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the CMAR contractor for costs the CMAR contractor incurs because of a Separate CMAR contractor's delays, improperly timed activities, damage to the Work or defective construction.

**§ 6.2.4** The CMAR contractor shall promptly remedy damage that the CMAR contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5 herein.

**§ 6.2.5** The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the CMAR contractor in Section 3.14 herein.

## **§ 6.3 Owner's Right to Clean Up**

If a dispute arises among the CMAR contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Owner will allocate the cost among those responsible.

# **ARTICLE 7 CHANGES IN THE WORK**

## **§ 7.1 General**

**§ 7.1.1** Changes in the Work, Contract Sum, and/or Contract Time may be accomplished after execution of the Contract, and without invalidating the Contract, by Authorization Request (AR), Amendment to Contract, Construction Change Directive, or Designer's Supplemental Instruction (ASI) for minor changes in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

**§ 7.1.2** Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the CMAR contractor shall proceed promptly, unless otherwise provided in the Authorization Request, Construction Change Directive, or Supplemental Instruction for a minor change in the Work. All supporting documentation shall be submitted in a format and level of detail suitable to the Owner and



Designer. All CMAR contractor and Subcontractor costs are subject to the audit provisions of the Contract Documents.

## **§ 7.2 Authorization Requests**

**§ 7.2.1** An Authorization Request (AR) is a written order to the CMAR contractor signed by the Owner, Designer and CMAR contractor, issued after execution of the Contract, authorizing a change in the Work that does not affect Contract Sum or the Contract Time. The Contract Sum and/or Contract Time can only be modified by Amendment to Contract. An Authorization Request signed by the CMAR contractor indicates his agreement therewith, including the adjustment in the Contract Sum and/or the Contract Time.

**§ 7.2.2** After an Authorization Request has been presented, approved, and executed by the parties, no additional requests for extensions of time or additional compensation shall be awarded to the CMAR contractor for the scope of Work included within or related to that Authorization Request.

**§ 7.2.3** The CMAR contractor may be due extended fixed job-site overhead for time delays only as provided in Article 7 of the Part B: Construction Services (Construction Management at Risk) Agreement. As part of the Pre-Construction Conference submittals, the CMAR contractor shall submit the following:

1. Fixed jobsite overhead cost itemized with documentation to support daily rates.
2. Bond Premium Rate with supporting information from the CMAR contractor carrier.
3. Labor burden by trade for CMAR contractor and subcontractors.

There shall be no extension of time allowed for stoppage of work associated with acts or omissions attributable to the CMAR contractor or his forces. In all cases, the CMAR contractor must notify the Designer and Owner in writing prior to any work stoppage. Reasonable proof of the cause of the stoppage shall be required by the Owner. In addition, reasonable proof that the stoppage affected the critical path and overall delivery schedule / Completion Date shall be required by the Owner.

**§ 7.2.4** Whether CMAR contractor or Subcontractor, Cost of the Work shall be limited to the following:

1. Costs of actual wages (basic hourly rate paid an employee) paid to labor personnel, including labor burden as approved by Owner. Supervision shall not be included as a line item in the "Cost of the Work", except when the change results in a documented delay in the Critical Path Schedule, as described in 7.2.7.
2. Costs of materials, supplies exclusive of incidental consumables), and equipment, including cost of transportation, whether incorporated or consumed;
3. Rental costs of machinery and equipment required to perform the Work, exclusive of incidental small tools of a specific trade (i.e. shovels, saws; hammers, pneumatic tools and air compressors, etc.), whether rented from the CMAR contractor or others;
4. Documented costs of premium increases for all bonds (Performance & Payment Bond) and insurance (Builder's Risk, General Liability, etc.), permit fees, and sales, use, or similar taxes, directly related to the change; and
5. Costs of supervision and field office personnel directly attributable to the change.

**§ 7.2.5** Whether CMAR contractor or Subcontractor, Cost of the Work shall not include the following:

1. Salaries or other compensation of personnel at their principal office and branch offices.
2. Any part of the capital expenses of Subcontractors, including interest on Subcontractors' capital employed for the Work.
3. Incidental small tools of a specific trade or consumables.

4. General use personnel vehicles, such as pickup trucks even for moving items around the site, fuel for these general use vehicles, travel, lodging, and/or meals .
5. Overhead and general expenses of any kind, or the cost of any item not specifically and expressly included in Articles 4 and 5 of Part B of the Construction Management Agreement as Cost of the Work and General Conditions items.
6. Cost of supervision not specifically required by the Authorization Request.

**§7.2.6** Where applicable, as provided by the Contract Documents, the cost to the Owner for Authorization Requests shall be determined by previously obtained competitively bid subcontractor unit prices associated with the delivery of the GMP Proposal. The quantity of any item shall be documented as submitted by the CMAR contractor and approved by the Designer. Unit prices shall cover cost of materials, installation, shipping, handling, warehousing, insurance, bonds, taxes, profit, overhead, and all other associated costs.

**§7.2.7** The cost to the Owner for Authorization Requests not determined on the basis of quantities and unit prices shall be determined by the method established in Subparagraph 7.3.3.3 herein.

**§7.2.8** Pursuant to Sections 9.5 and 9.6 herein, once a portion, component, or phase of the Project is accepted as Substantially Complete, the Owner will not accept, review, or approve any further Authorization Request Proposals from the CMAR contractor for that portion, component or phase of work.

### **§ 7.3 Construction Change Directives**

**§ 7.3.1** A Construction Change Directive (CCD) is a written order prepared by the Designer and signed by the Owner and Designer directing a change in the Work prior to final agreement on adjustment, if any, in a Change in the Work, Contract Sum or Contract Time. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, or adjustments to the Contract Sum and Contract Time.

**§ 7.3.2** A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change in the Work.

**§ 7.3.3** Where a Construction Change Directive is reasonably anticipated to result in an adjustment to the Contract Sum and/or Contract Time, the CMAR contractor shall provide, within 14 days and prior to proceeding with the Construction Change Directive, a Not-to-Exceed (NTE) Rough Order of Magnitude (ROM) adjustment to the Contract Sum and/or the Contract Time for review and approval by the Owner and Designer. The final costs and schedule impacts shall be calculated and the Construction Change Directive converted to an Amendment to Contract as soon as is practicable after the commencement of the Work described in the Construction Change Directive. The final adjustments to the Contract Sum and/or Contract Time shall be based on one of the following:

1. The mutual acceptance of a not-to-exceed lump sum properly itemized cost and/or time extension supported by sufficient substantiating data to permit evaluation;
2. Unit prices stated in the Contract Documents or subsequently agreed upon; or
3. The actual and reasonable Costs and savings of those performing the Work attributable to the Construction Change Directive, including, in case of an increase in the Contract Sum, any amount due the CMAR contractor and/or Subcontractors for additional overhead and profit as set forth in Paragraph 7.5.2 herein. In such case, the CMAR contractor shall keep and present, in such form as the Owner may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise stated in the Construction Change Directive, it is agreed by the Parties that adjustments to the Contract Sum including adjustments due to changes to the Contract Time, resulting from Construction Change Directives shall be determined by this method.

**§ 7.3.4** If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Authorization Request or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or CMAR contractor, the applicable unit prices shall be equitably adjusted.

If the CMAR contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Designer shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the CMAR contractor shall keep and present, in such form as the Designer may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

1. Costs of actual wages (basic hourly rate paid an employee) paid to labor personnel, including labor burden as approved by Owner;
2. Costs of materials, supplies (exclusive of consumables), and equipment, including cost of transportation, whether incorporated or consumed;
3. Rental costs of machinery and equipment (exclusive of hand tools), whether rented from the CMAR contractor or others;
4. Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
5. Costs of supervision and field office personnel directly attributable to the change.

**§ 7.3.5** Upon receipt of a signed Construction Change Directive, and the Owner's approval of the NTE ROM cost and time impact, as provided in Paragraph 7.3.3 above, the CMAR contractor shall promptly proceed with the change in the Work involved and advise the Owner and Designer of the CMAR contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

**§ 7.3.6** If the CMAR contractor disagrees with the adjustment in the Contract Time or Sum, the CMAR contractor may make a Claim in accordance with applicable provisions of Article 15.

**§ 7.3.7** A Construction Change Directive signed by the CMAR contractor indicates the CMAR contractor's agreement therewith, including any adjustment of the Contract Sum and/or Contract Time, if provided within the CCD, or the method for determining them. Such agreement shall be effective immediately and shall be recorded as an Authorization Request upon final determination of changes to Contract Sum and Contract Time as provided for in Section 7.5 herein.

**§ 7.3.8** The amount of credit allowed by the CMAR contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be the actual net cost as confirmed by the Owner. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

**§ 7.3.9** Pending final determination of the total cost to the Owner for a Construction Change Directive, amounts confirmed by the Owner in writing as not in dispute for such changes in the Work may be included within an Authorization Request or Amendment to Contract, and once executed, the CMAR contractor's Applications for Payment. The parties shall indicate their agreement with such undisputed costs by the execution of an Authorization Request or Amendment to Contract. For any portion of such cost that remains in dispute, either party shall retain its rights to disagree and assert a Claim in accordance with Article 15.

## **§ 7.4 Minor Changes in the Work**

The Designer shall have authority to recommend minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time that are consistent with the intent of the Contract Documents. Such changes will be effected by written Designer's Supplemental Instruction (ASI) signed by the Designer and Owner and shall be binding on the Owner and CMAR contractor.

## **§7.5 Costs of Changes and Allowable Markup for Overhead and Profit**

### **§7.5.1 CMAR contractor, Subcontractors and Sub-subcontractors**

For any change in the work and adjustments to the Owner Contingency or Contract Sum which is based on costs other than the unit price method, the CMAR contractor, Subcontractors and Sub-subcontractors (where applicable) shall be due home office fixed overhead and profit on the Cost of the Work, but not to exceed a total of 16% of the direct cost of any portion of the Work.

1. For CMAR contractor: For changes to the Work ordered as described within Article 7 herein which shall be executed by Subcontractor(s) and Sub-subcontractors (where applicable) no more than a total of 8% markup will be allowed on the Cost of the Work.
2. For Subcontractors: For changes to the Work ordered as described within Article 7 herein which shall be executed by Subcontractors, Subcontractors shall charge not more than eight percent (8%) mark-up for overhead and profit combined for Work performed by its own forces not involving Sub-subcontractors, and not more than four percent (4%) mark-up for overhead and profit combined for Work performed in conjunction with Sub-subcontractors of any tier or level. Subcontractors shall also provide a credit to the Owner in this amount for overhead and profit for any change which results in a net reduction in the Cost of the Work. In accordance with the Contract Documents, Subcontractor costs included within changes authorized by the Owner shall be based on actual allowable costs and are subject to the audit provisions of the Contract Documents.
3. For Sub-subcontractors: For additional Work ordered as described in Article 7 herein which shall be executed by Sub-subcontractors of any tier or level, Sub-subcontractors may charge not more than four percent (4%) mark-up for overhead and profit combined for Work performed by its own forces including any lower-tiered sub-subcontractors. The Sub-subcontractor shall provide a credit to the Owner of four percent (4%) for overhead and profit combined for any changes which results in a net reduction in the Cost of the Work. In accordance with the Contract Documents, Sub-subcontractor costs included within changes authorized by the Owner shall be based on actual allowable costs and are subject to the audit provisions of the Contract Documents.
4. When both additions and credits are involved in any one change, the allowance for additional overhead and profit, if and where applicable, shall be calculated on the basis of the net increase, if any. Changes to the Work shall equal the sum of the following:
  - a. Costs of actual wages (basic hourly rate paid an employee) paid to labor personnel, including labor burden as approved by Owner;
  - b. Costs of materials, supplies exclusive of consumables, and equipment, including cost of transportation, whether incorporated or consumed;
  - c. Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the CMAR contractor or others;
  - d. Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
  - e. Costs of supervision and field office personnel directly attributable to the change.

and the following:

- a. The actual labor cost that the Subcontractor(s) or Sub-subcontractor(s) would have incurred to perform the scope of Work deleted by the Owner authorized change including insurance and taxes.

- b. The actual unit cost of materials, supplies, products, equipment, and rental equipment that the Subcontractor(s) or Sub-subcontractor(s) would have used to perform the scope of Work deleted in the Owner authorized change, including shipping costs and taxes.
  - c. The actual cost of lower tiered subcontractors that the Subcontractor(s) and Sub-subcontractor(s) would have incurred in performing the scope of Work deleted by the Owner authorized change, including overhead and profit, insurance, bonds, and taxes.
  - d. The actual credit for the cost associated with lower limits required for Subcontractor(s) bonds, and Sub-subcontractor bonds, if applicable, as a result of the reduction in the scope of Work.
5. Additional Subcontractor General Conditions Costs: Additional costs for General Conditions may be included within the costs for changes by Subcontractors of any level where the proposed change impacts the Critical Path Schedule and involves an extension of the Contract Time, or when, in the opinion of the Owner, additional General Conditions are required by the change. In accordance with the Contract Documents, General Conditions costs included within the cost of changes authorized by the Owner shall be based on actual allowable costs and are subject to the audit provisions of the Contract Documents.
  6. The required cost of bonds, insurance, permits, and taxes to Subcontractors, and all Sub-subcontractors, vendors, and material suppliers, shall be considered direct costs of performing the Work. The **actual increases or decreases** in the cost of premiums for bonds, insurance (Builder's Risk, General Liability, etc.), permit fees, and sales, use, or similar taxes related to the Work shall be included as direct Cost of the Work without markup. All insurance and bond costs are to be actual and auditable costs inclusive of all premium adjustments. **Note that Subcontractor performance and payment bonds required by the CMAR contractor which are redundant costs to those required of the CMAR contractor shall not be eligible or included.**
  - 7.

#### §7.5.2 CMAR contractor

For adjustments to the Contract Sum, and where and if allowed, the CMAR contractor shall be allowed to charge, and accept as payment for home office overhead and profit, a percentage markup for additional Fee bearing the same relationship to the Cost of the Work performed by Subcontractors attributed to Owner authorized changes as the CMAR contractor's Fee stipulated in Article 5 of the Part B: Construction Services (Construction Management at Risk) Agreement bears to the Cost of the Work stipulated in same. For the duration of this Agreement, the CMAR contractor's markup for overhead and profit shall not exceed the percentage set forth in the **"Project Scope, Cost, and Time Summary"**.

1. Material Changes. For changes to the Project initiated and authorized by the Owner which substantially alter the original scope of the Project, as described in Article 2 of the Part B: Construction Services (Construction Management at Risk) Agreement, the Contract Time, and/or the Contract Sum, the CMAR contractor may charge not more than the percentage markup stipulated above for Fee (overhead and profit combined) for Work performed by Subcontractors of any tier or level. The amount of the CMAR contractor's Fee shall be computed by multiplying the Cost of the Work approved by the Owner authorized change by not more than the percentage stipulated above. No additional profit shall be added on to overhead by compounding. All functions not performed on the jobsite shall be classified as home office overhead, and are defined in the Contract Documents.
2. Routine Changes. For routine changes authorized by the Owner which do not substantially alter the original scope of the Project, as described in Article 2 of the Part B: Construction Services (Construction Management at Risk) Agreement, the CMAR contractor may charge not more than the percentage markup stipulated above for Fee (overhead and profit combined) for Work performed by Subcontractors of any tier or level. The amount of Fee shall be computed by multiplying the Cost of the Work approved by the Owner authorized



change by not more than the percentage stipulated above. No additional profit shall be added on to overhead by compounding. All functions not performed on the jobsite shall be classified as home office overhead, and are defined in the Contract Documents. In accordance with Article 5 of Part B: Construction Services (Construction Management at Risk) Agreement, as modified by the Owner, the CMAR contractor shall not be eligible to receive any additional Fee, or profit and overhead, on any adjustment to the Contract Sum until the GMP exceeds the amount set forth in the **“Project Scope, Cost, and Time Summary”**.

3. The cost of insurance, bonds, permits, and taxes to the CMAR contractor shall be considered direct costs of performing the Work. The actual increases or decreases in the cost of premiums for insurance, bonds, permit fees (if any), and sales, use, or similar taxes related to the Work shall be included in the direct Cost of the Work without markup. All insurance and bond costs are to be actual and auditable costs inclusive of all premium adjustments.
4. When both additions and credits are involved in any one change, the allowance for additional Fee, if and when applicable, including overhead and profit, shall be calculated on the basis of the net increase, if any. Credits for the deletion of Work shall be calculated in the same manner as stipulated in Subparagraph 7.5.1.3 above.
5. Additional compensation for the CMAR contractor’s Staffing and Site Office costs may be included by the CMAR contractor within the costs of changes authorized by the Owner only where the proposed change involves an extension of the Contract Time, or when additional Staffing and Site Office Costs are, in the opinion of the Owner, actually required by the change. In accordance with the Contract Documents, any of the CMAR contractor’s Staffing and Site Office Costs approved for inclusion within the cost of an Owner authorized change shall be based on actual allowable costs and are subject to the audit provisions of the Contract Documents.

### **§7.5.3 Calculation and Substantiation of Costs associated with Changes in the Work**

All proposed costs for Owner authorized changes shall be calculated in accordance with the Authorization Request Form attached and included within the Project Manual. For the cost of all changes negotiated on other than a unit cost basis, the CMAR contractor and Subcontractors of all levels or tiers shall provide an itemization of costs in accordance with the Contract Documents, including calculations, measurements, actual cost records, production rates, equipment types and capacity, labor costs by craft, and other information which may reasonably be required by the Owner to substantiate the costs included within Authorization Request Proposals submitted by the CMAR contractor. Such substantiation of costs shall be prepared in the manner and format required by the Owner and submitted with the Authorization Request Proposal. All costs submitted for Owner authorized changes are subject to the audit provisions of the Contract Documents.

### **§7.5.4 Overtime Pay**

Overtime pay, when specifically authorized by the Owner in writing, shall be paid for by the Owner on the basis of premium payment based on basic wage rates only, plus the cost of insurance and taxes associated with the premium payment. Overtime shall be defined as hours actually worked by hourly employees in excess of forty (40) hours per week. Overtime pay shall not be paid for the salaried employees of the CMAR contractor or Subcontractors of any tier or level. Premiums paid to hourly employees of the CMAR contractor or Subcontractors of any tier or level for off-shift, night, weekend work, or holiday work shall not have the same meaning as Overtime.

## **ARTICLE 8 TIME**

### **§ 8.1 Definitions**

**§ 8.1.1** Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

**§ 8.1.2** The date of commencement of the Work is the date established in the Agreement and/or the Owner's Notice to Proceed.

**§ 8.1.3** The date for the Acceptance (Substantial Completion) of the Project shall be established within the Owner's Notice to Proceed (NTP) with Part B: Construction Services, and shall be based upon the Date of Commencement established in the Owner's NTP and the number of consecutive calendar days for completion of the Project included within the Owner's RFQ, as adjusted. The date for Acceptance (Substantial Completion) of the Project shall be identified in the CMAR contractor's CPM Schedule.

**§ 8.1.4** The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

**§ 8.1.5** The Contract Time shall not be changed by the CMAR contractor's submission of a schedule or by Owner's acceptance of any interim schedule submitted by the CMAR contractor indicating an early or late completion date unless specifically authorized by Amendment to Contract.

## **§ 8.2 Progress and Completion**

**§ 8.2.1** Time is of the Essence, and completion of the Work must be within the Time for Completion stated in the Contract Documents, subject to such extensions as may be granted under Section 8.3 herein. The CMAR contractor agrees to commence work with adequate forces not later than seven (7) days after the Date of Commencement established in the Owner's written Notice to Proceed with Part B: Construction Services and to Substantially Complete each Phase of the Project within the Contract Time stipulated.

**§ 8.2.2** The CMAR contractor is advised that the Owner will suffer financial loss if each phase of the Project is not Substantially Complete within the time(s) set forth in contract. The fixed, agreed upon Liquidated Damages for each consecutive calendar day (Saturdays, Sundays, and holidays included) of delay until the Work of the Project is substantially complete and ready for Owner occupancy are as enumerated herein. The CMAR contractor and the CMAR contractor's Surety(s) shall be liable for and shall pay to the Owner, as the Owner's sole and exclusive remedy for the CMAR contractor's failure to complete each phase of the Project within the duration set forth, the following sums as fixed, agreed upon Liquidated Damages for each calendar day of delay until each phase of the Project is Substantially Complete:

- a) Two Thousand Five Hundred Dollars (\$2,500.00) per calendar day for the first thirty (30) days the Project remains incomplete and not available for the Owner's occupancy and use;
- b) Five Thousand Dollars (\$5,000.00) per calendar day for days thirty-one (31) through sixty (60) the Project remains incomplete and not available for the Owner's occupancy or use, and
- c) Ten Thousand Dollars (\$10,000.00) per calendar day thereafter the Project remains incomplete and not available for the Owner's occupancy or use.

However, the CMAR contractor's total liability for Liquidated Damages shall in no event exceed fifty percent (50%) of the CMAR contractor's Fee, as adjusted per the Contract Documents. Such Liquidated Damages shall be withheld by the Owner from the amounts due the CMAR contractor for progress and/or final payments

**§ 8.2.3** The CMAR contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the CMAR contractor and Owner.

**§ 8.2.4** The CMAR contractor shall proceed expeditiously with adequate forces and shall achieve Acceptance (Substantial Completion) for each phase of the Project within the stipulated Contract Time.



The Owner agrees to release retainage payments for each project phase upon receipt of the required clear lien certificate.

### **§ 8.3 Delays and Extensions of Time**

**§ 8.3.1** If the CMAR contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Designer, or of an employee of either of them, or of a Separate Contractor employed by the Owner; or by changes ordered in the Work; or by delay authorized by the Owner; or by other causes that the Owner determines may justify delay, then the Contract Time shall be extended by Amendment to Contract for such reasonable time subject to Owner's approval. In the event of such delay caused by the Owner as described within this Paragraph 8.3.1, the CMAR contractor may be compensated for its documented costs associated with the delay as provided by Article 7 of the Part B: Construction Services (Construction Management at Risk) Agreement, by Authorization Request or Amendment to Contract.

### **§ 8.3.2 Fortuitous Event Extensions of Time**

CMAR contractor shall be entitled to an extension of the Contract Time by Amendment to Contract for such reasonable time as the Designer may recommend for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Owner. The CMAR contractor shall not be entitled to recover from the Owner associated costs. The CMAR contractor hereby waives any and all claims for additional compensation or monetary damages arising out of or related to any such delay or interference caused by a Fortuitous Event, including, but not limited to, claims for additional Staffing and Site Office Costs or Fee; claims for extended General Conditions costs; claims for delay damages, interference damages, impact damages, acceleration damages; and/or any other form of time-related damages.

**§ 8.3.3** Claims relating to time shall be made in accordance with applicable provisions of Article 15 herein.

## **ARTICLE 9 PAYMENTS AND COMPLETION**

### **§ 9.1 Contract Sums**

The Contract Sums for Part A: Pre-Construction Services and Part B: Construction Services are stated in their respective Agreements inclusive of authorized amendments and adjustments, are the total amounts payable by the Owner to the CMAR contractor for performance of Preconstruction and Construction Phase Services under the Contract Documents.

#### **§9.1.1 Pre-Construction Services Contract Sum**

Pre-Construction Services and its Contract Sum are referenced in Articles 2 and 4 (respectively) of the Part A: Pre-Construction Services Agreement. The Pre-Construction Services stipulated Fee is not to be included within the CMAR contractor's Guaranteed Maximum Price Proposal submitted in accordance with Article 5 of the Construction Management Agreement.

#### **§9.1.2 Construction Services Contract Sum**

Construction Services and its Contract Sum, are stated as a Guaranteed Maximum Price, and stipulated in Articles 2 and 5 (respectively) of the Part B: Construction Services (Construction Management at Risk) Agreement.

### **§ 9.2 Schedule of Values**

The CMAR contractor shall submit to the Owner within its GMP Proposal a schedule of values, prepared in such form and manner, and supported by such data to substantiate its accuracy as the Owner may require, allocating the entire GMP by phase and division of the Work. This schedule of values, unless objected to by the Owner, shall be used as the basis for the CMAR contractor's cost and/or manpower loading of its CPM schedules required in Section 3.10 herein. The CMAR contractor shall maintain and update its schedule of values throughout the duration of the Project to accurately reflect the actual cost of each division of the Work for each phase of the Project.

### **§9.3 CMAR contractor's Pre-Construction Services Payments**

The CMAR contractor's invoices for Pre-Construction Services shall be prepared, submitted, approved, and paid in accordance with Article 4 of the Construction Management Agreement as modified by the RFQ.

### **§9.4 CMAR contractor's Construction Services Payments**

**§9.4.1** Monthly, the CMAR contractor shall meet with the Owner and Designer and review the percentage of the Work indicated as completed as of the last day of the month in the CMAR contractor's approved cost and manpower loaded CPM Schedule compared to the Work observed in the field to be actually and properly complete. Based on the review of the CMAR contractor's CPM Schedule and the site observations, the CMAR contractor, Owner, and Designer shall determine and mutually agree on the allowable percentages and amounts due the CMAR contractor for the Work completed, the amounts for materials stored on-site, and other items relating to the Application for Payment. In the absence of mutual agreement, the Owner shall determine the amount of the CMAR contractor's Application for Payment due the CMAR contractor. The CMAR contractor shall then submit an Application for Payment to the Owner and Designer based on the percentages and amounts of the Work completed, materials stored on-site, and other items relating to the Application for Payment mutually agreed to, or determined by the Owner, less normal retainage of five percent (5.0%). Applications shall be submitted to the Owner and Designer prior to the fifth (5th) day of each month. Each Application for Payment shall be accompanied by the following in a form and substance satisfactory to the Owner:

1. A document identifying all Subcontractors and material supplier with whom the CMAR contractor has entered into subcontracts; the amount of each such subcontract; the amount currently requested for payment by each subcontractor and material supplier; the amount to actually be paid to each such subcontractor and material supplier by the CMAR contractor; and the amount to be paid to the CMAR contractor from the requested progress payment.
2. Beginning with the second Application for Payment, a current CMAR contractor's lien waiver indicating that, to the best of the CMAR contractor's knowledge, information and belief, all Work for which Certificates for Payment have been previously issued and payments received from the Owner is free and clear of liens, claims, security interests, or encumbrances of any kind in favor of the CMAR contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work, and that all amounts previously requested by the CMAR contractor, and received from the Owner, on account of Subcontractors and material suppliers, have been paid by the CMAR contractor to the Subcontractors and material suppliers.
3. Beginning with the second Application for Payment, duly executed waivers of mechanics' liens from all Subcontractors and material suppliers establishing payment or satisfaction of payment of all amounts previously requested by the CMAR contractor on behalf of such entities or persons in any previous application for payment.
4. Duly executed CMAR contractor's affidavit and partial release of claims and liens, and similar partial release and waiver of claim for each Subcontractor or material supplier, for the requested progress payment to acknowledge the existence of any claim or lien against the Owner.

**§9.4.2** No payment will be made until the CMAR contractor's CPM Schedule is approved by the Owner and the monthly revisions and updates as required by Section 3.10 herein are received by the Owner. Retainage withheld by the Owner shall not be due the CMAR contractor until after Acceptance (Substantial Completion), expiration of the forty-five day lien period, submission to the Owner of a clear lien certificate and consent of surety, the Designer's receipt of the CMAR contractor's record drawings, and Owner's receipt of the Designer's Certification for Payment from its review of the CMAR contractor's invoice for retainage.

**§9.4.2.1** No payment will be made until the CMAR contractor's Quality Control Plan as required by the Construction Management Agreement as modified by the RFQ has been updated as required.

**§9.4.3** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Project site for subsequent incorporation in the Work. Payments for materials or equipment stored on the site shall be conditioned upon submission of invoices, bills of sale, or such other documents by the CMAR contractor satisfactory to the Owner to establish the cost of such materials and equipment and the Owner's title to such materials and equipment, or otherwise protect the Owner's interest, including applicable insurance.

**§9.4.3.1** The CMAR contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site without the Owner's prior approval.

**§9.4.4** The CMAR contractor warrants that title to all Work and stored materials and equipment covered by an Application for Payment will pass to the Owner no later than the time of payment. The CMAR contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the CMAR contractor's knowledge, information and belief, be free and clear of liens, claims, security interests, or encumbrances of any kind in favor of the CMAR contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

## **§ 9.5 Certificates for Payment**

**§ 9.5.1** The Designer will, within 14 days after receipt of the CMAR contractor's monthly Application for Payment, either issue a Certificate for Payment for such amount as the Owner and Designer determine is properly due, or notify the CMAR contractor of the reasons for withholding approval as provided in Paragraph 9.6. herein.

**§9.5.1.1** In taking action on the CMAR contractor's Applications for Payment, the Designer shall be entitled to rely on the accuracy and completeness of the information furnished by the CMAR contractor and shall not be deemed to represent that the Designer has made a detailed examination or audit of the documentation submitted or that the Designer has made exhaustive or continuous on-site inspections or that the Designer has made examinations to ascertain how or for what purposes the CMAR contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's accountants acting in the sole interest of the Owner.

**§9.5.2** The issuance of a Certificate for Payment will constitute a representation by the Designer to the Owner, based on the Designer's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Designer's knowledge, information, and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Designer. The issuance of a Certificate for Payment will further constitute a representation that the CMAR contractor is entitled to payment in the amount certified.

## **§ 9.6 Decisions to Withhold Certification**

**§ 9.6.1** The Designer shall withhold a Certificate for Payment, in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Designer's opinion, the representations to the Owner required by Paragraph 9.5 herein cannot be made. If the Designer is unable to certify payment in the amount of the Application, the Designer shall notify the CMAR contractor and Owner as provided in Subparagraph 9.5.1 above. If the CMAR contractor and Designer cannot agree on a revised amount, the Designer will promptly

issue a Certificate for Payment for the amount for which the Designer is able to make such representations to the Owner. The Designer has the duty and shall also withhold a Certificate for Payment or, because of subsequently discovered evidence, nullify the whole or a part of a Certificate for Payment previously issued, to such extent as is necessary in the Designer's opinion to protect the Owner from loss for which the CMAR contractor is responsible, including loss resulting from acts and omissions described in Paragraph 3.3.2 herein, because of:

1. Defective Work not remedied;
2. Third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the CMAR contractor;
3. Failure of the CMAR contractor to make payments properly to Subcontractors or for labor, materials or equipment;
4. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
5. Damage to the Owner or a Separate Contractor;
6. Reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
7. Repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.6.2 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

## **§ 9.7 Progress Payments**

§ 9.7.1 After the Designer has issued a Certificate for Payment, the Owner shall approve and make payment to the CMAR contractor within 30 days of receipt of Certificate for Payment.

§ 9.7.2 The CMAR contractor shall pay each Subcontractor after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the CMAR contractor on account of the Subcontractor's portion of the Work. The CMAR contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. CMAR contractor or Subcontractor shall make payment to each Subcontractor and supplier within fourteen (14) consecutive days of the receipt of payment from the Owner. If not paid, a penalty in the amount of 1/2 of one-percent (0.5%) per day is due, up to a maximum of fifteen percent (15%), from the expiration date until paid. The CMAR contractor or Subcontractor, whichever is applicable, is solely responsible for payment of a penalty.

§ 9.7.2.1 Except with the Owner and Designer's prior approval, payments to Subcontractors shall be subject to retention of not less than five percent (5.0%).

§ 9.7.3 The Designer will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the CMAR contractor and action taken thereon by the Designer and Owner on account of portions of the Work done by such Subcontractor.

§ 9.7.4 The Owner and Designer shall not have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law. When the Owner receives any claim of non-payment arising out of the Contract, the Owner shall deduct one-hundred twenty-five percent (125%) of such claim from the Contract Sum. The CMAR contractor, or any interested party, shall deposit security guaranteeing payment of the claim with the Recorder of Mortgages of the parish where the Work has been done. When the Owner receives original proof of such guarantee from the Recorder of Mortgages, the claim deduction will be added back to the Contract Sum.

**§ 9.7.5** The CMAR contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.7.2, 9.7.3, and 9.7.4.

**§ 9.7.6** A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

**§ 9.7.7** Unless the CMAR contractor provide the Owner with Payment Bonds in the full penal sum of the Contract Sum, payments received by the CMAR contractor for Work properly performed by Subcontractors and suppliers shall be held by the CMAR contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the CMAR contractor for which payment was made by the Owner. Nothing contained herein shall:

1. require money to be placed in a separate account and not commingled with money of the CMAR contractor,
2. create any owner agent liability or tort liability on the part of the CMAR contractor for breach of trust, or
3. entitle any person or entity to an award of punitive damages against the CMAR contractor for breach of the requirements of this provision.

**§ 9.8 Acceptance (Substantial Completion)**

**§ 9.8.1** Acceptance (Substantial Completion) is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The Designer shall determine when each phase of the Project is Substantially Complete in accordance with this Section.

**§ 9.8.2** When the CMAR contractor considers that the Work is Substantially Complete, or a portion, subpart, or phase thereof which the Owner agrees to accept separately, the CMAR contractor shall prepare and submit to the Designer and Owner a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the CMAR contractor to complete all Work in accordance with the Contract Documents. In addition to submission of its list of Work yet to be completed, or Work requiring correction, as referenced above, the CMAR contractor shall submit its completed and stamped final Test and Balance Report and Roofing Manufacturer and Roof Installer Warranties (where applicable) for the Project, or portion or phase thereof, to the Designer and Owner. The Designer and Owner's receipt of the CMAR contractor's final Test and Balance Report indicating air and water flow values and pressure relationships and the Roofing Manufacturer and Roof Installer Warranties in compliance with the Contract Documents are prerequisites to the Designer's and Owner's inspection of the completed Work required in Paragraph 9.8.3 below.

**§ 9.8.3** Upon receipt of the CMAR contractor's list and final stamped Test and Balance Report and Roofing Manufacturer and Roof Installer Warranties referenced above, and receipt of the CMAR contractor's notification that the Work is ready for inspection by the State Fire Marshal's office, the Designer and Owner shall make an inspection to determine whether the Work is Substantially Complete. If the Designer's and Owner's inspection of the Work, and review of the final Test and Balance Report, discloses any item, whether or not included on the CMAR contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy and/or utilize the Work for its intended purpose, the CMAR contractor shall, before acceptance of the Work as Substantially Complete by the Designer and Owner, complete or correct such item upon notification by the Designer and/or Owner.

The following items shall be prerequisite to the Project, or portion or phase thereof, being declared Substantially Complete by the Designer:



1. The Owner's receipt of the executed original Roofing Manufacturer's Warranty and Roof Installer's Guarantees, where applicable, and
2. Confirmation by the Designer that air and water flow values and pressure relationships indicated in the final Test and Balance Report, are accurate and in compliance with the Contract Documents.

If, following inspection, the Designer is unable to declare the Work to be Substantially Complete, the CMAR contractor shall complete all necessary Work and make all required corrections, and when completed, the CMAR contractor shall then submit a request for another inspection by the Designer and Owner to determine Substantial Completion.

**§ 9.8.4** When the Designer determines that each phase of the Project is Substantially Complete, the Designer shall prepare a "Recommendation of Acceptance" incorporating the punch list and submit it to the Owner. Upon Owner's approval of the "Recommendation of Acceptance", the Owner may issue a "Notice of Acceptance" which shall establish the Date of Acceptance (Substantial Completion). The CMAR contractor shall record the Notice of Acceptance with the Clerk of Court in the Parish in which the Work has been performed. If the Notice of Acceptance has not been recorded seven (7) days after issuance, the Owner may record the Acceptance at the CMAR contractor's expense.

**§ 9.8.5** Warranties required by the Contract Documents shall commence on the date of Acceptance (Substantial Completion) of the Work unless otherwise agreed to in writing by the Owner and CMAR contractor. Unless otherwise agreed to in writing by the Owner and CMAR contractor, security, maintenance, heat, utilities, damage to the Work not covered by the punch list, and insurance shall become the Owner's responsibility from the Date of Acceptance (Substantial Completion).

**§ 9.8.6** If all punch list items have not been completed by the end of the forty-five (45) day lien period, through no fault of the Designer or Owner, the Owner may hold the CMAR contractor in default. If the Owner finds the CMAR contractor is in default, the CMAR contractor's Surety shall be notified. If within forty-five (45) days after notification, the CMAR contractor's Surety has not completed the punch list, through no fault of the Designer or Owner, the Owner may, at his option, place the CMAR contractor in default, contract to have the balance of the Work completed and pay for such work with the unpaid funds remaining in the Contract Sum. Finding the CMAR contractor in default shall constitute a reason for disqualification of the CMAR contractor from bidding on future State of Louisiana contracts. If the CMAR contractor's Surety fails to complete the punch list within the stipulated time period, the Owner may not accept bonds submitted, in the future, by the surety.

## **§ 9.9 Partial Occupancy or Use**

**§ 9.9.1** Partial Occupancy is that stage in the progress of the Work when a designated portion of the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy and/or utilize the designated portion of the Work for its intended use. The Owner may occupy or use any Substantially Completed portion of the Work so designated by separate agreement with the CMAR contractor and authorized by the public Authorities Having Jurisdiction over the Project. Such occupancy or use may commence provided the Owner and CMAR contractor have accepted in writing the responsibilities assigned to each of them for payments, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the CMAR contractor considers the designated portion Substantially Complete, the CMAR contractor shall, unless waived by the Owner in writing, prepare and submit to the Designer and Owner all lists and Reports required of the CMAR contractor by Paragraph 9.8.2 and 9.8.3 herein. Consent of the CMAR contractor to Owner's partial occupancy or use shall not be unreasonable withheld or delayed.

**§ 9.9.2** Immediately prior to such partial occupancy or use, the Owner, CMAR contractor, and Designer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**§ 9.9.3** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

**§ 9.10 Final Completion and Final Payment**

**§ 9.10.1** Upon receipt of the CMAR contractor's written notice that each phase of the Work is ready for final inspection and acceptance, and upon receipt of a final Application for Payment, the Designer and Owner will promptly make such inspection and, when the Designer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Designer will promptly issue a final Certificate for Payment stating that to the best of the Designer's knowledge, information, and belief, and on the basis of the Designer and Owner's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the CMAR contractor and noted in the final Certificate is due and payable. If the Designer does not find the Work acceptable under the Contract Documents, the Designer and Owner shall make one additional inspection. If the Work is still not acceptable, the Designer, and each of the Designer's principal consultants, shall be paid \$175.00 per hour per person, plus reasonable expenses, for their time at the Project site, for each additional inspection, withheld from the unpaid funds remaining in the Part B: Construction Services Contract Sum. The payment shall be made by the Owner and deducted from Part B: Construction Services Contract funds. All warranties and guarantees required under, or pursuant to, the Contract Documents shall be assembled and delivered by the CMAR contractor to the Designer as part of the final Application for Payment. The Designer will review the warranties and guarantees for completeness and if deemed complete will forward to the Owner. The final Certificate for Payment will not be issued by the Designer until all warranties and guarantees have been received and accepted by the Owner.

**§9.10.1.1** Final payment shall be made by the Owner to the CMAR contractor when:

1. The Contract has been fully performed by the CMAR contractor except for the CMAR contractor's responsibility to correct nonconforming or incomplete Work, as provided in Paragraph 12.2.2 herein, and to satisfy other requirements, if any, which necessarily survive final payment;
2. A final Application for Payment and a final accounting for the Cost of the Work have been submitted by the CMAR contractor and reviewed by the Owner's accountants; and
3. The expiration of the 45 day Lien Notice period and the approval of the CMAR contractor's final Certificate for Payment by the Designer.
4. The final payment invoice will be accompanied by the following documentation:
  1. Evidence of completion,
  2. Updated final statement,
  3. Final liquidated damages settlement statement,
  4. Clear Lien Certificate,
  5. Consent of Surety.

**§ 9.10.2** Neither final payment nor any remaining retained percentage shall become due until the CMAR contractor submits to the Designer and Owner, to the extent and in such form as may be designated by the Owner, the following:

1. The CMAR contractor's affidavit and partial release of claims and liens for the requested progress payment,
2. Partial release and waiver of claims for all Subcontractors and material suppliers for the requested progress payment,



3. The CMAR contractor's affidavit as to the status of liens and claims for the requested progress payment,
4. The CMAR contractor's final affidavit and waiver of liens and release of claims,
5. A final affidavit from the CMAR contractor, and each Subcontractor and/or material supplier, that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied.
6. A final release and waiver of claims, liens, security interests, or encumbrances arising out of the Contract from all Subcontractor's and material suppliers,
7. A certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner,
8. A written statement that the CMAR contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, and
9. Consent of surety to final payment.

If a Subcontractor or material supplier refuses to furnish the required releases, waiver, or affidavits, the CMAR contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such claims, lien, or encumbrances. If such lien, claim, or encumbrance remains unsatisfied after payments are made, the CMAR contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

**§ 9.10.3** If, after Acceptance (Substantial Completion) of the Work, final completion thereof is materially delayed through no fault of the Construction, the Owner shall, upon application by the CMAR contractor, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the clear lien certificate and written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CMAR contractor to the Designer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

**§ 9.10.4** The making of final payment shall not constitute a waiver of any claims or rights by the Owner.

**§ 9.10.5** Acceptance of final payment by the CMAR contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

**§9.10.6** The amount of the final payment shall be calculated as follows:

1. Take the sum of the Cost of the Work substantiated by the CMAR contractor's final accounting, the CMAR contractor's fixed Staffing and Site Office Costs, and the CMAR contractor's fixed Fee, but not more than the Guaranteed Maximum Price, as adjusted.
2. Subtract amounts, if any, for which the Owner or Designer withholds, in whole or in part, from a final Certificate for Payment as provided in Paragraph 9.6 herein or other provisions of the Contract Documents.
3. Subtract the aggregate of previous payments made by the Owner.

**§9.10.6.1** If the aggregate of previous payments made by the Owner exceeds the amount due the CMAR contractor, the CMAR contractor shall promptly reimburse the difference to the Owner.

**§9.10.6.2** The Owner's accountants will review and report in writing on the CMAR contractor's final accounting of the Cost of the Work within ninety (90) days after delivery of the final accounting to the Owner and Designer by the CMAR contractor. Based upon such Cost of the Work as the Owner's accountants report to be substantiated by the CMAR contractor's final accounting, the Designer will, within seven days after receipt of the written report of the Owner's accountants, either issue to the Owner a final Certificate for Payment with a copy to the CMAR contractor, or notify the CMAR contractor and Owner in writing of Designer's reasons for withholding the Certificate for Payment.

**§9.10.7** If the Owner's accountants report the Cost of the Work as substantiated by the CMAR contractor's final accounting to be less than claimed by the CMAR contractor, the CMAR contractor shall be entitled to proceed without a further decision of the Designer. Pending a final resolution of the disputed amount, the Owner shall pay the CMAR contractor the amount certified in the Designer's final Certificate for Payment.

**§9.10.8** If, subsequent to final payment and at the Designer's request, the CMAR contractor incurs costs described in Article 6 of the Part B: Construction Services (Construction Management at Risk) Agreement arising from the resolution of disputes, the Owner shall reimburse the CMAR contractor such costs and the CMAR contractor's Staffing and Site Office Costs and Fee, if any, related thereto on the same basis as if such costs had been incurred prior to final payment, but not in excess of the GMP.

**§9.10.9** The CMAR contractor shall file no mechanic's or material man's lien or maintain any claim against the Owner's real estate or improvements for or on account of any work done, labor performed, or materials furnished under this Part B: Construction Services (Construction Management at Risk) Agreement.

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

The CMAR contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

### **§ 10.2 Safety of Persons and Property**

**§ 10.2.1** The CMAR contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

1. employees on the Work and other persons who may be affected thereby;
2. the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the CMAR contractor, a Subcontractor, or a Sub-subcontractor; and
3. other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

In addition to the provisions of this Article 10, the CMAR contractor shall take all appropriate and reasonable measures to protect the Owner's representatives and agents, visitors, user agency staff, and employees from personal injury and property damage, and shall use reasonable care to not unduly disrupt the Owner's operations on the Project site or on adjacent properties. In the event the CMAR contractor's operations interfere with or disrupt the Owner's operations, the CMAR contractor agrees, upon request by a representative of the Owner authorized in advance to make such request, to cease such disruptive activities for such period of time as may be required by the Owner to complete the operations negatively impacted. Such requests by the Owner shall not constitute grounds for any claim for additional compensation and/or time by the CMAR contractor or any Subcontractor of any level or tier. The CMAR contractor shall also be responsible for those measures necessary to protect any property adjacent to the Project and any equipment and/or improvements relating thereto. Any damage to such property, equipment, or

improvements caused by the CMAR contractor or any subcontractor of any tier or level shall be promptly repaired by the CMAR contractor without compensation or adjustment in the Contract Sum.

#### **§ 10.2.2 CMAR contractor's Required Safety Plans**

The CMAR contractor shall develop, submit for review by the Owner, maintain, revise as necessary, and implement throughout the duration of the Project, those Safety Plans required by the Part B: Construction Services (Construction Management at Risk) Agreement.

**§10.2.3** The CMAR contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on the health and safety of persons or property or their protection from damage, injury or loss.

**§10.2.4** The CMAR contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

**§10.2.5** When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the CMAR contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

**§10.2.6** The CMAR contractor shall promptly remedy damage and loss to property referred to in Subparagraphs 10.2.1.2 and 10.2.1.3 herein caused in whole or in part by the CMAR contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the CMAR contractor is responsible under Subparagraphs 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Designer or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the CMAR contractor. The foregoing obligations of the CMAR contractor are in addition to the CMAR contractor's obligations under the Part B: Construction Services (Construction Management at Risk) Agreement.

**§10.2.7** The CMAR contractor shall designate a responsible and qualified member of the CMAR contractor's organization at the site whose sole duty shall be the prevention of accidents and administration of the Construction Manager's required Safety Plans referenced in Paragraph 10.2.2 above.

**§10.2.8** The CMAR contractor shall not permit any portion of the construction or site to be loaded so as to cause damage or create an unsafe condition.

#### **§ 10.2.9 Injury or Damage to Person or Property**

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party immediately in the event of injury to persons, and in the event of damage to property, within 24 hours of the occur or discovery of the incident. The notice shall provide sufficient detail to enable the other party to investigate the matter.

#### **§ 10.3 Hazardous Materials and Substances**

**§ 10.3.1** The CMAR contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the CMAR contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site

by the CMAR contractor, the CMAR contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Designer in writing.

**§ 10.3.2** Upon receipt of the CMAR contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the CMAR contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. When the laboratory or other qualified entity or individual advises the Owner, Designer, and CMAR contractor in writing that Work in the affected area may continue, the CMAR contractor shall resume work without delay.

**§ 10.3.3** Notwithstanding any provision herein to the contrary, the Owner, by this Agreement, does not agree to indemnify, hold harmless, exonerate, or assume the defense of CMAR contractor or any other person or entity whatsoever, for any purpose whatsoever. However, in the event of a hazardous material(s) being found on the Project site, the Owner agrees to issue a written Authorization Request or Amendment to Contract to the CMAR contractor if, in the opinion of the Owner, a change in the Contract or Contract Time is required by the Contract Documents, appropriate, or necessary for the completion of the Work.

**§ 10.3.4** The Owner shall not be responsible for any of the materials or substances the CMAR contractor brings to the site. The CMAR contractor shall be solely responsible for the proper transportation, storage, or use of hazardous materials and/or substances if required by the contract documents.

**§ 10.3.5** The CMAR contractor shall indemnify the Owner and remediate at its own expense any material or substance the CMAR contractor, his contractors, or his subcontractors brings to the site and negligently mishandles and/or where it fails to perform its obligations under Paragraph 10.3.1.

#### **§ 10.4 Emergencies**

In an emergency affecting the safety of persons or property, the CMAR contractor shall notify the Owner and Designer immediately of the emergency, simultaneously acting at his discretion to prevent damage, injury, or loss. Any additional compensation or extension of time claimed by the CMAR contractor on account of emergency work shall be determined as provided in Article 7 and Article 15 herein.

### **ARTICLE 11 INSURANCE AND BONDS**

**Disregard the standard provisions of AIA 201-2017 and substitute the following:**

#### **§ 11.1 CMAR contractor's Liability Insurance**

The CMAR contractor shall purchase and maintain without interruption for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder by the CMAR contractor, its agents, representatives, employees or subcontractors. The duration of the contract shall be from the inception of the contract until the date of final payment.

#### **§ 11.2 Minimum Scope and Limits of Insurance**

##### **11.2.1 Worker's Compensation**

Worker's Compensation insurance shall be in compliance with the Worker's Compensation law of the CMAR contractor's headquarters. Employers Liability is included with a minimum limit of \$1,000,000 per accident/per disease/per employee. If Work is to be performed over water and involves maritime exposure, applicable LHWCA, Jones Act or other maritime law coverage shall be included. A.M. Best's insurance company rating requirement may be waived for Worker's compensation coverage only.

### 11.2.2 Commercial General Liability

Commercial General Liability insurance, including Personal and Advertising Injury Liability and Products and Completed Operations Liability, shall have a minimum limit per occurrence based on the project value. The Insurance Services Office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.

The aggregate loss limit must apply to each project. ISO form CG 25 03 (current form approved for use in Louisiana), or equivalent, shall also be submitted. The State project number, including part number, and project name shall be included on this endorsement.

#### COMBINED SINGLE LIMIT (CSL) PER OCCURRENCE

| Type of Construction  | Projects up to \$1,000,000 | Projects over \$1,000,000 up to \$10,000,000 | Projects over \$10,000,000 |
|-----------------------|----------------------------|----------------------------------------------|----------------------------|
| <b>New Buildings:</b> |                            |                                              |                            |
| Each Occurrence       |                            |                                              |                            |
| Minimum Limit         | \$1,000,000                | \$2,000,000                                  | \$4,000,000                |
| Per Project Aggregate | \$2,000,000                | \$4,000,000                                  | \$8,000,000                |

#### Renovations: The building(s) value for the Project is N/A

|                       |                           |                           |                           |
|-----------------------|---------------------------|---------------------------|---------------------------|
| Each Occurrence       |                           |                           |                           |
| Minimum Limit         | \$1,000,000**             | \$2,000,000**             | \$4,000,000**             |
| Per Project Aggregate | 2 times per occur limit** | 2 times per occur limit** | 2 times per occur limit** |

\*\*While the minimum Combined Single Limit of \$1,000,000 is required for any renovation, the limit is calculated by taking 10% of the building value and rounding it to the nearest \$1,000,000 to get the insurance limit. Example: Renovation on a \$33,000,000 building would have a calculated \$3,300,000 combined single limit of coverage ( $33,000,000 \times .10 = 3,300,000$  and then rounding down to \$3,000,000). If the calculated limit is less than the minimum limit listed in the above chart, then the amount needed is the minimum listed in the chart. Maximum per occurrence limit required is \$10,000,000 regardless of building value. The per project aggregate limit is then calculated as twice the per occurrence limit.

### 11.2.3 Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per occurrence of \$1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned automobiles.

### 11.2.4 Excess Umbrella

Excess Umbrella Insurance may be used to meet the minimum requirements for General Liability and Automobile Liability only.

### 11.2.5 Builder's Risk

- 11.2.5.1 Builder's Risk Insurance shall be in an amount equal to the amount of the construction contract including any amendments and shall be upon the entire Work included in the contract. The policy shall provide coverage equivalent to the ISO form number CP 10 20, Broad Form Causes of Loss (extended, if necessary, to include the perils of hurricane, wind, earthquake, collapse, fire, vandalism/malicious mischief, and theft, including theft of materials whether or not attached to any structure). The policy must include Designers' and engineers' fees necessary to provide plans, specifications and supervision of Work for the repair and/or replacement of property damage caused by a covered peril, not to exceed 10% of the cost of the repair and/or replacement.
- 11.2.5.2 Flood coverage shall be provided by the CMAR contractor on the first floor and below for all projects, except as otherwise noted. The Builder's Risk insurance policy, sub-limit for flood coverage shall not be less than ten percent (10%) of the total contract cost per occurrence. If flood is purchased as a separate policy, the limit shall be ten percent (10%) of the total contract cost per occurrence (with a max of \$500,000 if NFIP). Coverage for roofing projects shall **not** require flood coverage.
- 11.2.5.3 A Specialty Contractor may provide an installation floater in lieu of a Builder's Risk policy, with the similar coverage as the Builder's Risk policy, upon the system to be installed in an amount equal to the amount of the contract including any amendments. Flood coverage is not required.
- 11.2.5.4 The policy must include coverage for the Owner, CMAR contractor and any subcontractors as their interests may appear.

### 11.2.6 Pollution Liability *(required when asbestos or other hazardous material abatement is included in the contract)*

Pollution Liability insurance, including gradual release as well as sudden and accidental, shall have a minimum limit of not less than \$1,000,000 per claim. A claims-made form will be acceptable. A policy period inception date of no later than the first day of anticipated Work under this contract and an expiration date of no earlier than 30 days after anticipated completion of all Work under the contract shall be provided. There shall be an extended reporting period of at least 24 months, with full reinstatement of limits, from the expiration date of the policy if the policy is not renewed. The policy shall not be cancelled for any reason, except non-payment of premium.

### 11.2.7 Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and accepted by the Owner. The CMAR contractor shall be responsible for all deductibles and self-insured retentions.

## § 11.3 Other Insurance Provisions

### 11.3.1 The policies are to contain, or be endorsed to contain, the following provisions:

#### 11.3.1.1 Worker's Compensation and Employers Liability Coverage



11.3.1.1.1 To the fullest allowed by law, the insurer shall agree to waive all rights of subrogation against the Owner, its officers, agents, employees and volunteers for losses arising from Work performed by the CMAR contractor for the Owner.

#### 11.3.1.2 Commercial General Liability Coverage

11.3.1.2.1 Owner, its officers, agents, employees and volunteers shall be added as additional insureds with respect to liability arising out of activities performed by or on behalf of the CMAR contractor; products and completed operations of the CMAR contractor, premises owned, occupied or used by the CMAR contractor. ISO Form CG 20 10 (for ongoing work) AND CG 20 37 (for completed work) (current forms approved for use in Louisiana), or equivalent, are to be used.

11.3.1.2.2 CMAR contractor's insurance shall be primary with respect to the Owner, its officers, agents, employees and volunteers for any and all losses that occur under the contract. The coverage shall contain no special limitations on scope of protection afforded the Owner, its officers, officials, employees or volunteers. Any insurance or self-insurance maintained by the Owner shall be excess and non-contributory of the CMAR contractor's insurance.

#### 11.3.1.3 Builder's Risk

The policy must include an endorsement providing the following:

In the event of a disagreement regarding a loss covered by this policy, which may also be covered by a State of Louisiana self-insurance or commercial property policy through the Office of Risk Management (ORM), CMAR contractor and its insurer agree to follow the following procedure to establish coverage and/or the amount of loss:

Any party to a loss may make written demand for an appraisal of the matter in disagreement. Within 20 days of receipt of written demand, the CMAR contractor's insurer and either ORM or its commercial insurance company shall each select a competent and impartial appraiser and notify the other of the appraiser selected. The two appraisers shall select a competent and impartial umpire. The appraisers shall then identify the policy or policies under which the loss is insured and, if necessary, state separately the value of the property and the amount of the loss that must be borne by each policy. If the two appraisers fail to agree, they shall submit their differences to the umpire. A written decision by any two shall determine the policy or policies and the amount of the loss. Each insurance company agrees that the decision of the appraisers and the umpire if involved shall be binding and final and that neither party will resort to litigation. Each of the two parties shall pay its chosen appraiser and bear the cost of the umpire equally.

#### 11.3.1.4 Professional Liability Coverage

Professional Liability Insurance shall be furnished by the CMAR contractor based on an AFC (Construction Cost) of \$60,000,000 and a minimum Limit of Liability



of \$2,000,000. No deductible shall be in excess of 5% of the amount of the policy. The CMAR contractor shall be fully responsible to the Owner for his associates and his professional consultant work. Professional Liability coverage directly related to Pre-Construction Services and Construction Services for project design assist and construction of the total project rests solely with the CMAR contractor.

#### 11.3.1.5 All Coverages

11.3.1.5.1 All policies must be endorsed to require 30 days written notice of cancellation to the Agency. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard cancellation provisions in the CMAR contractor's policy. In addition, CMAR contractor is required to notify Agency of policy cancellations or reductions in limits.

11.3.1.5.2 Neither the acceptance of the completed Work nor the payment thereof shall release CMAR contractor from the obligations of the insurance requirements or indemnification agreement.

11.3.1.5.3 The insurance companies issuing the policies shall have no recourse against the Owner for payment of premiums or for assessments under any form of the policies.

11.3.1.5.4 Any failure of the CMAR contractor to comply with reporting provisions of the policy shall not affect coverage provided to the Owner, its officers, agents, employees and volunteers.

#### 11.3.2 Acceptability of Insurers

All required insurance shall be provided by a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located. Insurance shall be placed with insurers with an A.M. Best rating of **A-: VI or higher**. This rating requirement may be waived for Worker's compensation coverage only.

If at any time an insurer issuing any such policy does not meet the minimum A.M. Best rating, the CMAR contractor shall obtain a policy with an insurer that meets the A.M. Best rating and shall submit another certificate of insurance within 30 days.

#### 11.3.3 Verification of Coverage

CMAR contractor shall furnish the Owner with Certificates of Insurance reflecting proof of required coverage. The Certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The Certificates are to be received and approved by the Owner before Work commences and upon any contract renewal or insurance policy renewal thereafter. The Certificate Holder must be listed as follows:

State of Louisiana  
Name of Owner  
Owner Address  
City, State, Zip

Attn: Project # \_\_\_\_\_

The Owner reserves the right to request complete certified copies of all required insurance policies at any time.

Upon failure of the CMAR contractor to furnish, deliver and maintain required insurance, this contract, at the election of the Agency, may be suspended, discontinued, or terminated. Failure of the CMAR contractor to purchase and/or maintain any required insurance shall not relieve the CMAR contractor from any liability or indemnification under the contract. If the CMAR contractor does not meet the insurance requirements at policy renewal, at the option of the Owner, payment to the CMAR contractor may be withheld until the requirements have been met, OR the Owner may pay the renewal premium and withhold such payment from any monies due the CMAR contractor, OR the contract may be suspended or terminated for cause.

#### 11.3.4 Subcontractors

CMAR contractor shall include all subcontractors as insureds under its policies OR shall be responsible for verifying and maintaining the certificates provided by each subcontractor. Subcontractors shall be subject to all of the requirements stated herein. The Owner reserves the right to request copies of subcontractor's certificates at any time.

If CMAR contractor does not verify subcontractors' insurance as described above, Owner has the right to withhold payments to the CMAR contractor until the requirements have been met.

#### 11.3.5 Worker's Compensation Indemnity

In the event CMAR contractor is not required to provide or elects not to provide Worker's Compensation coverage, the parties hereby agree the CMAR contractor, its Owners, agents and employees shall have no cause of action against, and shall not assert a claim against, the State of Louisiana, its departments, agencies, agents and employees as an employer, whether pursuant to the Louisiana Worker's Compensation Act or otherwise, under any circumstance. The parties also hereby agree that the State of Louisiana, its departments, agencies, agents and employees shall in no circumstance be, or considered as, the employer or statutory employer of CMAR contractor, its Owners, agents and employees. The parties further agree that CMAR contractor is a wholly independent Contractor and is exclusively responsible for its employees, Owners, and agents. CMAR contractor hereby agrees to protect, defend, indemnify and hold the State of Louisiana, its departments, agencies, agents and employees harmless from any such assertion or claim that may arise from the performance of this contract.

#### 11.3.6 Indemnification/Hold Harmless Agreement

The Owner by this Agreement does not agree to indemnify, hold harmless, exonerate or assume the defense of the CMAR contractor or any other person or entity whatsoever, for any purpose whatsoever.

CMAR contractor agrees to protect, defend, indemnify, save, and hold harmless, the State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents, servants, employees and volunteers, from and against any and all claims, damages, expenses and liability arising out of injury or death to any person or the damage, loss or

destruction of any property which may occur, or in any way grow out of, the performance of the work or any act or omission of CMAR contractor, its agents, servants and employees, or any person or entity employed by any subcontractor, or any and all costs, expenses and/or attorney fees incurred by CMAR contractor as a result of any claims, demands, suits or causes of action, except those claims, demands, suits or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

CMAR contractor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suits, or causes of action are groundless, false or fraudulent. The State of Louisiana may, but is not required to, consult with the CMAR contractor in the defense of claims, but this shall not affect the CMAR contractor's responsibility for the handling and expenses of all claims.

#### **§ 11.4 Performance and Payment Bond**

§11.4.1 The Owner shall require the CMAR contractor to furnish Performance and Payment Bond(s) covering faithful performance of the Work and payment of obligations arising thereunder required in the Contract Documents on the date of execution of Part B: Construction Services (Construction Management at Risk) Agreement and/or the Part A: Pre-Construction Services Agreement where Advanced Construction Start construction activities are amended therein. All Performance and Payment Bonds provided shall meet all statutory requirements for a public works project in the State of Louisiana, be in a form satisfactory to the Owner and, without limitation, comply with the following specific requirements:

1. Except as otherwise required by statute, the form and substance of such Performance and Payment Bonds shall be satisfactory to the Owner in the Owner's sole judgement.
2. Bonds shall be executed by a responsible surety licensed to do business in the State of Louisiana, with an A.M. Best's rating of no less than A or X. Bonds shall remain in effect for a period not less than two (2) years following the date of Acceptance (Substantial Completion) of the latest part or phase of the Project to be completed under this Contract and the time required to resolve any items of incomplete Work or the payment of any disputed amounts, whichever time period is longer.
3. The CMAR contractor's Performance Bond and Labor and Materials Payment Bond(s) shall be equal to 100% of the amount of the Part B: Construction Services Agreement (contract) and 100% of the amount of any Advanced Construction Start construction amended into the Part A: Pre-Construction Services Agreement.
4. Bonds provided under this paragraph and required by the Contract Documents must display the surety's bond number. A rider including the following provision shall be attached to each bond:

"Surety agrees that in the event of any default by the CMAR contractor in the CMAR contractor's obligations to the Owner under the Contract, (specifying such default in detail), Surety shall have thirty (30) days from the time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such notice of default shall be sent by certified or registered U.S. mail, return receipt requested, to the lender(s) and Owner."

#### **§ 11.5 Subrogation Rights**

§ 11.5.1 The Owner and CMAR contractor reserve their respective rights against each other and the CMAR contractor's subcontractors, sub-subcontractors, agents, and employees, each of the other; and separate contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Part B: Construction Services (Construction Management at Risk) Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance.

**§ 11.5.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner reserves all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

## **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Designer's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Designer, be uncovered for the Designer's examination and be replaced at the CMAR contractor's expense without change in the Contract Time or Contract Sum.

**§ 12.1.2** If a portion of the Work has been covered that the Designer has not specifically requested to examine prior to its being covered, the Designer may request to see such Work and it shall be uncovered by the CMAR contractor. If such Work is found to be in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Authorization Request or Amendment to Contract, be at the Owner's expense. If such Work is found to not be in accordance with the Contract Documents, such costs and the cost of correction shall be at the CMAR contractor's expense unless the condition was caused by the Owner or a separate contractor of the Owner, in which event the Owner shall be responsible for payment of such costs

### **§ 12.2 Correction of Work**

#### **§ 12.2.1 Before or After Acceptance (Substantial Completion)**

The CMAR contractor shall promptly correct Work rejected by the Designer or failing to conform to the requirements of the Contract Documents, discovered before Acceptance (Substantial Completion) and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Designer's services and expenses made necessary thereby, shall be at the CMAR contractor's expense.

#### **§ 12.2.2 After Acceptance (Substantial Completion)**

**§ 12.2.2.1** It is anticipated that separate phases, or combinations of phases, of the Project will be completed based on different dates of Acceptance (Substantial Completion). Therefore, it is anticipated that warranty periods for the individual phases, or combinations of phases, will commence on different dates, as to be indicated in Owner's Notice of Acceptance, for completed portions of the Project. If, within one (1) year after the dates of Acceptance (Substantial Completion) recommended by the Designer for each completed portion or phase of the Project, or within such longer period of time as may be prescribed by the Contract Documents, including Paragraph 12.2.4 herein, or by law, any of the work is found to be defective, the CMAR contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the CMAR contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. In addition to the CMAR contractor's obligations under Section 3.5 herein, if, within one (1) year after the date of Acceptance (Substantial Completion) of the Work or designated portion thereof, or after the date for commencement of warranties established under Paragraph 9.6.1 herein, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the CMAR contractor shall correct it within thirty (30) days after receipt of written notice from the Owner to do so unless the Owner has previously given the CMAR contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If the CMAR contractor fails to correct nonconforming Work within thirty (30) days following receipt of notice from the Owner or Designer, the Owner may correct it in accordance with Section 2.4 herein. If the CMAR

contractor fails to correct Work identified as defective and covered by warranties, the Owner may hold the CMAR contractor in default. If the Owner finds the CMAR contractor or a Subcontractor is in default, the Subcontractor's Surety, if any, shall be notified. Finding the CMAR contractor or Subcontractor in default shall constitute a reason for disqualification of the CMAR contractor or Subcontractor from bidding on future State of Louisiana contracts.

**§ 12.2.2.2** The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Acceptance (Substantial Completion) by the period of time between Acceptance (Substantial Completion) and the actual completion of that portion of the Work.

**§ 12.2.2.3** The one (1) year period for correction of Work shall not be extended by corrective Work performed by the CMAR contractor pursuant to this Section 12.2. CMAR contractor agrees to warrant the quality of the Work, materials, and equipment provided for a period of one (1) year from the dates of Acceptance (Substantial Completion), except where longer periods for certain items are provided in the Project Manuals or where a manufacturer's warranty is for a longer period. CMAR contractor agrees to make all necessary repairs to the Work and to replace or repair any defective material and equipment during the warranty period. CMAR contractor agrees to transfer all equipment and manufacturer's warranties to Owner for all equipment, materials, and products provided as part of the Project. Nothing in this Subparagraph shall be construed to waive or limit any other claims, actions, or warranties as may be made or brought on behalf of the Owner. This Subparagraph shall not require CMAR contractor to repair or replace any Work, materials, or equipment damaged as a result of the negligence of the Owner.

**§ 12.2.3** The CMAR contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the CMAR contractor nor accepted by the Owner.

**§ 12.2.3.1** If the CMAR contractor does not correct such defective or non-conforming work within the time established within the Designer's or Owner's written notice to the CMAR contractor, the Owner may correct the Work with its own or separate forces, and may store any replaced materials or equipment at the expense of the CMAR contractor. If, upon the Owner's submission of an appropriately itemized invoice to the CMAR contractor, the CMAR contractor fails to reimburse the Owner its costs of such correction and storage within ten consecutive calendar days thereafter, the Owner may, upon ten additional days written notice, sell such materials and equipment through whatever means deemed appropriate by the Owner, and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the CMAR contractor including compensation for additional design services and reasonable compensation for the Owner's efforts. If such proceeds of sale do not cover all costs which the CMAR contractor should have borne, the difference shall be charged to the CMAR contractor and an appropriate Authorization Request or Amendment to Contract issued. If latent defects, or work not in compliance with the Contract Documents, are discovered after the termination or completion of this Agreement, the CMAR contractor agrees to, within ten (10) consecutive calendar days, reimburse the Owner for its costs of correcting such work.

**§ 12.2.3.2** If instead the Owner prefers to consider acceptance of Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract sum shall be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

**§ 12.2.4** The CMAR contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the CMAR contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.



**§ 12.2.5** Nothing contained in this Section 12.2 or any other Section of the Contract Documents shall be construed to establish a period of limitation with respect to other obligations the CMAR contractor has under the Contract Documents. Establishment of the one (1) year period for correction of Work as described in Paragraph 12.2.2 relates only to the specific obligation of the CMAR contractor to correct the Work and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the CMAR contractor's liability with respect to the CMAR contractor's obligations other than specifically to correct the Work. The CMAR contractor's obligation to complete the Work in accordance with the Contract Documents or to correct Work found to not be in accordance with the Contract Documents, shall not be limited or restricted by the one-year general warranty provisions of this Agreement. In the event latent discoveries of Work not completed in accordance with the Contract Documents are brought to the attention of the CMAR contractor by the Owner or Designer beyond the expiration of the one-year general warranty period, with the exception of nonconforming Work initially accepted by the Owner in writing per Section 12.3 below, the CMAR contractor agrees to promptly correct, repair, or replace such defective Work at no additional cost to the Owner. Failure of the CMAR contractor to promptly correct such Work found to not be in accordance with the requirements of the Contract Documents under this provision may constitute a reason for disqualification of the CMAR contractor and Subcontractor(s) involved from bidding on future State of Louisiana contracts.

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Written Notice**

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

### **§ 13.2 Rights and Remedies**

**§ 13.2.1** Duties and obligations imposed by the Contract Documents and rights and remedies available there under shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

**§ 13.2.2** No action or failure to act by the Owner, Designer, or CMAR contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except for time periods stipulated in Article 15 requiring actions by the Parties regarding Claims, or as may be specifically agreed in writing.

### **§ 13.3 Tests and Inspections**

**§ 13.3.1** Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations, or lawful orders of public authorities. The Owner shall provide for and contract separately independent testing lab services for such tests, inspections, and approvals and bear all related costs of tests, inspections and approvals. The CMAR contractor shall make arrangements for such tests, inspections, and approvals with the independent testing laboratory assigned by the Owner. The CMAR contractor shall give the Designer and Owner seventy-two (72) hour prior notice of when and where tests and inspections are to be made so that the Designer and Owner may be present for such procedures

**§ 13.3.2** If such procedures for testing, inspection, or approval under Paragraph 13.3.1 herein reveal failure of portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Designer's services and expenses shall be at the CMAR contractor's expense. Costs incurred by Owner as a result of cancellations of testing lab services due solely to poor coordination on the part of the CMAR contractor shall be reimbursed to the Owner at the CMAR contractor's expense.

§ 13.3.3 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the CMAR contractor and promptly delivered to the Owner and Designer.

§ 13.3.4 If the Designer and Owner are to observe tests, inspections, or approvals required by the Contract Documents, the Designer will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.5 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

## **ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT**

§ 14.1 **The Part B: Construction Services (Construction Management at Risk) Agreement may be terminated for the following reasons:**

1. Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped; or
2. An act of government, such as a declaration of national emergency that requires all Work to be stopped.

§ 14.2 The CMAR contractor may terminate the Contract if:

1. Through no act or fault of the CMAR contractor or a Subcontractor, Sub-subcontractor, or their agents or employees, or any other persons or entities performing portions of the Work under direct or indirect contract with the CMAR contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 herein constitute in the aggregate more than 100 percent (100%) of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less, or
2. Because the Designer has not issued a Certificate for Payment and has not notified the CMAR contractor of the reason for withholding certification as provided in Paragraph 9.6 herein, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents.

§ 14.2.1 If one of the reasons described in Paragraph 14.2 above exists, the CMAR contractor may, upon thirty (30) days' written notice to the Owner and Designer, terminate the Contract and recover from the Owner payment for Work actually and properly executed, including reasonable overhead and profit for Work completed prior to stoppage, costs incurred by reason of such termination, and damages. The CMAR contractor shall not be compensated for Work not actually and properly performed in accordance with the requirements of the Contract Documents, or for unrealized profit, overhead, or any other costs, fees, or expenses associated with unperformed Work. In no event shall total compensation to the CMAR contractor exceed the GMP, as adjusted. All sums paid to the CMAR contractor following termination by the CMAR contractor shall be substantiated to the satisfaction of the Owner and shall be subject to the audit provisions of this Agreement.

### **§ 14.3 Termination by the Owner for Cause**

§ 14.3.1 The Owner may terminate the Part A: Pre-Construction Services Agreement at any time and for any reason, or for its convenience, upon 30 days advanced written notice to the CMAR contractor. In the event of such termination by the Owner, the CMAR contractor shall be equitably compensated by the Owner on the basis of those Pre-Construction Services actually and properly performed by the CMAR contractor prior to the effective date of termination not previously reimbursed by the Owner, provided the CMAR contractor returns to the Owner all Instruments of Service, data, records, drawings, and documents in accordance with the Construction Management Agreement. The CMAR contractor shall not be compensated for Work not actually and properly performed in accordance with the requirements of the



Contract Documents, or for unrealized profit, overhead, or any other costs, fees, or expenses associated with unperformed Work. In no event shall total compensation to the CMAR contractor exceed the Contract Sum, as adjusted. All sums paid to the CMAR contractor following termination by the Owner shall be substantiated to the satisfaction of the Owner and shall be subject to the audit provisions of this Agreement.

**§ 14.3.2** The Owner may terminate the Part B: Construction Services (Construction Management at Risk) Agreement if the CMAR contractor:

1. Repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
2. Fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the CMAR contractor and the Subcontractors;
3. Repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
4. Commits a breach of a provision of the Contract Documents; or
5. Fails to complete the punch list within the lien period as provided in Paragraph 9.8.4 herein.
6. Fails to comply with the Owner's construction safety policies and procedures or similar policies as outlined in Part B: Construction Services (Construction Management at Risk) Agreement.

**§ 14.3.3** When any of the above reasons exist, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the CMAR contractor and the CMAR contractor's surety seven (7) days' written notice, terminate employment of the CMAR contractor and may, subject to any prior rights of the surety:

1. Exclude the CMAR contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the CMAR contractor;
2. Accept assignment of subcontracts, and
3. Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the CMAR contractor, the Owner shall furnish to the CMAR contractor an accounting of the costs incurred by the Owner in finishing the Work.

**§ 14.3.4** When the Owner terminates the CMAR contractor for one of the reasons stated in Paragraph 14.3.2. above, the CMAR contractor shall not be entitled to receive further payment until the Work is finished. Termination by the Owner shall not suspend assessment of liquidated damages against the surety.

**§14.3.5** If the unpaid balance of the GMP, and adjustments thereto, exceeds costs of finishing the Work, including compensation for the Designer's and/or other Owner's consultant's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, the CMAR contractor shall be compensated for any expenses actually incurred for the Cost of the Work and its Staffing and Site Costs not previously reimbursed by the Owner. The CMAR contractor shall not be compensated for Work not actually and properly performed in accordance with the requirements of the Contract Documents, or for unrealized profit, overhead, or any other costs, fees, or expenses associated with unperformed Work. In no event shall total compensation to the CMAR contractor exceed the GMP, as adjusted. All sums paid to the CMAR contractor following termination by the Owner shall be substantiated to the satisfaction of the Owner and shall be subject to the audit provisions of this Agreement. If such costs and damages exceed the unpaid balance of the GMP, as adjusted, the CMAR contractor shall, within 30 days, pay the difference to the Owner. The amount to be paid to the CMAR contractor or Owner, as the case may be, shall be certified by the Designer, upon application, and this obligation for payment shall survive termination of the Contract.

**§14.3.6** Termination by the Owner under this Subparagraph will not relieve the CMAR contractor and/or its surety of his obligations under the Liquidated Damages provisions of the Part B: Construction Services

(Construction Management at Risk) Agreement, and the CMAR contractor and/or surety shall be liable to the Owner for per diem Liquidated Damages.

**§14.3.7** In the event of termination for cause by the Owner under Subparagraph 14.3 is determined by any Court or tribunal to be wrongful and without cause, the termination for cause shall be converted to a termination for convenience pursuant to Subparagraph 14.5 below, and the CMAR contractor may recover only those damages specified in Subparagraph 14.5 for a termination for convenience.

#### **§ 14.4 Suspension by the Owner for Convenience**

As provided in Article 7 of Part B of the Construction Management Agreement, the Owner may order the CMAR contractor in writing to suspend, delay, or interrupt the Work, in whole or in part, for such period of time as the Owner may determine. In the event of such suspension of the Work by the Owner, adjustments of the Contract Time, Contract Sum, and compensation to the CMAR contractor shall be as provided in accordance with the provisions of Article 10 of the Construction Management Agreement. No adjustment shall be made to the extent:

1. that performance is, was, or would have been so suspended, delayed or interrupted by another cause for which the CMAR contractor is responsible; or
2. that an equitable adjustment is made or denied under another provision of the Contract.

#### **§ 14.5 Termination by the Owner for Convenience**

**§ 14.5.1** The Owner may, at any time, terminate the Part B: Construction Services (Construction Management at Risk) Agreement in whole or in part, for the Owner's convenience and without cause. Termination by the Owner under this Section shall be by Notice of Termination delivered to the CMAR contractor specifying the extent of termination and the effective date.

**§ 14.5.2** Upon receipt of a Notice of Termination for convenience, the CMAR contractor shall immediately, in accordance with instructions from the Owner, proceed with the performance of the following duties, regardless of delay in determining or adjusting amounts due under this Paragraph:

1. Cease operations as specified in the notice;
2. Place no further orders and enter into no further subcontracts for materials, labor, services, or facilities, except if necessary to complete continued portions of the Contract;
3. Terminate all Subcontracts and orders to the extent they relate to the Work terminated;
4. Proceed to complete the performance of the Work not terminated; and
5. Take actions that may be necessary, or that the Owner may direct, for the protection and preservation of the terminated Work.

**§ 14.5.3** Upon the CMAR contractor's receipt of a Notice of Termination for convenience, the Owner shall be credited for:

1. Payments previously made to the CMAR contractor for the terminated portion of the Work;
2. Claims which the Owner has against the CMAR contractor under the Contract pursuant to this Agreement for which the CMAR contractor is determined to be at fault;
3. The value of materials, supplies, equipment, or other items that are to be disposed of by the CMAR contractor that are part of the Contract Sum.

**§ 14.5.4** Upon such termination, the CMAR contractor shall recover, as its sole remedy, payment for Work actually and properly performed in connection with the terminated portion of the Work to the effective date of termination and for items properly and timely fabricated off the Project site, delivered, and stored in accordance with the Owner's instructions. In addition, the CMAR contractor shall be paid a prorated portion of its agreed upon Fee and Staffing and Site Office Costs, based on the scope of Work actually and

properly performed by the CMAR contractor prior to the date of termination. In no event shall the CMAR contractor be compensated for unrealized profits, overhead, or any other costs, fees, or expenses associated with unperformed Work.

## **ARTICLE 15 CLAIMS AND DISPUTES**

### **§ 15.1 Claims**

#### **§ 15.1.1 Definition**

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and CMAR contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

#### **§ 15.1.2 Notice of Claims**

Claims by either the Owner or CMAR contractor must be initiated by written notice to the other party and to the Designer. Claims by either party must be initiated within fifteen (15) days after occurrence of the event giving rise to such Claim, or within fifteen (15) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. "Reservation of Rights" or similar such stipulations shall not be recognized under this Contract as having any effect. A party must make a claim as defined herein within the time limits provided.

#### **§ 15.1.3 Continuing Contract Performance**

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Sections 7.3 and 9.10, and in Article 14 herein, the CMAR contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The CMAR contractor shall prepare Authorization Request Proposals for the Designer's and Owner's approval, and the Designer will issue Authorization Requests and Certificates for Payment in accordance with Owner's decision, provided, however, that the CMAR contractor shall use its best efforts to furnish the Owner and Designer, as expeditiously as possible, with notice of any claim, including, without limitation, those in connection with concealed or unknown conditions, once such claim is recognized, and shall cooperate with the Owner and Designer and the party against whom the claim is made in any effort to mitigate the alleged or potential damages, delay, or other adverse consequences arising out of the condition which caused such claim.

#### **§ 15.1.4 Claims for Additional Cost**

If the CMAR contractor wishes to make a Claim for an increase in the Contract Sum, the CMAR contractor shall give the Owner and Designer written notice thereof within fifteen (15) days after occurrence of the event giving rise to such claim before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4 herein.

#### **§ 15.1.5 Claims for Additional Time**

**§ 15.1.5.1** If the CMAR contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The CMAR contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one (1) Claim is necessary. If the CMAR contractor wishes to make claim for an increase in the Contract Time, the CMAR contractor shall give the Owner and Designer written notice thereof within fifteen (15) days after occurrence of the event giving rise to such claim. The CMAR contractor shall have the burden of demonstrating the effect of the claimed delay on the Contract Time and Contract Sum, if any, and shall furnish the Owner and Designer with detailed critical path (CPM) analysis or similar documentation relating thereto as the Owner and Designer may reasonably require.

**§ 15.1.5.2** If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction. Any claim for extension of time based on delays caused by abnormal weather shall be substantiated by the following:

1. Record of "normal weather conditions" established from historical weather data determined from climatological data sheets obtained from (U.S. Department of Commerce) National Weather Service Station for the locality closest to the project site for a ten-year period preceding the date of the Contract.
2. Weather data from National Weather Service for the time period cited in the claim for extension.
3. Copy of Superintendent's daily reports for the time period cited in the claim for extension.
4. Copy of the CMAR contractor's Cost and Manpower Loaded CMP Schedule indicating critical path activities impacted.
5. Documentation by the CMAR contractor that abnormal weather conditions actually caused delay in Project completion. Precipitation level must be more than a 'trace' for consideration as a basis of delay.

**§ 15.1.5.2.1** The CMAR contractor agrees that the Contract Time will not be extended due to normal inclement weather. For a time extension to be granted for abnormal inclement weather: (1) such weather must, in the reasonable opinion of the Owner, have actually had an adverse effect upon the progress of the CMAR contractor's work which is of a critical nature; and (2) in the reasonable opinion of the Owner, the adverse effect must not have been due to any fault or negligence of the CMAR contractor and could not have been avoided through proper planning, coordination, and implementation of adequate weather protection necessary to allow the Work to be continued without adverse effect upon labor production. The CMAR contractor agrees that the fact abnormal inclement weather may occur does not, of itself, justify any time extension hereunder.

**§ 15.1.5.2.2** The CMAR contractor is advised that in preparing its CPM Schedule, the following number of days should be considered as reasonably anticipated days of inclement weather for the Project site on a monthly basis:

|          |         |        |        |           |        |
|----------|---------|--------|--------|-----------|--------|
| January  | 11 days | May    | 5 days | September | 4 days |
| February | 10 days | June   | 6 days | October   | 3 days |
| March    | 8 days  | July   | 6 days | November  | 5 days |
| April    | 7 days  | August | 5 days | December  | 8 days |

Should the CMAR contractor request additional Time for completion of the Project based on inclement weather days, the CMAR contractor's request shall be considered only for days in excess of the number of reasonably anticipated inclement weather days stated above.

**§ 15.1.5.2.3** The CMAR contractor agrees that it shall not be entitled to a time extension for normal inclement weather which can be expected at the Project locale due to precipitation or temperature, based upon actual data from the U. S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) for the locale of the Project. The CMAR contractor acknowledges and warrants that in making its proposal or bid and Construction Schedule for the Work, it gave due care and consideration to this expected number of calendar days of inclement weather for the locale of the Project, and allowed therefore, as well as the impact of inclement weather on subsequent Work. During the time of performance, should the expected number of calendar days of inclement weather for the locale of the Project be less than originally anticipated by the CMAR contractor and the Owner, at the time of contracting, those days not so affected by inclement weather shall be considered float time in the Construction Schedule. Schedule float time shall be the property of the Project unless otherwise agreed to between the Owner and the CMAR contractor.

**§ 15.1.5.2.4** No extension of time will be made for abnormal inclement weather after the principal portions of the Work are enclosed except for site work which critically affects the Contract Time. For the purpose of this Subparagraph 15.1.5.6, the term "enclosed" is defined to mean when the Work is sufficiently closed in (exterior walls up and roof in place) so as to permit any structure, or major portion thereof which is part of the Work, to be adequately heated or cooled so as to allow the various trades to perform their work.

**§ 15.1.5.2.5** If the total calendar days lost due to inclement weather, from the Date of Commencement established in the Owner's written Notice to Proceed until the Work is enclosed, exceeds the total number of days to be expected to be lost for the same time period, a time extension, if granted, shall only be the number of calendar days needed to equal the excess number of calendar days lost to such abnormal inclement weather. The CMAR contractor shall not be eligible to receive extensions of time for "mud days" claimed due to excessive mud or muck on the Project site which is the result of normally anticipated inclement weather. The CMAR contractor's Site Logistics Plans are required to make provisions for the control of surface water and to maintain access to, and appropriate working conditions adjacent to, project structures.

**§ 15.1.5.2.6** Notwithstanding any other provision of the Contract Documents, the CMAR contractor agrees that its exclusive remedies for any delay or interference with the CMAR contractor's schedule for completion of the Work caused by abnormal inclement weather shall be its right to receive an extension of time for completion of the Work, as described in Subparagraph 15.1.5.2 herein. CMAR contractor hereby waives any and all claims for additional compensation or monetary damages arising out of or related to any such delay or interference caused by abnormal inclement weather, including, but not limited to, claims for additional Staffing and Site Office Costs or Fee, claims for extended general conditions costs, claims for delay damages, interference damages, impact damages, acceleration damages, and/or any other form of time-related damages.

**§ 15.1.5.3** The parties may consult with and seek input from the Designer regarding any dispute, Claim, or concern relating to the Project; however, all final decisions regarding the Project shall be made by the Owner.

#### **§ 15.1.6 Claims for Consequential Damages**

The Owner and CMAR contractor waive their respective rights for Claims against each other for consequential damages arising out of or relating to this Contract. This includes:

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the CMAR contractor for jobsite office expenses including the compensation of personnel if actively assigned thereto, and for loss of profit, except anticipated profit arising directly from the Work.

This is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall preclude the assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

#### **§ 15.2 Initial Decision**

**§ 15.2.1** Claims, excluding those arising under the provisions of 10.3, 10.4, 11.3.3.2, and 11.3.4 herein, shall be referred to the Initial Decision Maker for an initial decision. The Designer will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Paragraph 15.2.1, an initial decision shall be required as a condition precedent to resolution of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred



to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree in writing, the Initial Decision Maker will not decide disputes between the CMAR contractor and persons or entities other than the Owner.

**§ 15.2.2** The Initial Decision Maker will review Claims and within ten (10) days of the receipt of a Claim, take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise.

**§ 15.2.3** In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

**§ 15.2.4** If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

**§ 15.2.5** The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Designer, if the Designer is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both.

**§ 15.2.6** In the event of a Claim against the CMAR contractor, the Owner may, but is not obligated to notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a CMAR contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

**§ 15.2.7** If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### **§ 15.3 Disputes**

**§ 15.3.1** The Owner cannot be required to resolve any claim or dispute relating to this Agreement by arbitration or mediation. Any reference to the word "arbitration" or "mediation" in this Agreement or any other Contract Documents is void and of no effect between the Parties.

**§ 15.3.2** In the event of a dispute, the parties shall attempt to resolve the dispute using informal means, including, if necessary, a meeting between senior management officials of CMAR contractor, the Owner, and the Designer.

**§ 15.3.3** If the parties are unable to resolve the dispute using informal means, the parties may agree to mediate or file an action in the Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana.

## **END OF GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION**

## **SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions modify, change, delete from or add to the General Conditions of the Contract for Construction, AIA Document A201, 2017 Edition. Where any Article of the General Conditions is modified or any Section, Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Section, Article, Paragraph, Subparagraph or Clause shall remain in effect.

Articles, Sections, Paragraphs, Subparagraphs or Clauses modified or deleted have the same numerical designation as those occurring in the General Conditions.

### **ARTICLE 1**

#### **GENERAL PROVISIONS**

##### **1.1 BASIC DEFINITIONS**

###### **1.1.1. The Contract Documents**

In Section 1.1.1 delete the third sentence, and add the following sentence:

The Contract Documents shall include the Bid Documents as listed in the Instructions to Bidders and any modifications made thereto by addenda.

###### **1.1.8 Initial Decision Maker**

Delete all after the words, “shall not show partiality to the Owner or Contractor”.

##### **1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE [REFER TO *La R.S. 38:2317*]**

1.5.1 Delete the first sentence of the paragraph.

1.5.1 In the third sentence: delete the remainder after the word “publication”.

##### **1.7 DIGITAL DATA USE AND TRANSMISSION**

In the first sentence after the words, “in digital form” delete “. The parties will use AIA Document E203 2013, Building Information Modeling and Digital Data Exhibit”.

##### **1.8 BUILDING INFORMATION MODELS USE AND RELIANCE**

Delete Section 1.8.

### **ARTICLE 2**

#### **OWNER**

##### **2.2 EVIDENCE OF THE OWNER’S FINANCIAL ARRANGEMENTS**

Delete Section 2.2.



## **2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER**

2.3.1 In the first sentence, delete: all before “the Owner shall secure...”

Delete Section 2.3.2 and substitute the following:

2.3.2 The term Architect, when used in the Contract Documents, shall mean the prime Designer (Architect, Engineer, or Landscape Architect), or his authorized representative, lawfully licensed to practice architecture, engineering, or landscape architecture in the State of Louisiana, identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.

2.3.3 Delete the words: “to whom the Contractor has no reasonable objection and”.

## **ARTICLE 3**

### **CONTRACTOR**

## **3.4 LABOR AND MATERIALS**

3.4.2 Delete Section 3.4.2.

Delete Section 3.4.3 and substitute with the following:

3.4.3 Contractor and its employees, officers, agents, representatives, and Subcontractors shall conduct themselves in an appropriate and professional manner, in accordance with the Owner’s requirements, at all times while working on the Project. Any such individual who behaves in an inappropriate manner or who engages in the use of inappropriate language or conduct while on Owner’s property, as determined by the Owner, shall be removed from the Project at the Owner’s request. Such individual shall not be permitted to return without the written permission of the Owner. The Owner shall not be responsible or liable to Contractor or any Subcontractor for any additional costs, expenses, losses, claims or damages incurred by Contractor or its Subcontractor as a result of the removal of an individual from the Owner’s property pursuant to this Section. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

## **3.5 WARRANTY**

3.5.2 Replace reference to “Section 9.8.4” with “Section 9.8.6”.

## **3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS (La R.S. 40:1724[A])**

3.7.1 Delete Section 3.7.1.

3.7.2 In Section 3.7.2, replace the word “public” with the word “State”.

Delete Section 3.7.5 and substitute the following:

- 3.7.5 If, during the course of the Work, the Contractor discovers human remains, unmarked burial or archaeological sites, burial artifacts, or wetlands, which are not indicated in the Contract Documents, the Contractor shall follow all procedures mandated by State and Federal law, including but not limited to La R.S. 8:671 et seq., the Office of Coastal Protection and Restoration, and Sections 401 & 404 of the Federal Clean Water Act. Request for adjustment of the Contract Sum and Contract Time arising from the existence of such remains or features shall be submitted in writing to the Owner pursuant to the Contract Documents.

### **3.8 ALLOWANCES**

Delete Sections 3.8.1, 3.8.2, and 3.8.3 in their entirety and add the following new Section 3.8.1:

- 3.8.1 Allowances shall not be made on any of the Work.

### **3.9 SUPERINTENDENT**

- 3.9.1 Add the following to the end of the paragraph:  
Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

### **3.10 CONTRACTOR'S CONSTRUCTION AND SUBMITTAL SCHEDULES**

- 3.10.1 Add the following: For projects with a contract sum greater than \$1,000,000.00, the Contractor shall include with the schedule, for the Owner's and Architect's information, a network analysis to identify those tasks which are on the critical path, i.e., where any delay in the completion of these tasks will lengthen the project timescale, unless action is taken. A revised schedule shall be submitted with each Application and Certificate for Payment. No payment shall be made until this schedule is received.

- 3.10.3 In the first sentence, delete the word "general".

After the first sentence, add the following:

If the Work is not on schedule, as determined by the Architect, and the Contractor fails to take action to bring the Work on schedule, then the Contractor shall be deemed in default under this Contract and the progress of the Work shall be deemed unsatisfactory. Such default may be considered grounds for termination by the Owner for cause in accordance with Section 14.2.

Add the following Sections:

- 3.10.4 Add the following: Submittal by the contractor of a schedule or other documentation showing a completion date for his Work prior to the completion date stated in the contract shall not impose any obligation or responsibility on the Owner or Architect for the earlier completion date.
- 3.10.5 In the event the Owner employs a commissioning consultant, the Contractor shall cooperate fully in the commissioning process and shall require all subcontractors and

others under his control to cooperate. The purpose of such services shall be to ensure that all systems perform correctly and interactively according to the provisions of the Contract Documents.

### **3.11 DOCUMENTS AND SAMPLES AT THE SITE**

Add the following: This requirement is of the essence of the contract. The Architect shall determine the value of these documents and this amount shall not be approved for payment to the Contractor until all of the listed documents are delivered to the Architect in good order, completely marked with field changes and otherwise complete in all aspects.

## **ARTICLE 4**

### **ARCHITECT**

### **4.2 ADMINISTRATION OF THE CONTRACT**

4.2.1 In the first sentence, delete the phrase: “the date the Architect issues the final Certificate for Payment” and replace with the phrase “final payment is due, and with the Owner’s concurrence, from time to time during the one year period for correction of Work described in Section 12.2.”

4.2.2 In the first sentence, after the phrase: “become generally familiar with”; insert the following: “and to keep the Owner informed about”.

In the first sentence, after the phrase “portion of the Work completed”, insert the following: “to endeavor to guard the Owner against defects and deficiencies in the Work,”

4.2.4 In the first sentence, delete all after “The Owner and Contractor”, and add the following “may communicate directly with each other, when deemed necessary by the Owner, and the Owner will notify the Architect of any decision.”

4.2.10 Add the following sentence to the end of Section 4.2.10: There shall be no restriction on the Owner having a Representative.

4.2.11 Add the following sentence to the end of Section 4.2.11:

If no agreement is made concerning the time within which interpretation required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretation until 15 days after written request is made for them.

4.2.14 Insert the following sentence between the second and third sentences of Section 4.2.14:

If no agreement is made concerning the time within which interpretation required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretation until 15 days after written request is made for them.

## **ARTICLE 5**

### **SUBCONTRACTORS**

#### **5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

Delete Section 5.2.1, and substitute the following:

- 5.2.1 Unless otherwise required by the Contract Documents, the Contractor shall furnish at the Pre-Construction Conference, to the Owner and the Architect, in writing, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. No Contractor payments shall be made until this information is received.

Delete Section 5.2.2, and substitute the following:

- 5.2.2 The Contractor shall be solely responsible for selection and performance of all subcontractors. The Contractor shall not be entitled to claims for additional time and/or an increase in the contract sum due to a problem with performance or nonperformance of a subcontractor.

Delete Sections 5.2.3 and 5.2.4 and substitute the following:

- 5.2.3 The Contractor shall notify the Architect and the Owner when a subcontractor is to be changed and substituted with another subcontractor.

#### **5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS**

Delete Sections 5.4, 5.4.1, 5.4.2 and 5.4.3

## **ARTICLE 7**

### **CHANGES IN THE WORK**

#### **7.1 GENERAL**

Add the following Sections:

- 7.1.4 As part of the pre-construction conference submittals, the Contractor shall submit the following prior to the Contractor's initial request for payment:
- 7.1.4.1 Fixed job site overhead cost itemized with documentation to support daily rates.
  - 7.1.4.2 Bond Premium Rate with supporting information from the General Contractor's carrier.

7.1.4.3 Labor Burden by trade for both Subcontractors and General Contractor. The Labor Burden shall be supported by the Worker's Compensation and Employer's Liability Insurance Policy Information Page. Provide for all trades.

7.1.4.4 Internal Rate Charges for all significant company owned equipment.

7.1.5 If the General Contractor fails to submit the aforementioned documentation as part of the pre-construction submittals, then pay applications shall not be processed until such time as the Owner receives this information.

## 7.2 CHANGE ORDERS

Delete Section 7.2.1, and substitute the following Sections:

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, the Architect, and the Contractor issued after execution of the Contract, authorizing a change in the Work and/or an adjustment in the Contract Sum and/or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum or the Contract Time. Any reservation of rights, stipulation, or other modification made on the change order by the contractor shall have no effect.

7.2.2 "Cost of the Work" for the purpose of Change Orders shall be the eligible costs required to be incurred in performance of the Work and paid by the Contractor and Subcontractors which eligible costs shall be limited to:

7.2.2.1 Actual wages paid directly to labor personnel, with a labor burden markup exclusively limited to applicable payroll taxes, worker's compensation insurance, unemployment compensation, and social security taxes for those labor personnel performing the Work. Wages shall be the basic hourly labor rate paid an employee exclusive of fringe benefits or other employee costs. The labor burden percentage for the "Cost of the Work" is limited to categories listed herein. Employer-provided health insurance, fringe benefits, employee training (whether a requirement of employment or not), vacation pay, etc., are examples of ineligible labor burden costs which **shall not** be included, as these costs are already compensated by the Overhead and Profit markup.

Supervision shall not be included as a line item in the "Cost of the Work", except when the change results in a documented delay in the critical path, as described in Section 7.2.7.

7.2.2.2 Cost of all materials and supplies necessary and required to perform the Work, identifying each item and its individual cost, including taxes. Incidental consumables are not eligible costs and shall not be included.

7.2.2.3 Cost of each necessary piece of machinery and equipment required to perform the Work, identifying each item and its individual cost, including taxes. Incidental small tools of a specific trade (i.e., shovels, saws, hammers, air compressors, etc.,) and general use vehicles, such as pickup trucks even for

moving items around the site, fuel for these general use vehicles, travel, lodging, and/or meals are not eligible and shall not be included.

7.2.2.4 Eligible Insurance costs shall be limited to documented increases in “Builder’s Risk” insurance premium / costs only. Commercial General Liability, Automobile Liability, and all other required insurances, where referenced in the Contract shall be considered part of normal overhead. These costs are already compensated by the Overhead and Profit markup.

7.2.2.5 Cost for the General Contractor Performance and Payment Bond premium, where the documented cost of the premiums have been increased due to the Change Order.

7.2.3 Overhead and Profit - The Contractor and Subcontractor shall be due home office fixed overhead and profits on the Cost of the Work, but shall not exceed a total of 16% of the direct cost of any portion of Work.

The credit to the Owner resulting from a change in the Work shall be the sum of those items above, including overhead and profit. Where a change results in both credits to the Owner and extras to the Contractor for related items, overhead and profit shall be computed for credits to the Owner and extras to the Contractor. The Owner shall receive full credit for the computed overhead and profit on credit change order items.

7.2.4 The cost to the Owner resulting from a change in the Work shall be the sum of: Cost of the Work (as defined at Section 7.2.2) and Overhead and Profit (as defined at Section 7.2.3), and shall be computed as follows:

7.2.4.1 When all of the Work is General Contractor Work; 8% markup on the Cost of the Work.

7.2.4.2 When the Work is all Subcontract Work; 8% markup on the Cost of the Work for Subcontractor’s Overhead and Profit, plus 8% markup on the Cost of the Work, not including the Subcontractor’s Overhead and Profit markup, for General Contractor’s Overhead and Profit.

7.2.4.3 When the Work is a combination of General Contractor Work and Subcontract Work; that portion of the direct cost that is General Contract Work shall be computed per Section 7.2.4.1 and that portion of the direct cost that is Subcontract Work shall be computed per Section 7.2.4.2.

Premiums for the General Contractor’s bond may be included, but after the markup is added to the Cost of the Work.

Premiums for the Subcontractor’s Bond shall not be included.

7.2.4.4 Subcontract cost shall consist of the items in Section 7.2.2 above plus Overhead and Profit as defined in Section 7.2.3.

7.2.5 Before a Change Order is prepared, the Contractor shall prepare and deliver to the Architect the following information concerning the Cost of the Work, not subject to waiver, within a reasonable time after being notified to prepare said Change Order:

A detailed, itemized list of labor, material and equipment costs for the General Contractor's Work including quantities and unit costs for each item of labor, material and equipment.

An itemized list of labor, material and equipment costs for each Subcontractor's and/or Sub-Subcontractor's Work including quantities and unit costs for each item of labor, material and equipment.

7.2.6 After a Change Order has been approved, no future requests for extensions of time or additional cost shall be considered for that Change Order.

7.2.7 Extended fixed job-site costs are indirect costs that are necessary to support the work in the field. Examples of fixed job-site costs are field office rental, salaries of field office staff, field office utilities, and telephone.

Extended fixed job-site costs or equitable adjustment may be included in a Change Order due to a delay in the critical path, with the exception of weather related delays. In the event of a delay in the critical path, the Contractor shall submit all changes or adjustments to the Contract Time **within twenty-one (21) days** of the event giving rise to the delay. The Contractor shall submit documentation and justification for the adjustment by performing a critical path analysis of its most recent schedule in use prior to the change, which shows an extension in critical path activities.

The Contractor shall notify the Architect in writing that the Contractor is making a claim for extended fixed job-site overhead as required by Section 15.1.2. The Contractor shall provide proof that the Contractor is unable to mitigate financial damages through Alternate Work within this Contract or replacement work. "Replacement Work" is that work which the Contractor is obligated to perform under any construction contract separate from this Contract. Reasonable proof shall be required by the Architect that the delays affected the Completion Date.

7.2.8 "Cost of the Work" whether General Contractor cost or Subcontractor cost shall not apply to the following:

7.2.8.1 Salaries or other compensation of the Contractor's personnel at the Contractor's principal office and branch offices.

7.2.8.2 Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the Work.

7.2.8.3 Overhead and general expenses of any kind or the cost of any item not specifically and expressly included above in Cost of the Work.

7.2.8.4 Cost of supervision refer to section 7.2.2.1, with exception as provided in Section 7.2.7.

7.2.9 When applicable as provided by the Contract, the cost to Owner for Change Orders shall be determined by quantities and unit prices. The quantity of any item shall be as



submitted by the Contractor and approved by the Architect. Unit prices shall cover cost of Material, Labor, Equipment, Overhead and Profit.

### **7.3 CONSTRUCTION CHANGE DIRECTIVES**

7.3.3 In the first sentence after “following methods” insert: “, but not to exceed a specified amount”.

7.3.4 From .1 of the list, delete all after “Costs of labor, including” and substitute the following “social security, old age and employment insurance, applicable payroll taxes, and workers’ compensation insurance;”

Delete the following from .4 of the list: “permit fees,”

Delete Section 7.3.9 and substitute the following:

7.3.9 Pending final determination of the total costs of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties’ agreement with part or all of such costs.

## **ARTICLE 8**

### **TIME**

#### **8.1 DEFINITIONS**

Add the following:

8.1.5 The Contract Time shall not be changed by the submission of a schedule that shows an early completion date unless specifically authorized by change order.

#### **8.2 PROGRESS AND COMPLETION**

Add to Section 8.2.1 the following:

Completion of the Work must be within the Time for Completion stated in the Agreement, subject to such extensions as may be granted under Section 8.3. The Contractor agrees to commence Work not later than fourteen (14) days after the transmittal date of Written Notice to Proceed from the Owner and to substantially complete the project within the time stated in the Contract. The Owner will suffer financial loss if the project is not substantially complete in the time set forth in the Contract Documents. The Contractor and the Contractor’s Surety shall be liable for and shall pay to the Owner the sum stated in the Contract Documents as fixed, agreed and liquidated damages for each consecutive calendar day (Saturdays, Sundays and holidays included) of delay until the Work is substantially complete. The Owner shall be entitled to the sum stated in the Contract Documents. Such Liquidated Damages shall be withheld by the Owner from the amounts due the Contractor for progress payments.

Delete Section 8.2.2.

### **8.3 DELAYS AND EXTENSIONS OF TIME**

- 8.3.1 In the first sentence after the words “Owner pending” delete the words “mediation and binding dispute resolution” and add the word “litigation”, and delete the last word “determine” and add the following: “recommend, subject to Owner’s approval of Change Order. If the claim is not made within the limits of Article 15, all rights for future claims for that month are waived.”

## **ARTICLE 9**

### **PAYMENTS AND COMPLETION**

#### **9.1 CONTRACT SUM**

Delete Section 9.1.2.

Delete Section 9.2 and substitute the following:

#### **9.2 SCHEDULE OF VALUES**

At the Pre-Construction Conference, the Contractor shall submit to the Owner and the Architect a Schedule of Values prepared as follows:

- 9.2.1 The attached Schedule of Values Format shall be used. If applicable, the cost of Work for each section listed under each division, shall be given. The cost for each section shall include Labor, Materials, Overhead and Profit.
- 9.2.2 The Total of all items shall equal the Total Contract Sum. This schedule, when approved by the Architect, shall be used as a basis for the Contractor’s Applications for Payment and it may be used for determining the cost of the Work in deductive change orders, when a specific item of Work listed on the Schedule of Values is to be removed. Once the Schedule of Values is submitted at the Pre-Construction Conference, the schedule shall not be modified without approval from the Owner and Architect.

#### **9.3 APPLICATIONS FOR PAYMENT**

Delete Sections 9.3.1, 9.3.1.1, and 9.3.1.2 and substitute the following:

- 9.3.1 Monthly, the Contractor shall submit to the Architect a Facility Planning and Control – Application and Certification for Payment form, supported by any additional data substantiating the Contractor’s right to payment as the Owner or the Architect may require. Application for Payment shall be submitted on or about the first of each month for the value of labor and materials incorporated into the Work and of materials, suitably stored, at the site as of the twenty-fifth day of the preceding month, less normal retainage as follows, per La R.S. 38:2248:

9.3.1.1 Projects with Contract price up to \$500,000.00 – 10% of the Contract price.

9.3.1.2 Projects with Contract price of \$500,000.00, or more – 5% of the Contract price.

9.3.1.3 No payment shall be made until the revised schedule required by Section 3.10.1 is received.

9.3.1.4 The normal retainage shall not be due the Contractor until after substantial completion and expiration of the forty-five day lien period and submission to the Architect of a clear lien certificate, consent of surety, and invoice for retainage.

Delete Section 9.3.2 and substitute the following:

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, including applicable insurance.

## **9.5 DECISIONS TO WITHHOLD CERTIFICATION**

Section 9.5.1.7: Delete the word "repeated".

Delete Section 9.5.4.

## **9.6 PROGRESS PAYMENTS**

Delete Section 9.6.1 and substitute the following:

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment within twenty days except for projects funded fully or in part by a Federal reimbursement program. For such projects the Owner will make payment in a timely manner consistent with reimbursement.

9.6.2 Delete the phrase: "no later than seven days" from the first sentence.

After the end of the second sentence, add the following:

La R.S. 9:2784 (A) and (C) require a Contractor or Subcontractor to make payment due to each Subcontractor and supplier within fourteen (14) consecutive days of the receipt of payment from the Owner. If not paid, a penalty in the amount of ½ of 1% per day is due, up to a maximum of 15% from the expiration date until paid. The contractor or subcontractor, whichever is applicable, is solely responsible for payment of a penalty.

9.6.4 Delete the first two sentences of Section 9.6.4 and add the following to the end of the Section:

Pursuant to La. R.S. 38:2242 and La. R.S. 38:2242.2, when the Owner receives any claim of nonpayment arising out of the Contract, the Owner shall deduct 125% of such claim from the Contract Sum. The Contractor, or any interested party, may deposit security, in accordance with La. R.S. 38:2242.2, guaranteeing payment of the claim with the recorder

of mortgages of the parish where the Work has been done. When the Owner receives original proof of such guarantee from the recorder of mortgages, the claim deduction will be added back to the Contract Sum.

Delete Section **9.7 FAILURE OF PAYMENT.**

Delete Section 9.8 and substitute the following:

## **9.8 SUBSTANTIAL COMPLETION**

- 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The Architect shall determine if the project is substantially complete in accordance with this Section.
- 9.8.2 When the Contractor considers that the Work is Substantially Complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- 9.8.3 Upon receipt of the Contractor's list, the Architect shall make an inspection to determine whether the Work is substantially complete. A prerequisite to the Work being considered as substantially complete is the Owner's receipt of the executed Roofing Contractor's and Roofing Manufacturer's guarantees, where roofing Work is part of the Contract. Prior to inspection by the Architect, the Contractor shall notify the Architect that the project is ready for inspection by the State Fire Marshal's office. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use, the Contractor shall, before the Work can be considered as Substantially Complete, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.
- 9.8.4 When the Architect determines that the project is Substantially Complete, he shall prepare a punch list of exceptions and the dollar value related thereto. The monetary value assigned to this list will be the sum of the cost estimate for each particular item of Work the Architect develops based on the mobilization, labor, material and equipment costs of correcting the item and shall be retained from the monies owed the contractor, above and beyond the standard lien retainage. The cost of these items shall be prepared in the same format as the schedule of values. At the end of the forty-five day lien period payment shall be approved for all punch list items completed up to that time. After that payment, none of the remaining funds shall be due the contractor until all punch list items are completed and are accepted by the Architect. If the dollar value of the punch list exceeds the amount of funds, less the retainage amount, in the remaining balance of the Contract, then the Project shall not be considered as substantially complete. If funds remaining are less than that required to complete the Work, the Contractor shall pay the difference.

- 9.8.5 When the preparation of the punch list is complete the Architect shall prepare a Recommendation of Acceptance incorporating the punch list and submit it to the Owner. Upon approval of the Recommendation of Acceptance, the Owner may issue a Notice of Acceptance of Building Contract which shall establish the Date of Substantial Completion. The Contractor shall record the Notice of Acceptance with the Clerk of Court in the Parish in which the Work has been performed. If the Notice of Acceptance has not been recorded seven (7) days after issuance, the Owner may record the Acceptance at the Contractor's expense. All additive change orders must be processed before issuance of the Recommendation of Acceptance. The Owner shall not be responsible for payment for any Work associated with change orders that is not incorporated into the contract at the time of the Recommendation of Acceptance.
- 9.8.6 Warranties required by the Contract Documents shall commence on the date of Acceptance of the Work unless otherwise agreed to in writing by the Owner and Contractor. Unless otherwise agreed to in writing by the Owner and Contractor, security, maintenance, heat, utilities, damage to the Work not covered by the punch list and insurance shall become the Owner's responsibility on the Date of Substantial Completion.
- 9.8.7 If all punch list items have not been completed by the end of the forty-five (45) day lien period, through no fault of the Architect or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within forty-five (45) days after notification, the Surety has not completed the punch list, through no fault of the Architect or Owner, the Owner may, at his option, contract to have the balance of the Work completed and pay for such Work with the unpaid funds remaining in the Contract sum. Finding the Contractor in default shall constitute a reason for disqualification of the Contractor from bidding on future state contracts. If the surety fails to complete the punch list within the stipulated time period, the Owner may not accept bonds submitted, in the future, by the surety.

## **9.9 PARTIAL OCCUPANCY OR USE**

Delete Section 9.9.1 and substitute the following:

- 9.9.1 Partial Occupancy is that stage in the progress of the Work when a designated portion of the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the designated portion of the Work for its intended use. The Owner may occupy or use any substantially completed portion of the Work so designated by separate agreement with the Contractor and authorized by public authorities having jurisdiction over the Work. Such occupancy or use may commence provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers the designated portion substantially complete the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

## **9.10 FINAL COMPLETION AND FINAL PAYMENT**

Delete Section 9.10.4 and replace with the following:

9.10.4 The making of final payment shall not constitute a waiver of Claims by the Owner for the following:

9.10.4.1 Claims, security interests, or encumbrances arising out of the Contract and unsettled;

9.10.4.2 failure of the Work to comply with the requirements of the Contract Documents irrespective of when such failure is discovered;

9.10.4.3 terms of special warranties required by the Contract Documents; or

9.10.4.4 audits performed by the Owner, after final payment.

## **ARTICLE 10**

### **PROTECTION OF PERSONS AND PROPERTY**

#### **10.2 SAFETY OF PERSONS AND PROPERTY**

10.2.2 In the first sentence, between the words: “bearing on” and “safety”, add the words: “the health and,”

#### **10.3 HAZARDOUS MATERIALS**

10.3.1 In the second sentence after (PCB) add: “or lead”.

10.3.2 After the first sentence, delete all remaining sentences.

Add at the end: “The Contract time shall be extended appropriately.”

Delete Section 10.4 and substitute the following:

#### **10.4 EMERGENCIES**

In an emergency affecting the safety of persons or property, the Contractor shall notify the Owner and Architect immediately of the emergency, simultaneously acting at his discretion to prevent damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency Work shall be determined as provided in Article 15 and Article 7.

## **ARTICLE 11**

### **INSURANCE AND BONDS**

**AIA A101 – 2017 Exhibit A is not a part of these documents. Delete all of Sections 11.1, 11.2, 11.3, 11.4, and 11.5, and substitute the following:**

## INSURANCE REQUIREMENTS FOR NEW CONSTRUCTION, ADDITIONS AND RENOVATIONS

### 11.1 CONTRACTOR'S LIABILITY INSURANCE

The Contractor shall purchase and maintain without interruption for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder by the Contractor, its agents, representatives, employees or subcontractors. The duration of the contract shall be from the inception of the contract until the date of final payment.

### 11.2 MINIMUM SCOPE AND LIMITS OF INSURANCE

#### 11.2.1 Worker's Compensation

Worker's Compensation insurance shall be in compliance with the Worker's Compensation law of the Contractor's headquarters. Employers Liability is included with a minimum limit of \$1,000,000 per accident/per disease/per employee. If Work is to be performed over water and involves maritime exposure, applicable LHWCA, Jones Act or other maritime law coverage shall be included. A.M. Best's insurance company rating requirement may be waived for Worker's compensation coverage only.

#### 11.2.2 Commercial General Liability

Commercial General Liability insurance, including Personal and Advertising Injury Liability and Products and Completed Operations Liability, shall have a minimum limit per occurrence based on the project value. The Insurance Services Office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.

The aggregate loss limit must apply to each project. ISO form CG 25 03 (current form approved for use in Louisiana), or equivalent, shall also be submitted. The State project number, including part number, and project name shall be included on this endorsement.

### COMBINED SINGLE LIMIT (CSL) PER OCCURRENCE

| <u>Type of Construction</u>   | <u>Projects up to \$1,000,000</u>                               | <u>Projects over \$1,000,000 up to \$10,000,000</u> | <u>Projects over \$10,000,000</u> |
|-------------------------------|-----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------|
| <b>New Buildings:</b>         |                                                                 |                                                     |                                   |
| Each Occurrence Minimum Limit | \$1,000,000                                                     | \$2,000,000                                         | \$4,000,000                       |
| Per Project Aggregate         | \$2,000,000                                                     | \$4,000,000                                         | \$8,000,000                       |
| <b>Renovations:</b>           | <b>The building(s) value for the Project is \$ <u>N/A</u> .</b> |                                                     |                                   |
| Each Occurrence Minimum Limit | \$1,000,000**                                                   | \$2,000,000**                                       | \$4,000,000**                     |



|                       |                              |                              |                              |
|-----------------------|------------------------------|------------------------------|------------------------------|
| Per Project Aggregate | 2 times per<br>occur limit** | 2 times per<br>occur limit** | 2 times per<br>occur limit** |
|-----------------------|------------------------------|------------------------------|------------------------------|

\*\*While the minimum Combined Single Limit of \$1,000,000 is required for any renovation, the limit is calculated by taking 10% of the building value and rounding it to the nearest \$1,000,000 to get the insurance limit. Example: Renovation on a \$33,000,000 building would have a calculated \$3,000,000 combined single limit of coverage (33,000,000 times .10 = 3,300,000 and then rounding down to \$3,000,000). If the calculated limit is less than the minimum limit listed in the above chart, then the amount needed is the minimum listed in the chart. Maximum per occurrence limit required is \$10,000,000 regardless of building value. The per project aggregate limit is then calculated as twice the per occurrence limit.

### 11.2.3 Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per occurrence of \$1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned automobiles.

### 11.2.4 Excess Umbrella

Excess Umbrella Insurance may be used to meet the minimum requirements for General Liability and Automobile Liability only.

### 11.2.5 Builder's Risk

11.2.5.1 Builder's Risk Insurance shall be in an amount equal to the amount of the construction contract including any amendments and shall be upon the entire Work included in the contract. The policy shall provide coverage equivalent to the ISO form number CP 10 20, Broad Form Causes of Loss (extended, if necessary, to include the perils of wind, earthquake, collapse, vandalism/malicious mischief, and theft, including theft of materials whether or not attached to any structure). The policy must include architects' and engineers' fees necessary to provide plans, specifications and supervision of Work for the repair and/or replacement of property damage caused by a covered peril, not to exceed 10% of the cost of the repair and/or replacement.

11.2.5.2 Flood coverage shall be provided by the Contractor on the first floor and below for all projects, except as otherwise noted. The builder's risk insurance policy, sub-limit for flood coverage shall not be less than ten percent (10%) of the total contract cost per occurrence. If flood is purchased as a separate policy, the limit shall be ten percent (10%) of the total contract cost per occurrence (with a max of \$500,000 if NFIP). Coverage for roofing projects shall **not** require flood coverage.

11.2.5.3 A Specialty Contractor may provide an installation floater in lieu of a Builder's Risk policy, with the similar coverage as the Builder's Risk policy, upon the

system to be installed in an amount equal to the amount of the contract including any amendments. Flood coverage is not required.

11.2.5.4 The policy must include coverage for the Owner, Contractor and any subcontractors as their interests may appear.

11.2.6 Pollution Liability (*required when asbestos or other hazardous material abatement is included in the contract*)

Pollution Liability insurance, including gradual release as well as sudden and accidental, shall have a minimum limit of not less than \$1,000,000 per claim. A claims-made form will be acceptable. A policy period inception date of no later than the first day of anticipated Work under this contract and an expiration date of no earlier than 30 days after anticipated completion of all Work under the contract shall be provided. There shall be an extended reporting period of at least 24 months, with full reinstatement of limits, from the expiration date of the policy if the policy is not renewed. The policy shall not be cancelled for any reason, except non-payment of premium.

11.2.7 Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and accepted by the Owner. The Contractor shall be responsible for all deductibles and self-insured retentions.

### **11.3 OTHER INSURANCE PROVISIONS**

11.3.1 The policies are to contain, or be endorsed to contain, the following provisions:

11.3.1.1 Worker's Compensation and Employers Liability Coverage

11.3.1.1.1 To the fullest allowed by law, the insurer shall agree to waive all rights of subrogation against the Owner, its officers, agents, employees and volunteers for losses arising from Work performed by the Contractor for the Owner.

11.3.1.2 Commercial General Liability Coverage

11.3.1.2.1 The Owner, its officers, agents, employees and volunteers are to be added as additional insureds as respects liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor, premises owned, occupied or used by the Contractor. ISO Form CG 20 10 (for ongoing work) AND CG 20 37 (for completed work) (current forms approved for use in Louisiana), or equivalent, are to be used.

11.3.1.2.2 The Contractor's insurance shall be primary as respects the Owner, its officers, agents, employees and volunteers for any and all losses that occur under the contract. The coverage shall contain no special limitations on the scope of protection afforded to the Owner, its officers, officials, employees or volunteers. Any insurance or self-

insurance maintained by the Owner shall be excess and non-contributory of the Contractor's insurance.

#### 11.3.1.3 Builder's Risk

The policy must include an endorsement providing the following:

In the event of a disagreement regarding a loss covered by this policy, which may also be covered by a State of Louisiana self-insurance or commercial property policy through the Office of Risk Management (ORM), Contractor and its insurer agree to follow the following procedure to establish coverage and/or the amount of loss:

Any party to a loss may make written demand for an appraisal of the matter in disagreement. Within 20 days of receipt of written demand, the Contractor's insurer and either ORM or its commercial insurance company shall each select a competent and impartial appraiser and notify the other of the appraiser selected. The two appraisers shall select a competent and impartial umpire. The appraisers shall then identify the policy or policies under which the loss is insured and, if necessary, state separately the value of the property and the amount of the loss that must be borne by each policy. If the two appraisers fail to agree, they shall submit their differences to the umpire. A written decision by any two shall determine the policy or policies and the amount of the loss. Each insurance company agrees that the decision of the appraisers and the umpire if involved shall be binding and final and that neither party will resort to litigation. Each of the two parties shall pay its chosen appraiser and bear the cost of the umpire equally.

#### 11.3.1.4 All Coverages

11.3.1.4.1 All policies must be endorsed to require 30 days written notice of cancellation to the Agency. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard cancellation provisions in the Contractor's policy. In addition, Contractor is required to notify Agency of policy cancellations or reductions in limits.

11.3.1.4.2 Neither the acceptance of the completed Work nor the payment thereof shall release the Contractor from the obligations of the insurance requirements or indemnification agreement.

11.3.1.4.3 The insurance companies issuing the policies shall have no recourse against the Owner for payment of premiums or for assessments under any form of the policies.

11.3.1.4.4 Any failure of the Contractor to comply with reporting provisions of the policy shall not affect coverage provided to the Owner, its officers, agents, employees and volunteers.

#### 11.3.2 Acceptability of Insurers

All required insurance shall be provided by a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located. Insurance shall be placed with insurers with an A.M. Best's rating of **A-: VI or higher**. This rating requirement may be waived for Worker's compensation coverage only.

If at any time an insurer issuing any such policy does not meet the minimum A.M. Best rating, the Contractor shall obtain a policy with an insurer that meets the A.M. Best rating and shall submit another certificate of insurance within 30 days.

#### 11.3.3 Verification of Coverage

Contractor shall furnish the Owner with Certificates of Insurance reflecting proof of required coverage. The Certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The Certificates are to be received and approved by the Owner before Work commences and upon any contract renewal or insurance policy renewal thereafter. The Certificate Holder must be listed as follows:

State of Louisiana

Name of Owner

Owner Address

City, State, Zip

Attn: Project # \_\_\_\_\_

The Owner reserves the right to request complete certified copies of all required insurance policies at any time.

Upon failure of the Contractor to furnish, deliver and maintain required insurance, this contract, at the election of the Agency, may be suspended, discontinued, or terminated. Failure of the Contractor to purchase and/or maintain any required insurance shall not relieve the Contractor from any liability or indemnification under the contract.

If the Contractor does not meet the insurance requirements at policy renewal, at the option of the Owner, payment to the Contractor may be withheld until the requirements have been met, OR the Owner may pay the renewal premium and withhold such payment from any monies due the Contractor, OR the contract may be suspended or terminated for cause.

#### 11.3.4 Subcontractors

Contractor shall include all subcontractors as insureds under its policies OR shall be responsible for verifying and maintaining the certificates provided by each subcontractor. Subcontractors shall be subject to all of the requirements stated herein. The Owner reserves the right to request copies of subcontractor's certificates at any time.

If Contractor does not verify subcontractors' insurance as described above, Owner has the right to withhold payments to the Contractor until the requirements have been met.

#### 11.3.5 Worker's Compensation Indemnity

In the event Contractor is not required to provide or elects not to provide Worker's compensation coverage, the parties hereby agree the Contractor, its Owners, agents and employees shall have no cause of action against, and shall not assert a claim against, the State of Louisiana, its departments, agencies, agents and employees as an employer, whether pursuant to the Louisiana Worker's Compensation Act or otherwise, under any circumstance. The parties also hereby agree that the State of Louisiana, its departments, agencies, agents and employees shall in no circumstance be, or considered as, the employer or statutory employer of Contractor, its Owners, agents and employees. The parties further agree that Contractor is a wholly independent Contractor and is exclusively responsible for its employees, Owners, and agents. Contractor hereby agrees to protect, defend, indemnify and hold the State of Louisiana, its departments, agencies, agents and employees harmless from any such assertion or claim that may arise from the performance of this contract.

#### 11.3.6 Indemnification/Hold Harmless Agreement

Contractor agrees to protect, defend, indemnify, save, and hold harmless, the State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents, servants, employees and volunteers, from and against any and all claims, damages, expenses and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur, or in any way grow out of, any act or omission of Contractor, its agents, servants and employees, or any and all costs, expenses and/or attorney fees incurred by Contractor as a result of any claims, demands, suits or causes of action, except those claims, demands, suits or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

Contractor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suits, or causes of action are groundless, false or fraudulent. The State of Louisiana may, but is not required to, consult with the Contractor in the defense of claims, but this shall not affect the Contractor's responsibility for the handling and expenses of all claims.

### 11.4 PERFORMANCE AND PAYMENT BOND

- 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.
- 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.
- 11.4.3 Recordation of Contract and Bond [La R.S. 38:2241 thru 38:2241.1]

The Owner shall record within thirty (30) days the Contract Between Owner and Contractor and Performance and Payment Bond with the Clerk of Court in the Parish in which the Work is to be performed.

## **ARTICLE 12**

### **UNCOVERING AND CORRECTION OF WORK**

#### **12.2 CORRECTION OF WORK**

##### **12.2.1 Before Substantial Completion**

At the end of the paragraph, add the following sentences:

“If the Contractor fails to correct Work identified as defective within a thirty (30) day period, through no fault of the Designer, the Owner may hold the Contractor in default. If the Owner finds the Contractor in default, the Surety shall be notified. If within thirty (30) days after notification, the Surety has not corrected the nonconforming Work, through no fault of the Architect or Owner, the Owner may contract to have nonconforming Work corrected and hold the Surety and Contractor responsible for the cost, including architectural fees and other indirect costs. If the Surety fails to correct the Work within the stipulated time period and fails to meet its obligation to pay the costs, the Owner may elect not to accept bonds submitted in the future by the Surety. Finding the Contractor in default shall constitute a reason for disqualification of the Contractor from bidding on future state contracts.

##### **12.2.2 After Substantial Completion**

12.2.2.1 At the end of the paragraph delete the last sentence and add the following sentences:

“If the Contractor fails to correct nonconforming Work, or Work covered by warranties, within a thirty (30) day period, through no fault of the Architect or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within thirty (30) days after notification, the Surety has not corrected the non-conforming or warranty Work, through no fault of the Architect or Owner, the Owner may contract to have the nonconforming or warranty Work corrected and hold the Surety responsible for the cost including architects fees and other indirect costs. Corrections by the Owner shall be in accordance with Section 2.4. If the Surety fails to correct the nonconforming or warranty Work within the stipulated time period and fails to meet its obligation to pay the costs, the Owner may not accept bonds submitted, in the future, by the Surety.”

## **ARTICLE 13**

### **MISCELLANEOUS PROVISIONS**

#### **13.1 GOVERNING LAW**

Delete all after the word “located”.

## **13.2 SUCCESSORS AND ASSIGNS**

13.2.1 In the second sentence, delete “Except as ... 13.2.2”

Delete Section 13.2.2.

## **13.3 RIGHTS AND REMEDIES**

Add the following Section 13.3.3:

13.3.3 The Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction and venue in any action brought under this contract.

## **13.4 TESTS AND INSPECTIONS**

In Section 13.4.1, delete the second sentence and substitute the following:

The Contractor shall make arrangements for such tests, inspections and approvals with the Testing Laboratory provided by the Owner, and the Owner shall bear all related costs of tests, inspections and approvals.

Delete the last two sentences of Section 13.4.1.

## **13.5 INTEREST**

Delete Section 13.5.

# **ARTICLE 14**

## **TERMINATION OR SUSPENSION OF THE CONTRACT**

### **14.1 TERMINATION BY THE CONTRACTOR**

Delete Section 14.1.1.4.

In Section 14.1.3, after the word “profit,” delete the words “on Work not executed” and substitute the following: “for Work completed prior to stoppage”.

### **14.2 TERMINATION BY THE OWNER FOR CAUSE**

Add the following Section:

14.2.1.5 failure to complete the punch list within the lien period as provided in 9.8.7.

14.2.3 Add the following sentence:



“Termination by the Owner shall not suspend assessment of liquidated damages against the Surety.”

Add the following Section:

14.2.5 If an agreed sum of liquidated damages has been established, termination by the Owner under this Article shall not relieve the Contractor and/or Surety of his obligations under the liquidated damages provisions and the Contractor and/or Surety shall be liable to the Owner for per diem liquidated damages.

#### **14.4 TERMINATION BY THE OWNER FOR CONVENIENCE**

In Section 14.4.3, delete all after “incurred by reason of the termination,” and add “along with reasonable profit on the Work not executed.”

### **ARTICLE 15**

#### **CLAIMS AND DISPUTES**

##### **15.1 CLAIMS**

Delete Section 15.1.2, **Time Limit on Claims**, (See La R.S. 38:2189, and 38:2189.1).

15.1.3.1 Add the following to the end of the paragraph:

“A Reservation of Rights and similar stipulations shall not be recognized under this contract as having any effect. A party must make a claim as defined herein within the time limits provided.”

15.1.4.2 In the first sentence of the Section, delete “Initial Decision Maker’s” and replace with “Architect’s”. In the second sentence of the Section, delete “the decision of the Initial Decision Maker” and replace with: “his/her decision”.

Delete Section 15.1.6.2 and substitute the following:

15.1.6.2 If adverse weather conditions are the basis for a claim for additional time, the Contractor shall document that weather conditions had an adverse effect on the scheduled construction. An increase in the contract time due to weather shall not be cause for an increase in the contract sum. At the end of each month, the Contractor shall make one Claim for any adverse weather days occurring within the month. The Claim must be accompanied by sufficient documentation evidencing the adverse days and the impact on construction. Failure to make such Claim within **twenty-one (21) days** from the last day of the month shall prohibit any future claims for adverse days for that month. No additional adverse weather days shall be granted after the original or extended contract completion date, except those adverse weather days associated with a National Weather Service named storm or federally declared weather related disaster directly affecting the project site.

Add the following Section:

15.1.6.3 The following are considered reasonably anticipated days of adverse weather on a monthly basis:

|          |                |           |               |
|----------|----------------|-----------|---------------|
| January  | <u>11</u> days | July      | <u>6</u> days |
| February | <u>10</u> days | August    | <u>5</u> days |
| March    | <u>8</u> days  | September | <u>4</u> days |
| April    | <u>7</u> days  | October   | <u>3</u> days |
| May      | <u>5</u> days  | November  | <u>5</u> days |
| June     | <u>6</u> days  | December  | <u>8</u> days |

The Contractor shall ask for total adverse weather days. The Contractor's request shall be considered only for days over the allowable number of days stated above.

*Note: Contract is on a calendar day basis.*

## **15.2 INITIAL DECISION**

15.2.1 In the second sentence, delete the word "will" and replace with: "shall always".

In the second sentence, delete the phrase: ", unless otherwise indicated in the Agreement."

In the third sentence, delete the word "mediation" and replace with: "litigation".

At the end of the third sentence, add: "arising prior to the date final payment is due".

Delete the fourth sentence.

15.2.5 In the middle of the first sentence, delete all after the phrase: "rejecting the Claim".

In the second sentence, delete the phrase: "and the Architect, if the Architect is not serving as the Initial Decision Maker,".

In the third sentence, delete all after: "binding on the parties" and add the following: "except that the Owner may reject the decision or suggest a compromise or both".

Delete Section 15.2.6.

Delete Section 15.2.6.1.

## **15.3 MEDIATION**

Delete Section 15.3.

## **15.4 ARBITRATION**

Delete Section 15.4.

**R-1 ROOFING GUARANTEE**  
(Roofing Contractor is Sub to G.C.)

**OWNER:** STATE OF LOUISIANA

**ADDRESS:** OFFICE OF FACILITY PLANNING AND CONTROL  
POST OFFICE BOX 94095 CAPITOL STATION  
BATON ROUGE, LOUISIANA 70804-9095

Whereas \_\_\_\_\_

Address \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Email \_\_\_\_\_

herein called the "Roofing Contractor", has performed roofing and flashing in accordance with the Contract Documents for Project No. & WBS \_\_\_\_\_  
(hereinafter called the "Work") under a

Subcontract with \_\_\_\_\_

General Contractor on the Following Project: \_\_\_\_\_

Name of Project: \_\_\_\_\_

User Agency: \_\_\_\_\_

Location/Address: \_\_\_\_\_

Name and Type of Building(s): \_\_\_\_\_ State I.D. \_\_\_\_\_

Type(s) of Roof Deck(s): \_\_\_\_\_

Total Roof Area: \_\_\_\_\_ SF; Metal Edge Flashing: \_\_\_\_\_ LF

Date of Acceptance: \_\_\_\_\_ Guarantee Period: 2 Years

Date of Expiration: \_\_\_\_\_

AND WHEREAS the Roofing Contractor has contracted (as a Subcontractor) to guarantee said work against water entry from faulty or defective materials and workmanship for the designated Guarantee period of TWO (2) YEARS from the Acceptance Date of the Project;

AND WHEREAS the General Contractor, by its acceptance of the Contract for the above described project, has jointly assumed with the Roofing Contractor the obligations to the Owner of said guarantee against leaks and faulty or defective materials and workmanship;

NOW THEREFORE the Roofing Contractor and the General Contractor jointly and severally guarantee, subject to the terms and conditions herein set forth, that during the Guarantee Period they will at their own cost and expense, make or cause to be made with approved procedures and materials such repairs to or replacements

of said work resulting from water entry or faults or defects of said Work as are necessary to correct faulty and defective work and as are necessary to maintain said Work in watertight conditions and further to respond on or within two (2) working days upon written notification of leaks or defects by the Owner/User Agency. Furthermore, they will at their own cost and expense maintain the roof for (2) years after acceptance, in accordance with the current edition of the Roof Maintenance Manual published by the Roofing Industry Educational Institute. The roof shall be inspected a minimum of twice each year, and a report prepared documenting the conditions observed at each inspection. These inspections shall be made once during the months of April or May and once during the months of September and October. Two copies of each report shall be forwarded to the Owner and User Agency.

This Guarantee is made subject to the following terms and conditions:

1. Damage to the roof caused by the following items are excluded from this warranty: wind exceeding 73 mph, lightning, hail, fire or physical damage from falling or wind-blown objects. When the Work has been damaged by any of the foregoing causes, the Guarantee will be null and void until such damage has been repaired by the Roofing Contractor, and until the cost and expense thereof has been paid by the Owner or another responsible party so designated.
2. During the Guarantee Period, if the Owner/User Agency allows alteration of the Work by anyone other than a Contractor approved in writing by the Roofing Subcontractor, General Contractor, and Roofing Material Manufacturer prior to the work being performed, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on the roof, this Guarantee shall become null and void upon the date of said alterations. If the Owner/User Agency engages the Roofing Contractor to perform said alterations, the Guarantee shall not become null and void, unless the Roofing Contractor, prior to proceeding with said work, shall have notified the Owner/User Agency in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the Work, thereby reasonably justifying a termination of this Guarantee.
3. During the Guarantee Period, if the original use of the roof is changed and it becomes used for, but for which it was not originally designed or specified, as a promenade, work deck, spray-cooled surface, flooded basin, or other use of service more severe than originally specified, this Guarantee shall become null and void upon the date of said change.
4. During the Guarantee Period, if any building or area of a building is changed to uses creating extremes of interior temperature and/or humidity, but for which it was not originally designed and specified, without provisions and alterations made to the building which effectively contain or control these conditions, this guarantee shall become null and void upon the date of said change.
5. The Owner/User Agency shall promptly notify the Roofing Contractor in writing of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for the Roofing Contractor to inspect the Work, and to examine the evidence of such leaks, defects or deterioration.
6. This Guarantee is recognized to be the only guarantee of the General and Roofing Contractor on said work, and shall not operate to restrict or cut off the Owner from other remedies and recourses lawfully available to him in case of roofing failure. Specifically, this Guarantee shall not operate to relieve the Roofing Contractor of his responsibility for performance of the original work, regardless of whether the Contract was a Contract directly with the Owner or a Subcontract with the Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_\_\_.

February 2026

Roofing Guarantee R-1

Page 2 of 3

Proj No. & WBS: \_\_\_\_\_

Roofing Contractor's Signature: \_\_\_\_\_

Typed Name: \_\_\_\_\_

Representing: \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Email \_\_\_\_\_

Witness: \_\_\_\_\_ Witness: \_\_\_\_\_

And has been countersigned by the General Contractor issuing the Roofing Contractor's Subcontract for said work:

Name of General Contractor: \_\_\_\_\_

Date: \_\_\_\_\_ Authorized Signature: \_\_\_\_\_

Typed Name: \_\_\_\_\_

Representing: \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Email \_\_\_\_\_

Witness: \_\_\_\_\_ Witness: \_\_\_\_\_

**Facility Planning and Control  
State of Louisiana**

**TWENTY (20) YEAR  
MANUFACTURER'S NDL WATERTIGHTNESS  
MEMBRANE  
ROOFING SYSTEM WARRANTY**

**MFGR. Warranty No. \_\_\_\_\_**

\_\_\_\_\_, hereinafter referred to as "mfgr" hereby warrants to the owner, known as the State of Louisiana, hereinafter referred to as the "State" that the referenced membrane roofing assembly will remain in a watertight condition for a period of 20 Years. For the purpose of this warranty "watertight" or "watertightness means that the roofing system does not allow water to leak through a breach in the roofing system. Mfgr further warrants the performance of the products listed below and warrants that the material and installation of the roofing assembly is free of material and known installation defects at the time of application and that the materials listed below conform to mfgr specifications.

All products used in the roofing assembly from the deck (structural concrete, metal, LWIC, wood, etc.), up are included in this warranty regardless of whether mfgr furnished or branded the products with the exception of shop fabricated metals not furnished by mfgr. These products are to include, but not be limited to: base sheets, fasteners and plates, insulation board, cover board, asphalt, adhesives (insulation and membrane), mastics, field plies, membrane flashing plies and liquid flashing products. The roofing products are specifically listed as follows:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

In the event that the new membrane roofing assembly is installed in a recover fashion over an existing roofing assembly, the performance of the existing roofing products that remain in-place beneath the new roofing assembly are excluded from this warranty.

In the event that covered leaks occur in the roofing system that are attributable to the workmanship of the installing contractor or a defect in or failure of any of the mfgr products listed above, mfgr will make repairs required to return the roof to a watertight condition, regardless of the scope and cost of the required repairs. The State will notify mfgr within 30 days of the discovery of the leak. Should the State not make this notification within the prescribed 30 day time period, then further damage to the roofing assembly caused by the delay in notification will not be construed as a warranty repair item. Mfgr will respond to the leak notification within 10 days and once it is confirmed that the leak(s) is within the scope of mfgrs responsibilities under this warranty, mfgr will execute repairs promptly thereafter. Mfgr's failure to respond timely and make proper repairs shall enable the State to engage service of "others" to address the problem(s) at mfgr's expense assuming the cost of the repair is reasonable and the scope of the repair is limited to the remedy of the leak without jeopardizing State's protection under terms of this warranty. The State may make reasonable and customary emergency temporary repairs at its discretion and at mfgrs expense without jeopardizing the State's protection under the terms of this warranty.

**This Form shall be utilized on the following Roof Systems:**

2-Ply SBS, 1-Ply (PVC, TPO) & SPF.

On a **2-Ply SBS Roof System**, the manufacturers and their products previously approved by the State are included in the State's list of acceptable products; these mfgrs have agreed to a dimensional stability of the cap sheet and interply sheet of 0.2% per ASTM D 5147, section 10. 0.2% of a 33 foot roll is approximately equal to  $\frac{3}{4}$ ". For the term of this warranty, SBS cap sheet shrinkage in excess of  $\frac{3}{4}$ " will be repaired by the mfgr by cutting out the interply void in the "T" lap, cleaning and drying, and repair with an acceptable cap sheet product.

**The following items are excluded from this warranty:**

1. Damage to the roof caused by wind exceeding 73 mph, lightning, hail, fire or physical damage from falling or wind-blown objects
2. Deficient design by other than mfgr
3. Intentional or accidental damages to the roof, or misuse, abuse, vandalism or the likes
4. Leaks caused by deterioration or failure of items not included in the warranty
5. Modifications or alterations to the roofing assembly after completion unless done in a manner approved by mfgr
6. Damage to the roofing assembly after issuance of this warranty caused by excessive foot traffic or its use as a work platform or storage area



7. Damage to the roofing assembly caused by ponding water, which is defined as water on the surface of the roof that does not dissipate within 72 hours of average drying conditions
8. Consequential and incidental damages, including damage to the building or its contents
9. Damage to the roofing assembly caused by failure by the State to exercise reasonable care and maintenance
10. Damage to the roofing assembly caused by structural defects or failure or excessive movement of building components
11. Damage to the roofing assembly due to exposure to chemical attack, including deposits of animal fats, grease and oil
12. The State shall be responsible for the costs associated with the removal and replacement of any overburden, superstrata or overlays, either permanent or temporary, which include but are not limited to: structures or assemblies added after installation, fixtures or utilities on or through the roofing assembly, support platforms or bases for solar panels, garden roofs, decks, patios or any other obstacles that impede access, clear observation, investigation or repairs to the roofing system, excluding ballast or pavers or any other overburden specifically accepted by mfg to be included within warranty coverage.

For wind related events, this warranty excludes damage to the roofing assembly where the cause includes any of the following:

- A. Failure or excessive movement of primary or secondary structural elements or roof deck, wood nailers or blocking and edge system components not furnished by mfg
- B. Failure of walls, doors, windows, openings or other building envelope components
- C. Rooftop structures and equipment

Mfg may have access to the roof for inspection purposes for the term of the warranty by scheduling through the appropriate State Agency.

This warranty is tendered for the benefit of the State and is not transferable or assignable without the written consent of Mfg.

The Nineteenth Judicial District Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction in any action brought as a result of this warranty by any party hereto. This warranty shall be governed by and construed in accordance with the laws of the State of Louisiana.

This warranty instrument supersedes and is in lieu of any and all other expressed or implied warranties that are or may be in conflict with terms and conditions stated herein.

This warranty requires the signature of an authorized officer of Mfgr. Three fully executed copies are to be provided to the State as a prerequisite for project acceptance. The State's signature shall not be a requirement for implementation of, or cause to validate this warranty.

A separate and independent warranty shall be issued for each building or independent roof system in the case of multiple buildings or mixed roof types.

### **PROJECT DATA / SIGNATORS**

Owner: State of Louisiana – DOA – Facility Planning and Control

Building/Project Name: \_\_\_\_\_

Roof Type: \_\_\_\_\_

No. of Squares (100 SF): \_\_\_\_\_

Location: \_\_\_\_\_

State I.D. (if Exist. Bldg.): \_\_\_\_\_

Site Code: \_\_\_\_\_

State Project No. & WBS: \_\_\_\_\_

Date of Project Acceptance/Commencement of Warranty: \_\_\_\_\_ Ends: \_\_\_\_\_

### **Manufacturer Information**

Mfgr. Name: \_\_\_\_\_

Mfgr. Address: \_\_\_\_\_

Mfgr. Phone No.: \_\_\_\_\_

Authorized Mfgr. Signature:

S \_\_\_\_\_

Printed Name \_\_\_\_\_ Date: \_\_\_\_\_

Title \_\_\_\_\_

February 2026

20 Year Manufacturer Warranty

Page 4 of 5

Proj No. & WBS: \_\_\_\_\_

\_\_\_\_\_

**ADDITIONAL PARTIES FOR FILE AND RECORD**

File Reference:  
Contractor or  
Roofing Contractor

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

File Reference #2:  
Contractor or  
Roofing Contractor

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

Direct to:

**STATE of LOUISIANA (Owner)**  
**DIVISION OF ADMINISTRATION**  
**Facility Planning and Control**  
**Statewide Roofing Program**  
PO Box 94095  
Baton Rouge, Louisiana 70804-9095

February 2026

20 Year Manufacturer Warranty  
Page 5 of 5  
Proj No. & WBS: \_\_\_\_\_  
\_\_\_\_\_

### R-3 ROOFING GUARANTEE (Metal)

**OWNER:** STATE OF LOUISIANA OFFICE OF FACILITY PLANNING AND CONTROL  
POST OFFICE BOX 94095 CAPITOL STATION  
BATON ROUGE, LOUISIANA 70804-9095

Whereas \_\_\_\_\_

Address \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Email \_\_\_\_\_

herein called the Contractor, has provided pre-formed, pre-finished metal roofing, flashing, accessories and miscellaneous items required for a complete roof system installation in accordance with the Contract Documents for the PROJECT:

Name of Project: \_\_\_\_\_

Project No. & WBS: \_\_\_\_\_

User Agency: \_\_\_\_\_

Location/Address: \_\_\_\_\_

Name and Type of Building(s): \_\_\_\_\_ State I.D. \_\_\_\_\_

Type of System: (Standing Seam, Flat Seam, etc.) \_\_\_\_\_

Total Roof Area: \_\_\_\_\_ SF; Total Length of Ridge \_\_\_\_\_ LF

Total Length of Valley: \_\_\_\_\_ LF; Total Length of gutter/fascia trim: \_\_\_\_\_ LF

Date of Acceptance \_\_\_\_\_ Two year Guarantee Expiration \_\_\_\_\_

AND WHEREAS the Contractor has contracted to guarantee said work against water entry from faulty or defective materials and workmanship for the designated Guarantee period of TWO (2) YEARS from the Acceptance Date of the Project;

NOW THEREFORE the Contractor guarantees, subject to the terms and conditions herein set forth, that during the Guarantee Period the Contractor will at his own cost and expense, make or cause to be made with approved procedures and materials such repairs to or replacements of said work (including any wetted thermal insulation) resulting from water entry or faults or defects of said Work as are necessary to maintain said Work in watertight conditions and further, respond on or within TWO (2) working days upon written notification of leaks or defects by the Owner/User Agency.

This Guarantee is made subject to the following terms and conditions:

1. Damage to the roof caused by the following items are excluded from this warranty: wind exceeding 73 mph, lightning, hail, fire or physical damage from falling or wind-blown objects. When the Work has been damaged by any of the foregoing causes, the Guarantee will be null and void until such damage has been repaired by the Roofing Contractor, and until the cost and expense thereof has been paid by the Owner or another responsible party so designated.

2. During the Guarantee Period, if the Owner/ User Agency allows alteration of the Work by anyone other than a Contractor approved in writing by the original Contractor and/or Roofing Material Supplier prior to the work being performed, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything (i.e. signs) onto the roof, this Guarantee shall become null and void as of the date of said alterations. If the Owner/ User Agency engages the original Contractor for said alterations, the Guarantee shall be maintained in force unless the Contractor presents written notification to the Owner that the intended work will likely damage or cause deterioration of the base work, thereby justifying a termination of the original Guarantee.
3. The Owner/User Agency shall promptly notify the Contractor in writing of observed, known or suspected leaks, defects, or condition deterioration and shall afford a reasonable opportunity for the Contractor to inspect the work and examine evidence of such leaks, defects or deterioration.
4. This Guarantee is recognized to be the only guarantee of the Contractor of said work, and shall not operate to restrict or cut-off the Owner from any other remedies and recourse lawfully available to him in case of roofing failure to any cause or degree. Specifically, this Guarantee shall not operate to relieve the Contractor of his responsibility for the performance of the original work.

IN WITNESS THEREOF, this instrument has been duly executed

this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Contractor's Signature: \_\_\_\_\_

Typed Name: \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Email \_\_\_\_\_

Witness: \_\_\_\_\_ Witness: \_\_\_\_\_

And if applicable, is countersigned by the following Sub Contractor, Installer, or other party (as indicated) who acted as agent or represented the Contractor during the performance of the work:

Countersignee Name: \_\_\_\_\_  
(Type or Print)

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Representing: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Email \_\_\_\_\_

Witness: \_\_\_\_\_ Witness: \_\_\_\_\_

## Facility Planning and Control State of Louisiana

### TWENTY (20) YEAR WEATHERTIGHTNESS METAL ROOF SYSTEM - LIMITED WARRANTY

We, ManufacturerName the manufacturer; warrants to the State of Louisiana herein referenced as "Owner" of the building described below that subject to the terms, conditions, limitations and warranty responsibility stated herein ; Manufacturer warrants with no dollar limit (NDL) the undersigned Contractor workmanship and material defects, and will repair any leaks in the Manufacturer roofing system (Roofing System); and further, agrees to make provisions for satisfactorily drying all wetted thermal roof insulation caused by said leak(s), of the installed roof over the life of this **TWENTY (20) YEAR WARRANTY Period from the Acceptance Date of the Project** (as defined in the Contract Documents).

Satisfactory repair of reported leaks shall not serve to extend the term of the original 20-Year Warranty period for either the repair or the entire Roof System, but rather serve to maintain the Roof System weathertightness condition for the entire term of the original warranty.

Neither Manufacturer nor undersigned Contractor makes any other warranty whatever, expressed or implied. All implied warranties of merchantability and all implied warranties of fitness for any particular purpose which exceed or differ from the warranties herein expressed are disclaimed by each and all of said parties and are hereby excluded from this 20-Year Weathertightness Limited Warranty.

In no event shall Manufacturer be held liable for any commercial loss, claims for labor or consequential damages of any other type not specifically referenced herein, whether owner's claim be based in contract, tort, or strict liability.

#### TERMS, CONDITIONS, LIMITATIONS

1. A "Leak" is defined as water entry into any location where water entry is not specifically planned for. This can include insulation, cornices, attic spaces and other portions of the building assembly. Water entry through fastener holes, all flashings including valley, hip, ridge, closure, rake, wall runner, eave, curb, pipe penetration and other penetration flashings, and the roof panels and seams (side and end) are to be considered "leaks" as pertains to this weathertightness warranty.
2. Owner shall provide Manufacturer with written notice within THIRTY (30) days of discovery of any leaks in the Roof System; after which date, the principal to this warranty shall be expected to respond to said leak report within a period of TEN (10) working days.
  - a) Failure to respond, shall enable the Owner to engage service of "others" to address the problem without jeopardizing Owner's protection under terms of the original warranty.
  - b) Further, by Manufacturer's failure to respond as specified, subjects manufacturer to liability for full reimburse to the Owner for all costs incurred to engage the services of "others" in order to protect the building from further damage by roof leak(s).
  - c) Manufacturer cannot be held responsible for lack of performance or liable under the terms of this warranty due to Owner's failure to report claims as specified.

3. After a leak report is filed; Manufacturer shall determine whether the leak is caused by defects in manufactured material or in the workmanship and affect the Roof System repair in accordance with repair obligations herein. In the event a determination is made that neither defect in manufactured material or workmanship is at fault, the Owner shall be so advised in writing and permitted to exercise other remedies without jeopardy to provisions of the original warranty.
4. This Guarantee is made subject to the following terms and conditions:
  - a) Damage to the roof caused by the following items are excluded from this warranty: wind exceeding 73 mph, lightning, hail, fire or physical damage from falling or wind-blown objects. When the Work has been damaged by any of the foregoing causes, the Guarantee will be null and void until such damage has been repaired by the Roofing Contractor, and until the cost and expense thereof has been paid by the Owner or another responsible party so designated.
  - b) Deterioration caused by marine (salt water) atmosphere or by regular spray of salt or fresh water.
  - c) Corrosion caused by heavy fall out or exposure to corrosive chemicals, ash or fumes from chemical plants, foundries, plating works, kilns, fertilizing manufacture and paper manufacturing plants - if either cause is located less than one-half mile radius distant from the building.
  - d) Deterioration caused by corrosive or condensates generated or released from within the building itself.
  - e) Damages caused by workers or work activity on the roof after issuance of the warranty.
  - f) Structural failures affecting (but not part of) the Roof System.
  - g) Unauthorized alterations or modifications of the Work by anyone other than a Contractor agreed to in writing by all parties to this warranty.
  - h) Failure of the Owner to exercise reasonable care and maintenance.
5. During the Term of this warranty; and within 72 hours of formal request, the Owner shall permit Manufacturer, or manufacturer's agent access to the roof during regular business hours.
6. Failure of either party to exercise or enforce specific terms, conditions or provisions shall not be construed to be a waiver of same.
7. The Manufacturer shall not be responsible for consequential damage or loss to the building, its contents, or other material as a provision of this warranty.
8. The Manufacturer shall not have any liability or responsibility at any time for, or as a consequence of any condensation or underside corrosion which is or was caused at anytime by any condensation resulting from either or both of the following:
  - a) Inadequate ventilation of the attic space between the roof panel and insulation, when insulation is installed on top of existing roof.
  - b) The use of inadequate vapor barrier where the insulation is installed immediately beneath roof panels.
9. The Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction in any action brought as a result of this warranty by any party hereto.
10. This Warranty instrument supersedes and is in lieu of any and all other expressed or implied warranties that are or may be in conflict with terms and conditions stated herein.
11. An executed Warranty is required prior to Acceptance being issued by FP&C for the project.

## WARRANTY RESPONSIBILITY

FIRST (1st.) year through the TWENTIETH (20th) year from date of Acceptance of the project by Roof System Manufacturer whose legal entity is Manufacturer; except that the first recourse of the Owner for Warranty Benefits during Year 1 and Year 2 after date of Project Acceptance will be the Contractor per provisions of Roofing Guarantee R-3 (Metal).

EXCEPT AS EXPRESSLY PROVIDED HEREIN, Manufacturer MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WITH RESPECT TO MATERIALS COVERED HEREBY, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, NOR DOES SELLER MAKE ANY WARRANTY OR ASSUME ANY OBLIGATION WITH RESPECT TO THE VALIDITY OF ANY PATENTS, DESIGNS, COPYRIGHTS OR TRADEMARKS WHICH MAY COVER SUCH GOODS EXCEPT; THAT THE OWNER SHALL HAVE THE RIGHT TO RELY ON SAME BY REPRESENTATION OF THE MANUFACTURER THAT BY OFFERING THE MATERIAL, ROOF SYSTEM AND MISCELLANEOUS ITEMS FOR THE PURPOSES OF THIS PROJECT THERE IS NO VIOLATION OF THE RIGHTS OF OTHER PARTIES WITH RESPECT TO PATENTS, DESIGNS, COPYRIGHTS OR TRADEMARKS, FURTHER; THE CONDITIONS OF LIABILITY, RIGHTS, OBLIGATIONS AND REMEDIES OF THE PARTIES RELATING TO CLAIMS ARISING FROM DEFECTIVE GOODS SHALL BE GOVERNED EXCLUSIVELY BY THE TERMS HEREOF: THIS WARRANTY MAY NOT BE CHANGED ORALLY.

IN CONSIDERATION FOR PAYMENT RECEIVED, THIS WARRANTY IS TENDERED FOR THE BENEFIT OF THE OWNER AND IS NOT TRANSFERABLE OR ASSIGNABLE WITHOUT THE WRITTEN CONSENT OF THE MANUFACTURER Manufacturer.

THIS WARRANTY REQUIRES THE ORIGINAL SIGNATURES OF AN OFFICER OF THE MANUFACTURER, AND THREE FULLY EXECUTED COPIES WILL BE PROVIDED TO THE OWNER AS A PREREQUISITE FOR PROJECT ACCEPTANCE. THE OWNER'S SIGNATURE SHALL NOT BE A REQUIREMENT FOR IMPLEMENTATION OF, OR CAUSE TO VALIDATE THE WARRANTY.

A SEPARATE AND INDEPENDENT WARRANTY SHALL BE ISSUED FOR EACH BUILDING OR INDEPENDENT ROOF SYSTEM IN THE CASE OF MULTIPLE BUILDINGS OR MIXED ROOFED PROJECTS.

## PROJECT DATA / SIGNATORS

Building/Project Description: \_\_\_\_\_

Roof Type and Quantity: \_\_\_\_\_

Location: \_\_\_\_\_

State I.D. (if Exist. Bldg.): \_\_\_\_\_

Site Code: \_\_\_\_\_

State Project No. & WBS: \_\_\_\_\_

Date of Project Acceptance/Commencement of Warranty: \_\_\_\_\_ Ends: \_\_\_\_\_

**Manufacturer:**

Manufacturer

S \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_



**ADDITIONAL PARTIES FOR FILE AND RECORD**

File Reference:  
Contractor or  
Roofing Contractor

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

File Reference #2:  
Contractor or  
Roofing Contractor

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

Direct to:

**STATE of LOUISIANA (Owner)**  
**DIVISION OF ADMINISTRATION**  
**Facility Planning and Control**  
**Statewide Roofing Program**  
PO Box 94095  
Baton Rouge, Louisiana 70804-9095

February 2026

20 Year Manufacturer Warranty  
Page 4 of 4  
Proj No. & WBS: \_\_\_\_\_  
\_\_\_\_\_

# Facility Planning & Control

## CMAR PRE-CONSTRUCTION CONFERENCE AGENDA

*As a minimum, the following items are to be covered in the CMAR Pre-Construction Conference. The Designer may, at his discretion, add additional items which he feels are important to this particular project.*

**1. The CMAR contractor shall furnish the following prior to his first payment:**

- a. Cost breakdown (Schedule of Values), shall be in standard Construction Specifications Institute format.
- b. List of prequalified prime subcontractors and lower tier sub-contractors recommended for project along with major suppliers.
- c. Information listed in Article 7, subparagraph 7.2.3 of the AIA A201 General Conditions as modified by Owner (RFQ Exhibit B).
- d. Construction Schedule(s) as defined in 3.10.2 of the AIA A201 General Conditions as modified by Owner (RFQ Exhibit B).

***No Construction Services payments to the CMAR contractor shall be processed until all required preconstruction submittals are received by FP&C in their proper format.***

**2. Roles of Individuals:**

- a. **Designer** – shall be solely responsible for the direction of the project. The Designer shall keep minutes of all meetings, including construction progress meetings, and distribute within 7 days. All instructions to the CMAR contractor shall come from the Designer. All decisions and directions shall be in writing. Verbal instructions shall be immediately confirmed in writing. The Designer and his principal consultants shall visit the project regularly according to the requirements of the Louisiana Capital Improvement Projects Procedure Manual for Design and Construction.

The Designer shall NOT assume the role of his principal consultants in site visits. Copies of Designer Site Visit Reports shall be sent to Facility Planning and Control (FP&C) and the User Agency on a weekly basis.

- b. **Facility Planning and Control** – The Designer shall receive instructions only from FP&C. Unless otherwise directed by FP&C in

writing, any and all user agency or required Program or design changes shall be approved by FP&C prior to any design or construction work being performed by the Designer or CMAR contractor.

- c. **User Agency** - Any and all requests for changes to the work shall be submitted through FP&C. The User Agency shall establish and review ground rules for construction activities while the CMAR contractor, subcontractors, and material suppliers are working on their premises.

If representatives of FP&C or the User Agency find any discrepancies believed to be contrary to the Contract Documents, the Designer shall be notified. If a possible discrepancy needs immediate attention, the individual discovering the discrepancy and the CMAR contractor's representative should call the Designer for immediate resolution. All such communications shall be confirmed by the Designer in writing.

- d. **CMAR contractor** - Work shall be performed in general accordance with the Contract Documents (not necessarily standard practices). Emergency action to protect life or property shall be taken immediately by the CMAR contractor's on-site superintendent. Less urgent action shall be resolved by telephone among the appropriate parties. Fire Marshal approved documents shall be accessible at all times at the project site, in accordance with Fire Marshal requirements. Approved documents from all other applicable regulatory agencies shall also be accessible at all times at the project site.

**3. Authorization Requests / Amendments:**

An Authorization Request manages changes in the Cost of the Work (increases or decreases) using either the Owner or CMAR contractor contingency included within the Total Contract.

All requests for a change in the Cost of the Work shall be submitted by the CMAR contractor to the Designer (complete with detailed

breakdowns / proper backup documentation) for review. If found to be complete and cost reasonable with sufficient contingency funds available within the contracted work, the Designer shall prepare and submit an Authorization Request to Facility Planning and Control with a recommendation of action required.

An Amendment to Contract manages increases or decreases in the Total Contract and/or Contract Time (with no adjustment to Owner or CMAR contractor contingency). If costs and/or time are found to be reasonable and sufficient project funds are available outside the contracted amount, FP&C shall prepare and issue an Amendment to Contract for signatures.

**An Authorization Request or Amendment to Contract must be approved by FP&C prior to any of the related additional work being performed.**

- a. Authorization Requests or Amendments to the Contract cannot be approved without the proper breakdown as required by the Contract Documents (The same requirements apply to Contract Time extension requests).
- b. Facility Planning and Control needs only the original and one (1) copy of backups.
- c. Authorization Requests and Amendments shall be rounded to the nearest whole dollar amount.
- d. User Agency direct payments to the CMAR contractor for Changes to the Work **are not allowed**.
- e. User Agency requested Changes to the Work are discouraged and are to be avoided unless approved by FP&C prior to any related work being performed.

#### **4. Invoice Procedure:**

- a. Invoices may be submitted in electronic format.
  - 1) Contractor shall submit one Certificate for Payment directly to the Designer. Facility Planning and Control – Application and Certification for Payment forms shall be used for submittal. Certificate for payment need **not** be notarized.
  - 2) After review, the Designer shall process the Certificate as promptly as possible, in any case within seven (7) days. If a

Certificate is held for any reason, written notice stating the reason for delay should be given the owner and the contractor. If a Certificate is changed for any reason, changes will be made to all copies.

- 3) Distribution of copies shall be as follows:
  - a) Designer forwards one Certificate for Payment directly to Facility Planning and Control with a transmittal letter/memo.
  - b) Designer forwards copy of transmittal letter and one (1) copy of Certificate to CMAR contractor. One (1) copy retained for Designer records. One (1) copy sent to User Agency.
- b. During construction, Designer's invoices shall be sent directly to Facility Planning & Control.
- c. If federal funds are involved, compliance with additional regulations is required including but not limited to:
  - Davis Bacon Act - Wage rate & payroll records.
  - Drug Free Workplace Act
  - Civil Rights EOP poster with name of EOP person shown.
- d. Stored Materials must be on site for payment to be made. Payment will not be made for materials stored in a bonded warehouse or elsewhere.
- e. An Original 45 Day Clear Lien and an Original Consent of Surety (AIA Form G707) is required prior to final payment to the CMAR contractor.

#### **5. Prior Approval:**

Only items as specified or prior approved in accordance with the Contract Documents will be incorporated into the project. Approval of shop drawings does not relieve CMAR contractor of complying with the Prior Approval clause.

#### **6. Testing Lab:**

- a. The Owner will engage and pay for the testing laboratory if required. If the CMAR contractor obtains the services of a testing laboratory, he will be responsible for all costs for that laboratory

- b. Designer should furnish Testing Lab with written notice of types and frequency of required tests. Set up procedure for Testing Lab notification.
- c. No off site testing unless called for in the Contract Documents.
- d. Facility Planning and Control will pay a minimum of standby time. CMAR contractor may be billed if not well controlled.
- e. Testing Lab invoices shall be submitted by hardcopy or in electronic format through the Designer, who in turn acknowledges their recognition of services submitted.

## 7. Project Sign

When a project sign is specified, select location.

## 8. Meetings:

Establish a time and place for the Monthly Meeting. Designer shall notify FP&C prior to and provide minutes of all meetings to all participants within 7 days.

## 9. Roofing:

Pre-roofing Conference - establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements. This conference should be held shortly after award of the roofing contract and a minimum of six (6) weeks prior to the anticipated start of roofing. Attendance by CMAR contractor, roofing subcontractor and manufacturer's representative is required. A letter from the manufacturer stating the roofer is an approved applicator and sample warranties shall be submitted at the Pre-roofing Conference, if not before.

- a. General Guidelines for Low Sloped Roofs
  - 1) Details in compliance with NRCA and Roof Manufacturer
  - 2) Concrete Decks are to be primed.
  - 3) Nailable Decks; Red Rosin sheet is required on wood decks.
  - 4) Fastening per manufacturer's requirements to comply with I-90 FM rating.
  - 5) Asphalt
    - a) Type IV asphalt shall be used for all modified bitumen mop-down systems

- b) Temperature at the point of application shall be the EVT temperature plus or minus 25 degrees.
- 6) Insulation
  - a) All wet insulation is to be rejected and removed from the site.
  - b) All insulation joints shall be staggered, including daily tie-ins.
- 7) Metal
  - a) Color Selection approved by FP&C.
  - b) Gravel guard - use minimal raised lip for areas where drainage is over the edge.
- 8) Drainage: Most guarantees prohibit water remaining on the roof more than 48 hours.
- 9) Roofing guarantees
  - a) No dollar limit. Guarantee system from the deck up, naming all products within the system.
  - b) No language about "no pay, no guarantee".
  - c) Warranty start date to be on or very near date of Acceptance of Building Contract. The roofing warranty required for his project must meet the requirements of FP&C. It is important that the roofing manufacturer and applicator are aware of this. An incomplete or incorrect warranty **will** delay acceptance.
  - d) AIA A133 Owner / CMAR contractor Agreement as modified by Owner (RFQ Exhibit A) Article 11, Section 11.20, the Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana shall be the exclusive venue and have sole jurisdiction in any action brought under this contract.
- 10) Manufacturer's specification to be used in support of Designer's specification. Manufacturer's requirements are a minimum, use Designer's specification if it exceeds.
- 11) CMAR contractor shall track and fully document adverse weather days including predicted rain percentage and submit detailed log with Certificates of Payment to Designer.

Roofing Pre-application Conference - verify readi-ness of the project structure, review assignments of Preliminary Conference, scan last minute details, changes or corrections and to

review the anticipated schedule of progress should be held within one (1) week of roofing application. Attendance by CMAR contractor, roofing subcontractor and superintendent (or foreman) and manufacturer's representative is required.

Representatives of the Designer and FP&C shall be visiting the site to make sure the roof is being installed per the manufacturers' requirements and the Contract Documents. If work is believed to be deficient and/or not in compliance, tests and corrective measures may be required to prove the roof is acceptable. Tests include Blow-Off Testing, etc.

Moisture Survey - When installation is complete, FP&C will arrange to have a moisture survey performed. Deficiencies will be noted, either on the roof with paint or on roof plan drawing or both. After these deficiencies are corrected, FP&C will arrange to have these areas resurveyed. If these deficiencies are found not to be corrected and additional survey time is required, then the cost of this time will be assessed against the CMAR contractor at a rate of \$150.00 per hour through a credit Authorization Request.

Designer: Please fill out "Roof Completion Information" form and submit it with the Recommendation of Acceptance. If the roofed section is new, a scaled drawing is also needed. Preferably, this drawing would be on AutoCAD in compliance with the layers specified in our "Instructions to Designers."

## **10. General Correspondence:**

- a. Project Number must be on all correspondence.
- b. CMAR contractor shall copy FP&C on any correspondence **if**:
  - 1) It involves a controversial issue.
  - 2) It relates to Designer responses to information requests that are not been furnished in a timely manner.

## **11. Miscellaneous Items to be Discussed as Necessary:**

- a. Shop drawings, samples, hardware, and color schedules. Shop drawings furnished to the User by the Designer are for record purposes only, not for approval. Approval is the sole responsibility of the Designer.

COLOR SELECTION: User shall approve all color selections, If User selection is not completed in a timely manner, the Designer, in consultation with FP&C, shall make the selections, which will be final.

- b. Establish the location and type of temporary facilities and utilities. Establish how payment for temporary utilities will be made and how costs will be tracked?
- c. Outages / Interruptions of Services. CMAR contractor shall request and coordinate, in writing, all outages / interruptions with the User. The amount of advance notice shall be determined by the User. Coordination of outages or interruptions is the responsibility of the CMAR contractor.
- d. CMAR contractor use/access to pertinent buildings and facilities.
- e. Location of staging area and/or fencing.
- f. Site and stored material security is the CMAR contractor's responsibility.
- g. Use of site, parking of vehicles, decals and/or permits for parking
- h. The User Agency shall have first refusal of salvaged materials. Where are they to be delivered? The CMAR contractor is responsible for the disposition of all other materials in accordance with laws and regulations.
- i. Safety and First Aid. This is the CMAR contractor's responsibility.
- j. Procedure for keeping Record Documents. The CMAR contractor shall record as-built information that varies from the contract documents, on (1) one set of prints, to be furnished to the Designer at completion of the job. As-builts are prepared by Designer, inclusive of Supplemental Drawings, the CMAR contractor, based on the as-built work and the required adjustments to the contract documents and changes to the work, and shall be submitted timely to Facility Planning and Control. Plans shall be marked "**AS-BUILT**".

As-built drawings submitted to FP&C shall consist of (2) two full size paper sets of Record Drawings (As-Built) prepared by the Designer. Also required are (2) two disks or flash drives of As-built drawings in AutoCAD (.dwg) and .pdf format, including electronic copies of the bid specifications and addenda. Acceptable As-builts are required prior to the Designer's final payment.

- k. Use of any Asbestos Containing materials is prohibited.
- l. Pictures or videos of existing conditions may be made.

- m. Near the end of the project the FP&C Project Manager will review the work to determine compliance with FP&C's ADA Non-Comprehensive Field Checklist. Any accessibility problems identified in this review shall be corrected before the project can be considered complete.

## **12. Pre-Closeout Conference**

When the project reaches 75 to 80% completion, the Designer will schedule a meeting with the CMAR contractor, FP&C and the User Agency to review the requirements and procedures for the Final Inspection and Acceptance.

## SCHEDULE OF VALUES

*The Contractor is to use the following format. The total Contract Cost is to be itemized in each Subsection listed (as applicable)*

| DIVISION 01 – GENERAL REQUIREMENTS                                                   | Quantity  | Cost  |
|--------------------------------------------------------------------------------------|-----------|-------|
| 01 00 00 General Requirements                                                        | _____     | _____ |
| 01 32 50 Record Drawings, Shop Drawings, Product Data, Samples and other submittals. | _____     | _____ |
|                                                                                      | TOTAL     | _____ |
| DIVISION 02 – EXISTING CONDITIONS                                                    |           |       |
| 02 30 00 Subsurface Investigation                                                    | _____     | _____ |
| 02 41 00 Demolition                                                                  | _____     | _____ |
|                                                                                      | TOTAL     | _____ |
| DIVISION 03 – CONCRETE                                                               |           |       |
| 03 01 00 Maintenance of Concrete                                                     | _____     | _____ |
| 03 11 00 Concrete Forming                                                            | _____     | _____ |
| 03 15 00 Concrete Accessories                                                        | _____     | _____ |
| 03 20 00 Concrete Reinforcing                                                        | _____     | _____ |
| 03 30 00 Cast-in-place Concrete                                                      | _____     | _____ |
| 03 40 00 Precast Concrete                                                            | _____     | _____ |
| 03 50 00 Cast Decks & Underlayment                                                   | TOTAL     | _____ |
| DIVISION 04 – MASONRY                                                                |           |       |
| 04 01 00 Maintenance of Masonry                                                      | _____     | _____ |
| 04 05 13 Masonry Mortaring                                                           | _____     | _____ |
| 04 05 19 Masonry Anchorage & Reinforcing                                             | _____     | _____ |
| 04 05 23 Masonry Accessories                                                         | _____     | _____ |
| 04 20 00 Unit Masonry                                                                | TOTAL     | _____ |
| DIVISION 05 – METALS                                                                 |           |       |
| 05 05 23 Metal Fastenings                                                            | _____     | _____ |
| 05 10 00 Structural Metal Framing                                                    | _____     | _____ |
| 05 20 00 Metal Joists                                                                | _____     | _____ |
| 05 30 00 Metal Decking                                                               | _____     | _____ |
| 05 50 00 Metal Fabrications                                                          | _____     | _____ |
| 05 58 00 Formed Metal Fabrications                                                   | TOTAL     | _____ |
| DIVISION 06 – WOOD, PLASTICS, & COMPOSITES                                           |           |       |
| 06 05 23 Fastening and Adhesives                                                     | _____     | _____ |
| 06 10 00 Rough Carpentry                                                             | _____     | _____ |
| 06 13 00 Heavy Timber                                                                | _____     | _____ |
| 06 17 00 Shop-fabricated Structural Wood                                             | _____     | _____ |
| 06 20 00 Finish Carpentry                                                            | SUB-TOTAL | _____ |

DISISION 06 – WOOD, PLASTICS, &  
COMPOSITES (CONTINUES)

|          |                        |       |       |
|----------|------------------------|-------|-------|
| 06 40 00 | Architectural Woodwork | _____ | _____ |
| 06 60 00 | Plastic Fabrications   | _____ | _____ |
| 06 80 00 | Composite Fabrications | _____ | _____ |
|          |                        | TOTAL | _____ |

DIVISION 07 – THERMAL AND MOISTURE  
PROTECTION

|          |                                         |       |       |
|----------|-----------------------------------------|-------|-------|
| 07 10 00 | Dampproofing and Waterproofing          | _____ | _____ |
| 07 18 00 | Traffic Coatings                        | _____ | _____ |
| 07 19 00 | Water Repellents                        | _____ | _____ |
| 07 21 00 | Thermal Insulation                      | _____ | _____ |
| 07 24 00 | Exterior Insulation & Finish Systems    | _____ | _____ |
| 07 25 00 | Weather Barriers                        | _____ | _____ |
| 07 31 00 | Shingles and Shakes                     | _____ | _____ |
| 07 32 00 | Roof Tiles                              | _____ | _____ |
| 07 40 00 | Roofing and Siding Panels               | _____ | _____ |
| 07 50 00 | Membrane Roofing                        | _____ | _____ |
| 07 60 00 | Flashing and Sheet Metal                | _____ | _____ |
| 07 61 00 | Sheet Metal Roofing                     | _____ | _____ |
| 07 70 00 | Roof & Wall Specialties and Accessories | _____ | _____ |
| 07 80 00 | Fire and Smoke Protection               | _____ | _____ |
| 07 90 00 | Joint Protection                        | _____ | _____ |
| 07 95 00 | Expansion Control                       | _____ | _____ |
|          |                                         | TOTAL | _____ |

DIVISION 08 – OPENINGS

|          |                                    |       |       |
|----------|------------------------------------|-------|-------|
| 08 11 00 | Metal Doors and Frames             | _____ | _____ |
| 08 14 00 | Wood Doors                         | _____ | _____ |
| 08 15 00 | Plastic Doors                      | _____ | _____ |
| 08 30 00 | Specialty Doors and Frames         | _____ | _____ |
| 08 41 00 | Entrances and Storefronts          | _____ | _____ |
| 08 44 00 | Curtain Wall and Glazed Assemblies | _____ | _____ |
| 08 51 00 | Metal Windows                      | _____ | _____ |
| 08 52 00 | Wood Windows                       | _____ | _____ |
| 08 53 00 | Plastic Windows                    | _____ | _____ |
| 08 56 00 | Special Function Windows           | _____ | _____ |
| 08 60 00 | Roof Windows and Skylights         | _____ | _____ |
| 08 70 00 | Hardware                           | _____ | _____ |
| 08 80 00 | Glazing                            | _____ | _____ |
| 08 90 00 | Louvers and Vents                  | _____ | _____ |
|          |                                    | TOTAL | _____ |

DIVISION 09 – FINISHES

|          |                                       |           |       |
|----------|---------------------------------------|-----------|-------|
| 09 22 00 | Supports for Plaster and Gypsum Board | _____     | _____ |
| 09 23 00 | Gypsum Plastering                     | _____     | _____ |
| 09 24 00 | Portland Cement Plastering            | _____     | _____ |
| 09 29 00 | Gypsum Board                          | _____     | _____ |
| 09 30 00 | Tiling                                | _____     | _____ |
|          |                                       | SUB-TOTAL | _____ |



## DIVISION 09 – FINISHES (CONTINUED)

|          |                     |       |       |
|----------|---------------------|-------|-------|
| 09 50 00 | Acoustical Ceilings | _____ | _____ |
| 09 54 00 | Specialty Ceilings  | _____ | _____ |
|          | Quantity            | _____ | _____ |
| 09 61 00 | Flooring Treatment  | _____ | _____ |
| 09 62 00 | Specialty Flooring  | _____ | _____ |
| 09 63 00 | Masonry Flooring    | _____ | _____ |
| 09 64 00 | Wood Flooring       | _____ | _____ |
| 09 65 00 | Resilient Flooring  | _____ | _____ |
| 09 66 00 | Terrazzo Flooring   | _____ | _____ |
| 09 68 00 | Carpeting           | _____ | _____ |
| 09 69 00 | Access Flooring     | _____ | _____ |
| 09 97 00 | Wall Finishes       | _____ | _____ |
| 09 91 00 | Painting            | _____ | _____ |
| 09 97 00 | Special Coatings    | _____ | _____ |
|          | TOTAL               | _____ | _____ |

## DIVISION 10 – SPECIALTIES

|          |                                       |       |       |
|----------|---------------------------------------|-------|-------|
| 10 11 00 | Visual Display Surfaces               | _____ | _____ |
| 10 14 00 | Signage                               | _____ | _____ |
| 10 21 00 | Compartments and Cubicles             | _____ | _____ |
| 10 22 00 | Partitions                            | _____ | _____ |
| 10 26 00 | Wall and Door Protection              | _____ | _____ |
| 10 28 00 | Toilet, Bath, and Laundry Accessories | _____ | _____ |
| 10 44 00 | Fire Protection Specialties           | _____ | _____ |
| 10 51 00 | Lockers                               | _____ | _____ |
| 10 56 00 | Storage Assemblies                    | _____ | _____ |
| 10 82 00 | Grilles and Screens                   | _____ | _____ |
|          | TOTAL                                 | _____ | _____ |

## DIVISION 11 – EQUIPMENT

|          |                                                  |       |       |
|----------|--------------------------------------------------|-------|-------|
| 11 15 00 | Security, Detention, and Banking Equipment       | _____ | _____ |
| 11 19 00 | Detention Equipment                              | _____ | _____ |
| 11 23 00 | Commercial Laundry and<br>Dry Cleaning Equipment | _____ | _____ |
| 11 26 00 | Unit Kitchens                                    | _____ | _____ |
| 11 27 00 | Photographic Processing Equipment                | _____ | _____ |
| 11 40 00 | Foodservice Equipment                            | _____ | _____ |
| 11 51 00 | Library Equipment                                | _____ | _____ |
| 11 52 00 | Audio-Visual Equipment                           | _____ | _____ |
| 11 53 00 | Laboratory Equipment                             | _____ | _____ |
| 11 61 00 | Theater and Stage Equipment                      | _____ | _____ |
| 11 65 00 | Athletic and Recreational Equipment              | _____ | _____ |
| 11 70 00 | Healthcare Equipment                             | _____ | _____ |
|          | TOTAL                                            | _____ | _____ |

## DIVISION 12 – FURNISHINGS

|          |                             |       |       |
|----------|-----------------------------|-------|-------|
| 12 20 00 | Window Treatments           | _____ | _____ |
| 12 30 00 | Casework                    | _____ | _____ |
| 12 40 00 | Furnishings and Accessories | _____ | _____ |
| 12 50 00 | Furniture                   | _____ | _____ |
|          | TOTAL                       | _____ | _____ |

DIVISION 13 – SPECIAL CONSTRUCTION

|          |                                  |       |       |
|----------|----------------------------------|-------|-------|
| 13 10 00 | Special Facility Components      | _____ | _____ |
| 13 34 00 | Fabricated Engineered Structures | _____ | _____ |
| 13 49 00 | Radiation Protection             | _____ | _____ |
|          | TOTAL                            | _____ | _____ |

DIVISION 14 – CONVEYING EQUIPMENT

|          |                             |       |       |
|----------|-----------------------------|-------|-------|
| 14 20 00 | Elevators                   | _____ | _____ |
| 14 30 00 | Escalators and Moving Walks | _____ | _____ |
| 14 40 00 | Lifts                       | _____ | _____ |
| 14 80 00 | Scaffolding                 | _____ | _____ |
|          | TOTAL                       | _____ | _____ |

DIVISION 21 – FIRE SUPPRESSION

|          |                                      |       |       |
|----------|--------------------------------------|-------|-------|
| 21 10 00 | Water-Based Fire-Suppression Systems |       |       |
|          | Piping                               | _____ | _____ |
| 21 20 00 | Fire-Extinguishing Systems           | _____ | _____ |
| 21 30 00 | Fire Pumps                           | _____ | _____ |
|          | TOTAL                                | _____ | _____ |

DIVISION 22 – PLUMBING

|          |                             |       |       |
|----------|-----------------------------|-------|-------|
| 22 07 00 | Plumbing Insulation         | _____ | _____ |
| 22 11 00 | Facility Water Distribution | _____ | _____ |
| 22 13 00 | Facility Sanitary Sewerage  | _____ | _____ |
| 22 14 00 | Facility Storm Drainage     | _____ | _____ |
| 22 30 00 | Plumbing Equipment          | _____ | _____ |
| 22 40 00 | Plumbing Fixtures           | _____ | _____ |
|          | TOTAL                       | _____ | _____ |

DIVISION 23 – HEATING, VENTILATING, & AIR-  
CONDITIONING

|          |                                          |       |       |
|----------|------------------------------------------|-------|-------|
| 23 05 93 | Testing, Adjusting, & Balancing for HVAC | _____ | _____ |
| 23 07 00 | HVAC Insulation                          | _____ | _____ |
| 23 09 00 | Instrumentation & Control for HVAC       | _____ | _____ |
| 23 13 00 | Facility Fuel-Storage Tanks              | _____ | _____ |
| 23 20 00 | HVAC Piping and Pumps                    | _____ | _____ |
| 23 30 00 | HVAC Air Distribution                    | _____ | _____ |
| 23 40 00 | HVAC Air Cleaning Devices                | _____ | _____ |
| 23 50 00 | Central Heating Equipment                | _____ | _____ |
| 23 60 00 | Central Cooling Equipment                | _____ | _____ |
| 23 70 00 | Central HVAC Equipment                   | _____ | _____ |
|          | TOTAL                                    | _____ | _____ |

DIVISION 26 – ELECTRICAL

|          |                                                             |       |       |
|----------|-------------------------------------------------------------|-------|-------|
| 26 09 00 | Instrumentation & Control for<br>Electrical Systems         | _____ | _____ |
| 26 10 00 | Medium-Voltage Electrical Distribution                      | _____ | _____ |
| 26 20 00 | Low-Voltage Electrical Transmission                         | _____ | _____ |
| 26 27 00 | Low-Voltage Distribution Equipment                          | _____ | _____ |
| 26 30 00 | Facility Electrical Power Generating<br>& Storage Equipment | _____ | _____ |
| 26 40 00 | Electrical and Cathodic Protection                          | _____ | _____ |
| 26 50 00 | Lighting                                                    | _____ | _____ |
|          | TOTAL                                                       | _____ | _____ |

DIVISION 27 – COMMUNICATIONS

|          |                                                    |       |       |
|----------|----------------------------------------------------|-------|-------|
| 27 10 00 | Structured Cabling                                 | _____ | _____ |
| 27 20 00 | Data Communications                                | _____ | _____ |
| 27 30 00 | Voice Communications                               | _____ | _____ |
| 27 40 00 | Audio-Video Communications                         | _____ | _____ |
| 27 50 00 | Distributed Communications &<br>Monitoring Systems | _____ | _____ |
|          |                                                    | TOTAL | _____ |

DIVISION 28 – ELECTRONIC SAFETY AND  
SECURITY

|          |                                                    |       |       |
|----------|----------------------------------------------------|-------|-------|
| 28 10 00 | Electronic Access Control &<br>Intrusion Detection | _____ | _____ |
| 28 20 00 | Electronic Surveillance                            | _____ | _____ |
| 28 30 00 | Electronic Detection and Alarm                     | _____ | _____ |
| 28 40 00 | Electronic Monitoring and Control                  | _____ | _____ |
|          |                                                    | TOTAL | _____ |

DIVISION 31 – EARTHWORK

|          |                                                   |       |       |
|----------|---------------------------------------------------|-------|-------|
| 31 10 00 | Site Clearing                                     | _____ | _____ |
| 31 20 00 | Earth Moving                                      | _____ | _____ |
| 31 31 00 | Soil Treatment                                    | _____ | _____ |
| 31 32 00 | Soil Stabilization                                | _____ | _____ |
| 31 40 00 | Shoring and Underpinning                          | _____ | _____ |
| 31 50 00 | Excavation Support and Protection                 | _____ | _____ |
| 31 60 00 | Special Foundations and Load-<br>Bearing Elements | _____ | _____ |
|          |                                                   | TOTAL | _____ |

DIVISION 32 – EXTERIOR IMPROVEMENTS

|          |                             |       |       |
|----------|-----------------------------|-------|-------|
| 32 10 00 | Bases, Ballasts, and Paving | _____ | _____ |
| 32 30 00 | Site Improvements           | _____ | _____ |
| 32 90 00 | Planting                    | _____ | _____ |
|          |                             | TOTAL | _____ |

DIVISION 33 – UTILITIES

|          |                                   |       |       |
|----------|-----------------------------------|-------|-------|
| 33 10 00 | Water Utilities                   | _____ | _____ |
| 33 30 00 | Sanitary Sewerage Utilities       | _____ | _____ |
| 33 40 00 | Storm Drainage Utilities          | _____ | _____ |
| 33 50 00 | Fuel Distribution Utilities       | _____ | _____ |
| 33 60 00 | Hydronic & Steam Energy Utilities | _____ | _____ |
| 33 70 00 | Electrical Utilities              | _____ | _____ |
| 33 80 00 | Communications Utilities          | _____ | _____ |
|          |                                   | TOTAL | _____ |

DIVISION 34 – TRANSPORTATION

|          |                |       |       |
|----------|----------------|-------|-------|
| 34 00 00 | Transportation | _____ | _____ |
|          |                | TOTAL | _____ |

DIVISION 35 – WATERWAY AND MARINE  
CONSTRUCTIONS

|          |                                  |       |       |
|----------|----------------------------------|-------|-------|
| 35 00 00 | Waterway and Marine construction | _____ | _____ |
|          |                                  | TOTAL | _____ |

DIVISION 40-43 – PROCESS EQUIPMENT

DIVISION 44 – POLLUTION CONTROL  
EQUIPMENT

|          |                                 |       |       |
|----------|---------------------------------|-------|-------|
| 44 40 00 | Water Treatment Equipment       | _____ | _____ |
| 44 41 00 | Packaged Water Treatment Plants | _____ | _____ |
| 44 50 00 | Solid Waste Control             | _____ | _____ |
|          |                                 | TOTAL | _____ |

DIVISION 45 – INDUSTRY SPECIFIC  
MANUFACTURING  
EQUIPMENT

DIVISION 48 – ELECTRICAL POWER  
GENERATION

|          |                                       |       |       |
|----------|---------------------------------------|-------|-------|
| 48 10 00 | Electrical Power Generation Equipment | _____ | _____ |
| 48 70 00 | Electrical Power Generation Testing   | _____ | _____ |
|          |                                       | TOTAL | _____ |

Facility Planning & Control  
**AUTHORIZATION REQUEST**

|                          |                      |  |
|--------------------------|----------------------|--|
| PROJECT NAME: _____      | AR NUMBER: _____     |  |
| PROJECT & WBS NO.: _____ | CONTRACT DATE: _____ |  |
| CONTRACTOR: _____        | SRM No: _____        |  |
| SITE CODE: _____         | STATE ID: _____      |  |

You are directed to make the following change(s) with costs to be deducted from Owner or Construction Manager Contingency as described herein. Attach SUMMARY, BREAKDOWN and/or UNIT PRICE BREAKDOWN forms as required and brief description of the change(s) below.

|                                                                                                                                                    |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Owner Contingency (Original Contract)                                                                                                              | _____  |
| Owner Contingency After Amendment #_____                                                                                                           | _____  |
| Changes by Previous Authorization Request(s) (AR)                                                                                                  | _____  |
| Current Adjusted Owner Contingency Balance                                                                                                         | \$0.00 |
| Owner Contingency is <input type="checkbox"/> unchanged <input type="checkbox"/> increased by <input type="checkbox"/> decreased by                | _____  |
| <b>New Owner Contingency Balance</b>                                                                                                               | \$0.00 |
|                                                                                                                                                    |        |
| Construction Manager Contingency (Original Contract)                                                                                               | _____  |
| Construction Manager Contingency After Amendment #_____                                                                                            | _____  |
| Changes by Previous Authorization Request(s) (AR)                                                                                                  | _____  |
| Current Adjusted Construction Manager Contingency Balance                                                                                          | \$0.00 |
| Construction Manager Contingency is <input type="checkbox"/> unchanged <input type="checkbox"/> increased by <input type="checkbox"/> decreased by | _____  |
| <b>New Construction Manager Contingency Balance</b>                                                                                                | \$0.00 |

**NOTE:** 1: No additional increase in money will be considered for a Change item once the Authorization Request has been executed.  
2: Time due to increase or decrease in work scope associated with this AR shall be processed via Amendment to Contract.

| RECOMMENDED            | ACCEPTED                 | APPROVED                    |
|------------------------|--------------------------|-----------------------------|
| Designer's Name: _____ | Contractor's Name: _____ | Project Manager: _____      |
| Address: _____         | Address: _____           | Facility Planning & Control |
| _____                  | _____                    |                             |
| Email Address: _____   | Email Address: _____     |                             |
| By: _____              | By: _____                | By: _____                   |
| Date: _____            | Date: _____              | Date: _____                 |
| _____                  | _____                    | _____                       |

**FACILITY PLANNING AND CONTROL USE ONLY**

| Classification       | Amount | Classification                              | Amount |
|----------------------|--------|---------------------------------------------|--------|
| Omission (Type "O")* | _____  | Miscellaneous (Type "M")                    | _____  |
| Error (Type "E")*    | _____  | Owner Requested (Type "R")                  | _____  |
|                      |        | Senior Manager/Assistant Director approval: | _____  |

**COMMENTS:**

## CMAA Contract Authorization Request

**SUMMARY**

State of Louisiana  
Facility Planning and Control  
State Project No. \_\_\_\_\_

Item No. \_\_\_\_\_  
RFI No. (or COR, CPR, etc.) \_\_\_\_\_  
Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

Description of Work: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Subcontractor Cost Breakdowns**

(See attached.)

| Subcontractor Name | No.   | A<br>Direct Cost | B<br>(Max 12%) | C<br>A+(A X B) |
|--------------------|-------|------------------|----------------|----------------|
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |
| _____              | _____ | _____            | _____%         | _____          |

**Subcontractor Direct Costs + Subcontractor OH&P**

(Sum column C)

**Construction Manager's Staffing Cost**

(Sum column C times rate)

\_\_\_\_\_%  
(Max: 4.66%)

**Construction Manager's Site Office Cost**

(Sum column C X rate)

\_\_\_\_\_%  
(Max: 0.39%)

**General Conditions**

(Sum column C X rate)

\_\_\_\_\_%  
(Max: 5%)

**Performance and Payment Bond**

(Sum column C X rate)

\_\_\_\_\_%  
(Max: 0.7%)

**Builder's Risk Insurance**

(Sum column C X rate)

\_\_\_\_\_%  
(Max: 5%)

**General Liability Insurance**

(Sum column C X rate)

\_\_\_\_\_%  
(Max: 0.79%)

**Construction Manager's Fee**

(Sum column C X rate - only applies when accrued changes exceed 4% of the cost of the work)

\_\_\_\_\_%  
(Max: 5%)

Amount will be ☐ unchanged ☐ increased by ☐ decreased by

(Sum of Change Order Subtotal and Performance and Payment Bond)

Days will be ☐ unchanged ☐ increased by ☐ decreased by

(Attach supporting data such as meteorological reports)

CMaR Contract Authorization Request  
**BREAKDOWN**

State of Louisiana

Facility Planning and Control

State Project No. \_\_\_\_\_

Breakdown No. \_\_\_\_\_

Item No. \_\_\_\_\_

RFI No. (or COR, CPR, etc.) \_\_\_\_\_

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

**Direct Cost of Work :**

**A. Labor**

Check here if explained on the Comment Sheet



Hourly Wage Rate

Hours

Total Cost

|   |       |                          |
|---|-------|--------------------------|
| 1 | _____ | <input type="checkbox"/> |
| 2 | _____ | <input type="checkbox"/> |
| 3 | _____ | <input type="checkbox"/> |
| 4 | _____ | <input type="checkbox"/> |
| 5 | _____ | <input type="checkbox"/> |
| 6 | _____ | <input type="checkbox"/> |
| 7 | _____ | <input type="checkbox"/> |

|                          |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Sub Total

Add Labor Burden @ \_\_\_\_\_ %

**LABOR TOTAL**

|       |
|-------|
| _____ |
|-------|

**B. Material**



Unit Price

Unit

Units

Total Cost

|   |       |                          |
|---|-------|--------------------------|
| 1 | _____ | <input type="checkbox"/> |
| 2 | _____ | <input type="checkbox"/> |
| 3 | _____ | <input type="checkbox"/> |
| 4 | _____ | <input type="checkbox"/> |
| 5 | _____ | <input type="checkbox"/> |
| 6 | _____ | <input type="checkbox"/> |
| 7 | _____ | <input type="checkbox"/> |

|                          |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

|       |       |       |
|-------|-------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Sub Total

Add Tax @ \_\_\_\_\_ %

**MATERIAL TOTAL**

|       |
|-------|
| _____ |
|-------|

**C. Equipment**



Unit Rate

Unit

Units

Total Cost

|   |       |                          |
|---|-------|--------------------------|
| 1 | _____ | <input type="checkbox"/> |
| 2 | _____ | <input type="checkbox"/> |
| 3 | _____ | <input type="checkbox"/> |
| 4 | _____ | <input type="checkbox"/> |
| 5 | _____ | <input type="checkbox"/> |
| 6 | _____ | <input type="checkbox"/> |
| 7 | _____ | <input type="checkbox"/> |

|                          |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

|       |       |       |
|-------|-------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Sub Total

Add Tax @ \_\_\_\_\_ %

**EQUIPMENT TOTAL**

|       |
|-------|
| _____ |
|-------|

**TOTAL DIRECT COST FOR THIS BREAKDOWN:**

|       |
|-------|
| _____ |
|-------|

(Sum A, B & C)

CMaR Contract Authorization Request  
**BREAKDOWN COMMENT SHEET**

|                               |                             |       |
|-------------------------------|-----------------------------|-------|
| State of Louisiana            | Breakdown No.               | _____ |
| Facility Planning and Control | Item No.                    | _____ |
| State Project No. _____       | RFI No. (or COR, CPR, etc.) | _____ |
|                               | Date:                       | _____ |

Project Name: \_\_\_\_\_

Contractor/Subcontractor Name: \_\_\_\_\_

**A. Labor**

No. (From BREAKDOWN Sheet)

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**B. Material**

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**C. Equipment**

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |



CMAr Contract Authorization Request

**UNIT PRICE BREAKDOWN**

State of Louisiana

Facility Planning and Control

State Project No. \_\_\_\_\_

Breakdown No. \_\_\_\_\_

Item No. \_\_\_\_\_

RFI No. (or COR, CPR, etc.) \_\_\_\_\_

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

**Unit Price Tabulation**

(Unit prices must be included in the bid or clearly defined in a standard, industry recognized pricing reference. The pricing reference shall be identified herein.)

| Unit Price Description | Reference* | Unit Price | Units | Total |
|------------------------|------------|------------|-------|-------|
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |
| _____                  | _____      | _____      | _____ | _____ |

\* Reference Legend: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Unit Price Total:

(Sum Total column)

**State of Louisiana**  
**Division of Administration**  
**Facility Planning and Control**  
**Instructions for Authorization Request Back Up Forms**

The General Conditions of the Contract for Construction, AIA Document A201, 2017 Edition, and the Supplementary Conditions provide for changes in the contract in the form of change orders. The costs of such changes must be carefully, clearly and accurately documented. Facility Planning & Control has prepared a set of forms to be used to provide this documentation in a consistent format that is in accordance with the Contract Documents.

Authorization Requests will typically contain one or more items of work. Each item of work will typically include work by the one or more subcontractors and/or sub-subcontractors. The documentation begins with a breakdown of the work of the subcontractor and each sub-subcontractor. This is prepared using the form entitled "BREAKDOWN." One form for each subcontractor and sub-subcontractor. Each breakdown will be summarized on the form entitled "SUMMARY." Each item of work will, in turn, be summarized on the Authorization Request itself. This should be on the face of the Authorization Request.

The forms are available as a Microsoft Excel worksheet for ease of preparation, with formulas established for mark-ups and other basic mathematical operations.

These forms are to be used as provided. Any alteration to the forms may cause the change order to be rejected.

**GENERAL:** (Refer to Article 7 of the Supplementary and General Conditions)

**Forms** - There are five forms to be used for all Facility Planning and Control change orders: CHANGE ORDER form, SUMMARY, BREAKDOWN, BREAKDOWN COMMENT SHEET and UNIT PRICE BREAKDOWN. The CHANGE ORDER form is the highest level and is the official, signed document. A CHANGE ORDER form may include one or more items of work, each of which is backed up by a SUMMARY. Each SUMMARY will be backed up with one or more BREAKDOWNS. Any unusual rates, unit costs or quantities may be explained on the COMMENT SHEET. It's simple. The BREAKDOWN form must be used for the general contractor and any subcontractor or sub-subcontractor, at any level, that is to get OH&P. Use as many as needed.

**Unit Pricing** - Labor, material and equipment breakdown is the standard method of pricing Authorization Requests for Facility Planning and Control. However, unit pricing may be considered in some circumstances if the unit prices are clearly established such as by unit prices that were included in the bid. These prices may also be derived from a construction industry standard reference such as R.S. Means. If unit prices were included in the bid proposal they are acceptable for pricing Authorization Request work and, in fact, must be used for any work that is included in the Authorization for which they were established. The UNIT PRICE BREAKDOWN is provided for this purpose.

**AUTHORIZATION REQUEST:**

**Project identification information:** Complete as required. The Site Code, State ID and CFMS / SRM No(s). (contract numbers) can be obtained from the FP&C Project Manager.

**Description:** This will include a list of each attached SUMMARY that makes up this Authorization Request and a brief statement of the work included in each.

**New Contract Sum:** Calculate the new contract amount using the original contract amount, previous Authorization Requests and the new Authorization Request. Select the appropriate word for increase, decrease or unchanged, and delete the terms that don't apply.

**RECOMMENDED:** Show the Designer's name and address, sign on the line indicated as "By:" and date on the indicated line.

**ACCEPTED:** Show the Contractor's name and address, sign on the line indicated as "By:" and date on the indicated line.

**APPROVED:** For approval by FP&C.

## **SUMMARY:** (Refer to Article 7 of the Supplementary and General Conditions)

**Item No.:** Show the Item number as it will appear on the Authorization Request Form. Note: This may be one of several items included in one Authorization Request form.

**RFI No.:** Show the number of the request for information. This may be known by another name such as ARP (Authorization Request Proposal) CPR (Change Proposal Request,) etc.

**Project No., WBS No., Date, Project Name.** Complete as appropriate.

**Contractor:** Name of General Contractor.

**Description of Work:** Give a brief description of the work included in this **Item**.

**General Contractor Direct Costs:** Show the total General Contractor Cost from the BREAKDOWN and show the Breakdown No. in the space provided.

**General Contractor Total Cost:** Show the total General Contractor Cost plus the General Contractor's overhead and profit. The overhead and profit shall not exceed 8% of the Direct Cost.

**Subcontractor Cost Breakdowns:** List each subcontractor, Breakdown No. and Total Direct Cost (in column "A") from the attached BREAKDOWN sheets. Show the subcontractor's overhead and profit percentage in column "B" and show the calculated total of the direct cost plus the percentage of the direct cost in column "C." If the electronic version of the form is being used, column "C" will be automatically calculated. The overhead and profit shall not exceed 8% of the Total Direct Cost.

**Subcontractor Direct Costs Total:** Sum of column "A." This will be used to calculate the General Contractor's overhead and profit on the subcontractors' work. If the electronic version is being used, this will be an automatic calculation.

**Subcontractor Direct Costs + Subcontractor OH&P:** Sum of column "C." This represents the total amount that subcontractors will be paid. Automatic calculation.

**Indirect Costs -** Enter percentage and calculate the amount for the indirect cost.

**Construction Manager Fee (only applies when accrued changes exceed 4% of the cost of the work) -** Enter percentage and calculate the amount for the fee.

**Amount will be (increased) (decreased) (unchanged) by:** Add/calculate total Authorization Request amount. Indicate "increase," "decrease" or "unchanged", and delete the terms that don't apply.

**Days will be (increased) (decreased) (unchanged) by:** Show the number of days to be added or deleted from the contract, if any, due to changes in scope, adverse weather, unusual delays or other factors, **only** if it is proven the critical path is affected. Note that a change in scope does not necessarily indicate a change in time. Indicate "increased," "decreased" or "unchanged", and delete the terms that don't apply.

## **BREAKDOWN:**

**Item No.** Show the Item number as it will appear on the Authorization Request Form and the SUMMARY. Note: This may be one of several items included in one CHANGE ORDER form.

**RFI No.:** Show the number of the request for information. This may be known by another name such as ARP (Authorization Request Proposal), CPR (Change Proposal Request), etc.

**Project No., WBS No., Date, Project Name.** Complete as appropriate.

**Subcontractor:** Name of Subcontractor or Sub-subcontractor.

**Direct Cost of Work:**

**Check here if explained on the Comment Sheet:** If rates, unit costs or quantities may appear unreasonable compared to standard costs or quantities the reasons may be explained on the attached comment sheet and the box checked to indicate that there is an explanation.

**A. Labor:** Include the “wages paid” hourly direct labor and/or foreman necessary to perform the required change. “Wages paid” is the amount actually paid the employee, not the fully burdened charge rate used in the bid, etc. Supervisory personnel in district or home office shall not be included. Do not include the project superintendent, except as permitted by Section 7.2 of Supplementary Conditions. Supervisory personnel on the job-site, but with broad supervisory responsibility shall not be included as Direct Labor, except as permitted by Section 7.2 of Supplementary Conditions. Typically there will be only one superintendent on the job and his/her time shall not be included, except as permitted by Section 7.2 of Supplementary Conditions. Typically all other employees are eligible for inclusion. List by job title each person employed on the work, his/her hourly rate, the number hours work and the extended Total Cost. Do not list crews unless the rates for them are readily available in standard cost estimating references such as R. S. Means. Add the labor burden that was provided at the Pre-Construction conference and in compliance with the Contract Documents, and total the amounts in LABOR TOTAL.

**B. Material:** Include the acquisition cost of all materials directly required to perform the required change. List each material used in the work, the price per unit, name of the unit, the number of units used and the extended Total Cost. Add the tax rate and tax and total the amounts in MATERIAL TOTAL.

**C. Equipment:** Include the rental cost of equipment items necessary to perform the change. For company-owned equipment items, include documentation of internal rental rates submitted at the pre-construction conference. Charges for small tools, and craft specific tools are not allowed. List each piece of equipment used in the work, the rate by units of time (hour, day, week, etc.,) number of units of time the piece was in service on the work and the extended total cost. Add the tax rate, calculate the tax and total the amounts in EQUIPMENT TOTAL.

**TOTAL DIRECT COST FOR THIS BREAKDOWN:** Total of A. Labor, B. Material and C. Equipment. This is the amount that will be carried forward to the SUMMARY Sheet. This amount does **NOT** include Overhead and Profit. This will be added on the SUMMARY Sheet.

## COMMENTS SHEET:

The COMMENTS SHEET uses the same heading as the SUMMARY and BREAKDOWN.

The COMMENTS SHEET includes three sections, one each for A. Labor, B. Materials and C. Equipment. These correspond to the sections in the BREAKDOWN. Each comment should be entered in the section to which it corresponds on the BREAKDOWN and numbered to correspond to the appropriate line. Comments are to used only to explain unusual rates, costs or quantities.

## UNIT PRICE BREAKDOWN:

The UNIT PRICE BREAKDOWN uses the same heading as the BREAKDOWN.

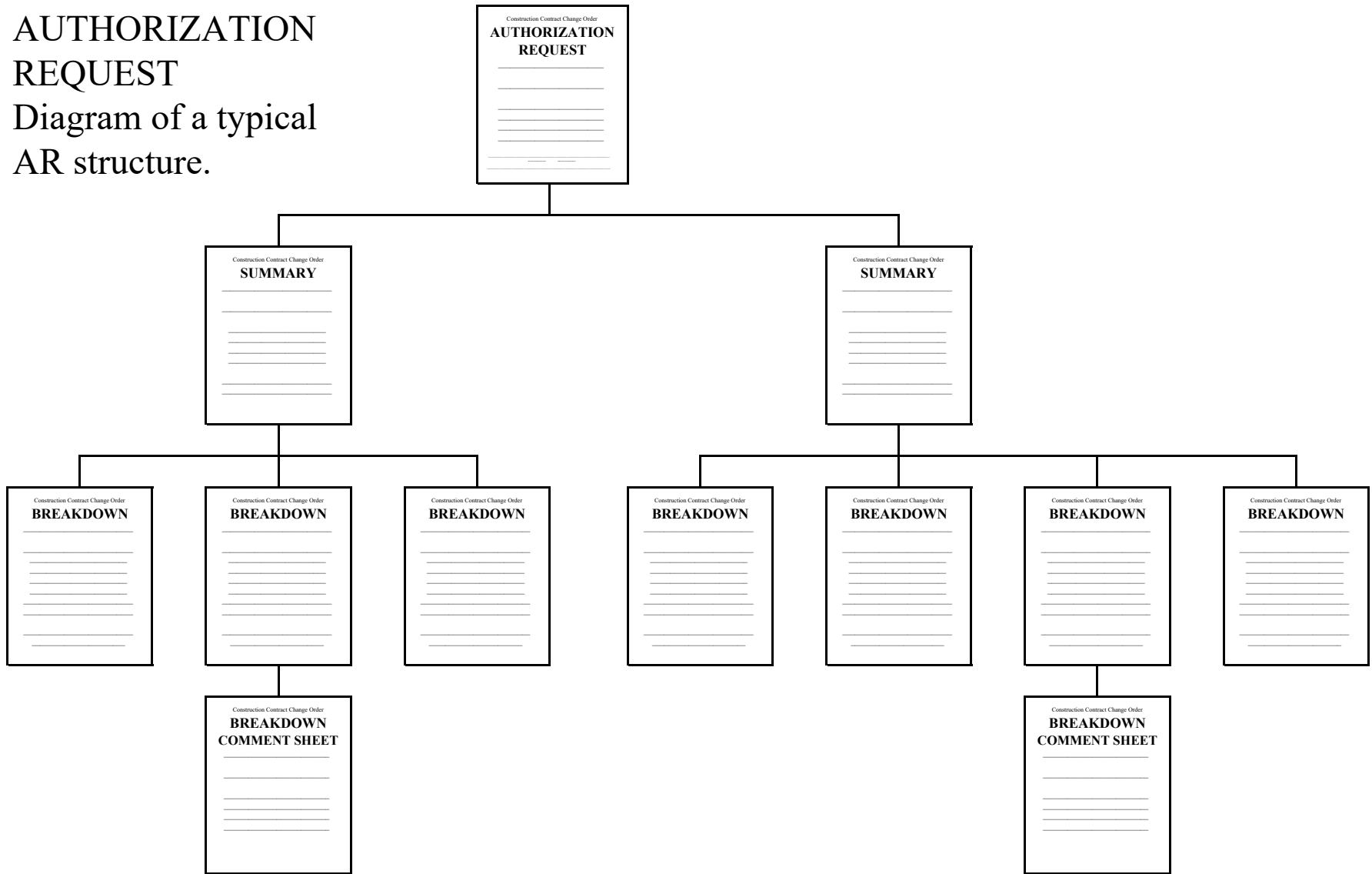
The UNIT PRICE BREAKDOWN is similar to the BREAKDOWN.

**Unit Price Tabulation:** Each unit price is listed along with its corresponding price and the number of units used in the work. The price and number of units are multiplied to provide the total cost of each unit price item. The pricing reference, such as the bid form for the project or a construction industry standard reference, must be cited for each unit price. This may be more fully described in "Reference Legend,"

**Unit Price Total:** Sum the unit prices to obtain the total cost for unit prices.

# AUTHORIZATION REQUEST

Diagram of a typical  
AR structure.



❖ NOT FOR RECORDATION PURPOSES ❖

## Facility Planning & Control **PARTIAL OCCUPANCY**

PROJECT NAME:

PROJECT LOCATION:

PROJECT / PART NUMBER:

CFMS / SRM No.

WBS NUMBER:

CONTRACTOR:

USER AGENCY:

The below described portion of subject project is, to the best of my knowledge and belief, complete to a point where the User desires to use in according with the Contract Documents.

DATE OCCUPIED: \_\_\_\_\_ .

WARRANTY items covered by Occupancy:

|                                        |               |
|----------------------------------------|---------------|
| _____<br>Designer                      | _____<br>Date |
| _____<br>Contractor                    | _____<br>Date |
| _____<br>Facility Planning and Control | _____<br>Date |

Punch List: Attached ☐

None ☐

c: User Agency, ORM

❖ NOT FOR RECORDATION PURPOSES ❖

❖ NOT FOR RECORDATION PURPOSES ❖

Facility Planning & Control  
**RECOMMENDATION OF ACCEPTANCE**

TO: FACILITY PLANNING AND CONTROL  
P.O. Box 94095  
Baton Rouge, LA 70804-9095

FROM: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
*Design Firm Name and Address*

DATE: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_ WBS No. \_\_\_\_\_

SITE CODE: \_\_\_\_\_ STATE ID: \_\_\_\_\_ CFMS/SRM #: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_  
\_\_\_\_\_

ORIGINAL CONTRACT AMOUNT: \$ \_\_\_\_\_

FINAL CONTRACT AMOUNT: \$ \_\_\_\_\_

FINAL BUILDING AREA (SQ. FEET): \_\_\_\_\_

I certify that, to the best of my knowledge and belief, this project is substantially complete in accordance with the Plans and Specifications to the point where it can be used for the purpose which was intended. It is recommended that it be accepted.

DATE OF ACCEPTANCE: \_\_\_\_\_

CONTRACT DATE OF COMPLETION: \_\_\_\_\_

NUMBER OF DAYS (OVERRUN) (UNDERRUN) (As of Acceptance Date) \_\_\_\_\_

LIQUIDATED DAMAGES PER DAY STIPULATED IN CONTRACT \$ \_\_\_\_\_

VALUE OF PUNCH LIST \$ \_\_\_\_\_

Was part of project occupied prior to Acceptance? ☐ No ☐ Yes, see attached Partial Occupancy Forms

ADA Certificate of Compliance Required? ☐ No ☐ Yes, see attached form.

La. Building Code Certificate of Compliance Required? ☐ No ☐ Yes, see attached form.

ROOF GUAR-MANUF: \_\_\_\_\_ START DATE: \_\_\_\_\_ END DATE: \_\_\_\_\_

ROOFER: \_\_\_\_\_ START DATE: \_\_\_\_\_ END DATE: \_\_\_\_\_

Signed: \_\_\_\_\_  
DESIGNER

**FOR USE OF PROJECT MANAGER:**

Signed: \_\_\_\_\_  
PROJECT MANAGER

c: User Agency

❖ NOT FOR RECORDATION PURPOSES ❖

**CERTIFICATE OF COMPLIANCE**  
with  
**Americans with Disabilities Act and Architectural Barriers Act**  
**Accessibility Guidelines**

TO: STATE OF LOUISIANA  
DIVISION OF ADMINISTRATION  
FACILITY PLANNING AND CONTROL  
P.O. Box 94095  
Baton Rouge, LA 70804-9095

FROM: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
*Design Firm Name and Address*

PROJECT NAME: \_\_\_\_\_

PROJECT No.: \_\_\_\_\_

WBS No.: \_\_\_\_\_

SITE CODE: \_\_\_\_\_ STATE ID: \_\_\_\_\_

DATE OF ACCEPTANCE: \_\_\_\_\_

I, \_\_\_\_\_ certify that, to the best of my knowledge and belief, this project has been constructed in compliance with the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines as reviewed by the fire marshal.

\_\_\_\_\_  
*Designer Signature* Date: \_\_\_\_\_

**State of Louisiana**  
**DIVISION OF ADMINISTRATION**  
**Facility Planning and Control**

**CERTIFICATE OF COMPLIANCE**  
with



# Louisiana Building Code for State Owned Buildings

TO: STATE OF LOUISIANA  
DIVISION OF ADMINISTRATION  
FACILITY PLANNING AND CONTROL  
P.O. Box 94095  
Baton Rouge, LA 70804-9095

FROM: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
*Design Firm or Owner/User Name and Address*

PROJECT NAME: \_\_\_\_\_

PROJECT No.: \_\_\_\_\_

WBS No.: \_\_\_\_\_

SITE CODE: \_\_\_\_\_ STATE ID: \_\_\_\_\_

DATE OF ACCEPTANCE: \_\_\_\_\_

I, \_\_\_\_\_ certify that, to the best of my knowledge and belief,  
this project has been constructed in compliance with the construction documents determined to be satisfactory  
by the State of Louisiana, Division of Administration, Office of Facility Planning and Control.

\_\_\_\_\_  
*(Signature of Designer or Owner/User)* Date: \_\_\_\_\_

\_\_\_\_\_  
**Name of Project**

\_\_\_\_\_  
**Project No.**

**STATE OF** \_\_\_\_\_

**PARISH OF** \_\_\_\_\_

**ATTESTATIONS AFFIDAVIT**

**Before me**, the undersigned notary public, duly commissioned and qualified in and for the parish and state aforesaid, personally came and appeared Affiant, who after being duly sworn, attested as follows:

**LA. R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS**

A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

(a) Public bribery (R.S. 14:118)

(c) Extortion (R.S. 14:66)

(b) Corrupt influencing (R.S. 14:120)

(d) Money laundering (R.S. 14:230)

B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

(a) Theft (R.S. 14:67)

(f) Bank fraud (R.S. 14:71.1)

(b) Identity Theft (R.S. 14:67.16)

(g) Forgery (R.S. 14:72)

(c) Theft of a business record  
(R.S.14:67.20)

(h) Contractors; misapplication of  
payments (R.S. 14:202)

(d) False accounting (R.S. 14:70)

(i) Malfeasance in office (R.S. 14:134)

(e) Issuing worthless checks  
(R.S. 14:71)

**LA. R.S. 38:2212.10 Verification of Employees**

A. At the time of bidding, Appearer is registered and participates in a status verification system to verify that all new hires in the state of Louisiana are legal citizens of the United States or are legal aliens.

B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.

C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

---

**Name of Project**

---

**Project No.**

**LA. R.S. 23:1726(B) Certification Regarding Unpaid Workers Compensation Insurance**

- A. R.S. 23:1726 prohibits any entity against whom an assessment under Part X of Chapter 11 of Title 23 of the Louisiana Revised Statutes of 1950 (Alternative Collection Procedures & Assessments) is in effect, and whose right to appeal that assessment is exhausted, from submitting a bid or proposal for or obtaining any contract pursuant to Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950 and Chapters 16 and 17 of Title 39 of the Louisiana Revised Statutes of 1950.
- B. By signing this bid /proposal, Affiant certifies that no such assessment is in effect against the bidding / proposing entity.

---

**NAME OF BIDDER**

---

**NAME OF AUTHORIZED SIGNATORY OF BIDDER**

---

**DATE**

---

**TITLE OF AUTHORIZED SIGNATORY OF BIDDER**

---

**SIGNATURE OF AUTHORIZED  
SIGNATORY OF BIDDER/AFFIANT**

**Sworn to and subscribed** before me by Affiant on the \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

---

Notary Public

## **SECTION 00 0018 – TAX EXEMPT STATUS**

### **PART 1 – GENERAL**

#### **1.01 SUMMARY**

- A. The project is to be exempt from sales and use taxes imposed by any taxing authority. The successful contractor / subcontractors will be required to submit the appropriate tax exemption form R-85012-T (Public Projects Contractor / Subcontractor: Sales Tax Certification and Exemption Application – Louisiana Revised Statute 47:305.7(A)(1)(b)) to the Louisiana Department of Revenue for each contract / subcontract associated with the work.

**END OF SECTION**



**Public Projects Contractor/Subcontractor**  
*Sales Tax Certification and Exemption Application*  
*Louisiana Revised Statute 47:305.7(A)(1)(b)*

**For questions about this form, please contact:**  
 Louisiana Department of Revenue  
 Taxpayer Compliance - SES Division  
 Phone: (855) 307-3893  
 Email: [LDRSales.ExemptionApplications@la.gov](mailto:LDRSales.ExemptionApplications@la.gov)

This form is for use by contractors and subcontractors when applying for certification and exemption from the collection of sales tax in accordance with La. R.S. 47:305.7(A)(1)(b).

Please complete the application below and return it via email to [LDRSales.ExemptionApplications@la.gov](mailto:LDRSales.ExemptionApplications@la.gov) along with a copy of the executed contract.

| Applicant Information |                |                              |     |
|-----------------------|----------------|------------------------------|-----|
| Contractor Legal Name |                | LDR Sales Tax Account Number |     |
| Contractor Trade Name |                |                              |     |
| Physical Address      | City           | State                        | ZIP |
| Mailing Address       | City           | State                        | ZIP |
| Contact Person        | Contact Number |                              |     |
| Email Address         |                |                              |     |

| Public Entity Information |                                                     |
|---------------------------|-----------------------------------------------------|
| Public Entity             | LDR Sales Tax Account Number <i>(if applicable)</i> |

| Contract Information |                                             |                                       |
|----------------------|---------------------------------------------|---------------------------------------|
| Contract Number      | Contract Beginning Date <i>(mm/dd/yyyy)</i> | Contract End Date <i>(mm/dd/yyyy)</i> |
| Contract Description |                                             |                                       |

**Please select the legal status of the public entity listed above:**

- |                                                                          |                                                               |
|--------------------------------------------------------------------------|---------------------------------------------------------------|
| <input type="checkbox"/> State agency, board, or commission              | <input type="checkbox"/> Parish school board or public school |
| <input type="checkbox"/> Municipal government or instrumentality thereof | <input type="checkbox"/> Law enforcement district             |
| <input type="checkbox"/> Public charter school (La. R.S. 17:3971-4001)   | <input type="checkbox"/> Waterworks district                  |
| <input type="checkbox"/> Hospital service district                       | <input type="checkbox"/> Parish and municipal libraries       |
| <input type="checkbox"/> Public housing authority                        | <input type="checkbox"/> Other _____                          |
| <input type="checkbox"/> Parish government or instrumentality thereof    |                                                               |

Under the penalty of perjury, I declare that I am authorized to sign this application on behalf of the above named contractor, and that I have examined this application, and to the best of my knowledge, it is true, correct, and complete.

|                            |                          |
|----------------------------|--------------------------|
| Name <i>(Please print)</i> | Title                    |
| Signature                  | Date <i>(mm/dd/yyyy)</i> |

A copy of the contract with all parties' signatures must be attached to the application. Failure to provide a copy of the contract will result in delays in the evaluation process.

## SECTION 01 1000 - SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.01 PROJECT INFORMATION

- A. Project Name & Location: New Jetson Center for Youth, Baker, LA, 70714
- B. Owner Information: State of Louisiana/DOA, Facility Planning & Control, P.O. Box 94095, Baton Rouge, LA 70804, Ph. 225-342-0820.
- C. Umbrella Agency Information: Office of Juvenile Justice, 7919 Independence Blvd., Baton Rouge, LA 70806, Ph. 225-287-7900.
- D. User Agency Information: OJJ Jetson Center for Youth, 15200 Scenic Hwy, Baker, LA 70814.
- E. Architect Information: Grace Design Studios LLC, 501 Government Street, Suite 200, Baton Rouge, LA 70802 - Ph. 225-338-5569.

#### 1.02 PROJECT DESCRIPTION

- A. The work consists of a new construction stand-alone juvenile detention facility campus. Project includes new buildings that house administration, education spaces, food service, gymnasium, medica, housing units and maintenance shops.
  - 1. The scope of civil work includes some earthwork, surface drainage, demolition of existing entry asphalt parking and drive areas, construction of new asphalt paving and drives and all the necessary installations of and connections to infrastructure outlined in the drawings and specifications including but not limited to installation of exterior paving, as outlined in contract documents. Other special site work includes installation of security perimeter fencing and lighting.
  - 2. Building construction of a new main building consists of a tilt wall and CMU structure supplemented by some structural steel, with a TPO roofing system. Exterior walls insulated tilt wall construction with interior fully grouted CMU block walls on a slab on grade foundation. Ceilings are suspended acoustic lay-in with hold down clips, and impact gypsum board security ceilings with metal security mesh above, as indicated in contract documents. Doors, windows, and frames will be hollow metal, grout filled, security type as indicated in drawings and specifications.
  - 3. The scope of mechanical work includes installation of ductless HVAC system as indicated on plans and specifications.
  - 4. The scope of electrical includes interior and exterior lighting and electrical supply as indicated in contract documents.
  - 5. The scope of security surveillance system includes the installation of control panels and cameras, and conduit runs.
  - 6. Work in Secure Areas: Work shall be performed within confines of secure areas. Work within secure areas shall be coordinated with the Owner, User Agency and Architect and shall be performed in accordance with User Agency's work day and shall not compromise security of the premises. All construction staff shall sign in and wear badges at all times while on the construction site. All tools and deliveries will be checked per User Agency's policy.

#### 1.03 EXAMINATION OF SITE

- A. Examination of Documents and Site: Contractor shall carefully examine Documents and Construction Site to obtain first-hand knowledge of scope and the conditions of the Work. The Contractor, by signing a Contract to perform the Work, represents and warrants that he has examined Drawings, Specifications and site of the Work and from his own investigation has satisfied himself as to scope, accessibility, nature and location of Work, character of equipment and other facilities needed for performance of work, character and extent of work to be performed, local availability, practices, and jurisdiction and other circumstances that affect performance of work. Contractor shall make sufficient investigation to ascertain that existing conditions are as represented on the Drawings and that the final results can be achieved as shown on the Drawings. No additional compensation will be allowed by the Owner for failure of

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Contractor to fully inform himself as to conditions affecting work. Dimensions and conditions of existing buildings shown on the Drawings are taken from original construction documents and may not represent actual conditions, and should be assumed to be approximate. The Contractor shall verify ALL existing dimensions and conditions, which would affect new work or renovations before proceeding with actual construction. Contractor will not be entitled to additional compensation if existing dimensions or conditions vary from that shown on the Contract Documents.

- B. Contractor's Representation: By executing the Contract, the Contractor represents that he has:
1. Visited the site;
  2. Made due allowances for difficulties and contingencies to be encountered, including, but not limited to environmental restrictions, if any.
  3. Compared Contract Documents with work in place.
  4. Informed himself of existing conditions; and,
  5. Notified the Architect of ambiguities, inconsistencies, and errors discovered in the Contract Documents, or between the Contract Documents and existing conditions.
  6. Responsibility: Failure to visit the site and perform attendant responsibilities listed above shall not relieve the Contractor or any Subcontractor from their obligations, and no extra payment will be authorized for work related to conditions which can be determined by examination of the site and the Contract Documents.

#### **1.04 PROTECTION**

- A. Protection: The Contractor shall take all reasonable precautions to protect existing property, systems and equipment. At completion of Work, all areas of the site damaged or otherwise adversely affected by the work under this Contract shall be repaired, replaced, or otherwise returned to their original conditions without cost to the Owner.

**END OF SECTION**

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## SECTION 01 2500 - SUBSTITUTION PROCEDURES

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
  - 1. Substitutions for Convenience (as defined in this Section): Will only be considered in the Bidding Phase only in accordance with the Instructions to Bidders. Substitutions for convenience must be submitted electronically via Centerline.co.
- B. Related Requirements:
  - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
  - 2. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

#### 1.03 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
  - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

#### 1.04 ACTION SUBMITTALS

- A. Substitution Requests: Submit electronic copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form (During Construction): Submit electronically via Centerline.co
  - 2. Substitution Request Form (Bidding Phase): Submit electronically via Project Trek.com. Submit during the bidding phase for consideration of substitutions prior to submittal of bids in accordance with the Instructions to Bidders.
  - 3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.
    - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.



- h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
  - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
  - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
4. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation. Within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

## **1.05 QUALITY ASSURANCE**

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

## **1.06 PROCEDURES**

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

## **PART 2 PRODUCTS**

### **2.01 SUBSTITUTIONS**

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Requested substitution provides sustainable design characteristics that specified product provided.
    - c. Substitution request is fully documented and properly submitted.
    - d. Requested substitution will not adversely affect Contractor's construction schedule.
    - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - f. Requested substitution is compatible with other portions of the Work.
    - g. Requested substitution has been coordinated with other portions of the Work.
    - h. Requested substitution provides specified warranty.

- i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Submit requests for substitution for convenience electronically via Centerline.co
  - 1. General: Architect will consider requests for substitution if received within 7 working days of the bid opening date, as per Instructions to Bidders. Requests received after that time will not be considered by Architect.
  - 2. Conditions for Consideration: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require extensive revisions to the Contract Documents.
    - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - d. Substitution request is fully documented and properly submitted.
    - e. Requested substitution will not adversely affect Contractor's construction schedule.
    - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - g. Requested substitution is compatible with other portions of the Work.
    - h. Requested substitution has been coordinated with other portions of the Work.
    - i. Requested substitution provides specified warranty.
    - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 25 00**

## SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
  - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

#### 1.03 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, via Centerline.co

#### 1.04 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    - e. Quotation Form: Provide information on State Change Order/Authorization Request Forms, an example is included as part of these Specifications.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.
  - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  - 6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

7. Proposal Request Form: Provide information via Centerline.co on State Change Order/Authorization Request Forms, an example is included as part of these Specifications.

#### **1.05 CHANGE ORDER PROCEDURES**

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order/Authorization Request for signatures of Owner and Contractor on State Change Order/Authorization Request Form, an example is included as part of these Specifications.

#### **1.06 CONSTRUCTION CHANGE DIRECTIVE**

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 26 00**

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## SECTION 01 2900 - PAYMENT PROCEDURES

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
  - 1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 2. Section 013000 "Submittal Procedures" for administrative requirements governing the preparation and submittal of submittal schedule.
  - 3. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

#### 1.03 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

#### 1.04 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. Items required to be indicated as separate activities in Contractor's construction schedule.
  - 2. Submit the initial schedule of values to Architect and Owner at the Pre-Construction Conference, on the Schedule of Values form provided as part of these Specifications.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. State project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  - 2. Arrange schedule of values consistent with format of Schedule of Values included as part of these Specifications.
  - 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
  - 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
  - 5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
    - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### **1.05 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Progress payments shall be submitted to Architect seven days before the regularly scheduled monthly progress meeting. The period covered by each Application for Payment is one month, ending on the last day of the month.
  1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use the Payment Application forms provided by Facility Planning and Control.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
  4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored on site, but not yet installed.
  1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
  2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
  3. Provide summary documentation for stored materials indicating the following:
    - a. Materials previously stored and included in previous Applications for Payment.
    - b. Work completed for this Application utilizing previously stored materials.
    - c. Additional materials stored with this Application.
    - d. Total materials remaining stored, including materials with this Application.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
  1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of values.
  3. Contractor's construction schedule (preliminary if not final).
  4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
  5. Products list (preliminary if not final).
  6. Schedule of unit prices.
  7. Submittal schedule (preliminary if not final).
  8. List of Contractor's staff assignments.
  9. List of Contractor's principal consultants.
  10. Copies of building permits.
  11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  12. Initial progress report.
  13. Report of preconstruction conference.
  14. Certificates of insurance and insurance policies.
  15. Performance and payment bonds.
  16. Data needed to acquire Owner's insurance.
  17. Fixed job site overhead cost itemized as per 7.1.4 of the AIA A201 – 2017, General Conditions of the Contract for Construction as amended herein
- I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  6. AIA Document G707, "Consent of Surety to Final Payment."
  7. Evidence that claims have been settled.
  8. Final liquidated damages settlement statement.

**PART 2 EXECUTION (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 29 00**

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## SECTION 01 3000 - SUBMITTAL PROCEDURES

### PPART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
  - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.

#### 1.03 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Centerline: Centerline is a web based project management system to be used on this project. All project information will be maintained on this system. Information contained on this system will be the official log of all project information. The contractor shall pay all fees associated with his access to this project management system.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.
- E. Bluebeam Document (BSX): A standard file format licensed by Bluebeam Software, Inc. and available for use in creating, marking up, collaborating, and sharing PDF documents. Contractor shall pay all fees for access to this program for this project.

#### 1.04 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
  - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
  - 4. Format: Arrange the following information in a tabular format:
    - a. Scheduled date for first submittal.
    - b. Specification Section number and title.
    - c. Submittal category: Action; informational.
    - d. Name of subcontractor.

- e. Description of the Work covered.
- f. Scheduled date for Architect's final release or approval.
- g. Scheduled dates for installation.

#### **1.05 SUBMITTAL ADMINISTRATIVE REQUIREMENTS**

- A. Architect's Digital Data Files: Electronic copies in PDF format of the Contract Drawings will be provided one time by Architect for Contractor's use in preparing submittals.
  - 1. Architect will furnish Contractor overall floor plan digital AutoCAD drawing files, indicated below, for use in preparing Shop Drawings and Project record drawings within 21 days of receiving request for files.
    - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    - b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD 2018 or higher.
    - c. Contractor shall execute a data licensing agreement in the form of the Architect's CAD Release Letter included at the end of this Section.
    - d. The following AutoCAD files only will be furnished for each appropriate discipline:
      - 1) Overall floor plans.
      - 2) Overall reflected ceiling plans.
      - 3) Overall roof plans.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  - 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Any resubmittals required, must be submitted for review by design team within 6 weeks (42 days) of resubmittal notification. Allow 15 days for review of each resubmittal.
  - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
  - 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 21 days for review of each submittal. Submittal will be returned Architect before being returned to Contractor.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., OJJ-Jetson-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., OJJ-Jetson-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name of Architect.
    - e. Name of Contractor.
    - f. Name of firm or entity that prepared submittal.
    - g. Names of subcontractor, manufacturer, and supplier.
    - h. Category and type of submittal.
    - i. Submittal purpose and description.
    - j. Specification Section number and title.
    - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - l. Drawing number and detail references, as appropriate.
    - m. Location(s) where product is to be installed, as appropriate.
    - n. Related physical samples submitted directly.
    - o. Indication of full or partial submittal.
    - p. Transmittal number, numbered consecutively.
    - q. Submittal and transmittal distribution record.
    - r. Other necessary identification.
    - s. Remarks.
  5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
    - a. Project name.
    - b. Number and title of appropriate Specification Section.
    - c. Manufacturer name.
    - d. Product name.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

## **PART 2 PRODUCTS**

### **2.01 SUBMITTAL PROCEDURES**

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Post electronic submittals as PDF electronic files directly to the Project on Centerline.co.
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
  - 3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Full range of color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
  - 4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  - 5. Submit Product Data before or concurrent with Samples.
  - 6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
  - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.

- c. Compliance with specified standards.
  - d. Notation of coordination requirements.
  - e. Notation of dimensions established by field measurement.
  - f. Relationship and attachment to adjoining construction clearly indicated.
  - g. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
  3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit physical copy of manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit sets of Samples. Architect will retain two Sample sets; remainder will be returned.
      - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  - 2. Manufacturer and product name, and model number if applicable.
  - 3. Number and name of room or space.
  - 4. Location within room or space.
  - 5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- G. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017800 "Closeout Submittals."
- J. Maintenance Data: Comply with requirements specified in Section 017800 "Closeout Submittals."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.

4. Product and manufacturers' names.
  5. Description of product.
  6. Test procedures and results.
  7. Limitations of use.
- T. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- U. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## **2.02 DELEGATED-DESIGN SERVICES**

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file signed and sealed by a licensed, (in the state of the project location), responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## **PART 3 EXECUTION**

### **3.01 CONTRACTOR'S REVIEW**

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017800 "Closeout Submittals."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals shall be marked up using Bluebeam software: Contractor shall use BLUE color mark ups with Arial 10 point text, Architect shall use RED, Civil - TEAL, Structural - GREEN, Mechanical & Plumbing - PLUM, Electrical - ORANGE, Security - BURNT ORANGE, Landscape - MAGENTA, Audio-Video Consultant - FOREST GREEN and Special Systems - LIGHT PURPLE.

### **3.02 ARCHITECT'S ACTION**

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
1. Final Unrestricted Release: When the Architect marks a submittal "Approved," or "No Exceptions Taken", the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

2. Final-But-Restricted Release: When the Architect marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
  3. Returned for Resubmittal: When the Architect marks a submittal "Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
    - a. Do not use, or allow others to use, submittals marked "Revise and Resubmit" or "Rejected" at the Project Site or elsewhere where Work is in progress.
  4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

### 3.03 ELECTRONIC FILE AGREEMENT LETTER:

- A. Submit the text below in letter format, on contractor letterhead, signed by a authorized signatory of the contractor, to the project Architect to request electronic file documents.

Date

Grace Design Studios, LLC

501 Government St., Suite 200

Baton Rouge, LA 70802

Re: New Jetson Center for Youth

Dear Project Architect,

We are requesting that Grace Design Studios, LLC, (herein after "Grace"), provide electronic files, (roof plans only), for our convenience and use for the above referenced project, subject to the following terms and conditions:

Grace's electronic files are compatible with AUTOCAD 2021 Grace makes no representation as to the compatibility of these files with specific hardware or software beyond the specified release of the referenced specifications.

Data contained on these electronic files is part of Grace's instruments of service and shall not be used by us or anyone else receiving this data through or from us for any purpose. Use by us or by others will be at our sole risk and without liability or legal exposure to Grace. We agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against Grace, its officers, directors, employees, agents or subconsultants which may arise out of or in connection with your use of the electronic files.

Furthermore, we shall, to the fullest extent permitted by law, indemnify and hold harmless Grace from all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from our use of these electronic files.

|                                      |             |                      |
|--------------------------------------|-------------|----------------------|
| 571506 / New Jetson Center for Youth | 01 3000 - 8 | SUBMITTAL PROCEDURES |
|--------------------------------------|-------------|----------------------|



These electronic files are not contract documents. Significant difference may exist between these electronic files and corresponding hard copy contract documents due to addendum, change orders or other revisions. Grace makes no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed documents prepared by Grace and electronic files, the signed contract document shall govern. We shall be responsible for determining if any conflict exists. By our use of these electronic files, we are not relieved of our duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate our work with that of other contractors for the project.

Because of the potential that the information presented on the electronic files can be modified, unintentionally or otherwise, Grace reserves the right to remove all indicia of its ownership and/or involvement for each electronic display.

Under no circumstances shall delivery of the electronic files for use by us be deemed a sale by Grace, and Grace makes no warranties, either expressed or implied, of merchantability and fitness for any particular purpose. In no event shall Grace be liable for any loss of profit or any consequential damages. These documents may not be distributed to any other party without the express written consent of Grace.

This request is allowed for floor, ceiling and roof plans only.

By signing this document, I agree to the terms above.

---

Signature

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Date

**END OF SECTION**

## **SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.02 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Requests for Information (RFIs).
  - 3. Project meetings.
- B. Contractor shall prepare and submit any and all items electronically via Centerline.co. Email shall not be considered the means of notification of any item to the Architect, all contract communication shall be thru Centerline.
- C. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- D. Related Requirements:
  - 1. Section 013113 "Project Coordination Drawings" for production of BIM model to be updated during construction and to serve as final As-Built drawings.
  - 2. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
  - 3. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 4. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

#### **1.03 DEFINITIONS**

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

#### **1.04 INFORMATIONAL SUBMITTALS**

- A. Subcontractor List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
  - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

#### **1.05 GENERAL COORDINATION PROCEDURES**

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
  2. Preparation of the schedule of values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

#### **1.06 COORDINATION DRAWINGS**

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in Section 013113 "Project Coordination Drawings", and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

#### **1.07 REQUESTS FOR INFORMATION (RFIS)**

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI electronically via Centerline.co.
1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.

9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.
  11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow fourteen (14) working days for Architect's response for each RFI. RFIs received by after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for approval of Contractor's means and methods.
    - d. Requests for coordination information already indicated in the Contract Documents.
    - e. Requests for adjustments in the Contract Time or the Contract Sum.
    - f. Requests for interpretation of Architect's actions on submittals.
    - g. Incomplete RFIs or inaccurately prepared RFIs.
  2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
  3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- D. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:
1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Architect.
  4. RFI number including RFIs that were dropped and not submitted.
  5. RFI description.
  6. Date the RFI was submitted.
  7. Date Architect's response was received.
  8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

#### **1.08 PROJECT MEETINGS**

- A. General: Architect will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner, Umbrella Agency, User Agency, and Contractor of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Umbrella Agency, User Agency, Contractor, and Architect, within three days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, Umbrella Agency, User Agency, Architect and Contractor, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Umbrella Agency, User Agency, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Contractor to provide the following items to Owner at Preconstruction Conference:
    - a. General Contractor Project Team.
    - b. Licenses, Insurance and Bonds
    - c. List of Sub-contractors and major suppliers.
    - d. Cost breakdown (Schedule of Values), shall be in standard Construction Specifications Institute format
    - e. Construction Schedule
    - f. Fixed jobsite overhead cost itemized with documentation to support daily rates.
    - g. Bond Premium Rate with supporting information from the General Contractor's carrier.
    - h. Labor Burden by trade for both Subcontractors and General Contractor.
    - i. Internal Rate Charges for all significant company owned equipment.
  3. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Lines of communications.
    - f. Procedures for processing field decisions and Change Orders.
    - g. Procedures for RFIs.
    - h. Procedures for testing and inspecting.
    - i. Procedures for processing Applications for Payment.
    - j. Distribution of the Contract Documents.
    - k. Submittal procedures.
    - l. Preparation of record documents.
    - m. Use of the premises.
    - n. Work restrictions.
    - o. Working hours.
    - p. Responsibility for temporary facilities and controls.
    - q. Procedures for moisture and mold control.
    - r. Procedures for disruptions and shutdowns.
    - s. Construction waste management and recycling.
    - t. Parking availability.
    - u. Office, work, and storage areas.
    - v. Equipment deliveries and priorities.
    - w. First aid.
    - x. Security.

- y. Progress cleaning.
- 4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Project Closeout Conference: Architect will schedule and conduct a Project closeout conference, at a time convenient to Owner, Umbrella Agency, User Agency and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
  - 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  - 2. Attendees: Authorized representatives of Owner, Umbrella Agency, User Agency, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.
    - e. Requirements for delivery of material samples, attic stock, and spare parts.
    - f. Requirements for demonstration and training.
    - g. Preparation of Contractor's punch list.
    - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
  - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- D. Progress Meetings: Architect will conduct progress meetings once a month.
  - 1. Date of monthly progress meetings will be coordinated and determined at Pre-Construction Conference.
  - 2. Attendees: In addition to representatives of Owner, Umbrella Agency, User Agency, Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Sequence of operations.
      - 2) Status of submittals.
      - 3) Deliveries.
      - 4) Off-site fabrication.
      - 5) Access.
      - 6) Site utilization.
      - 7) Temporary facilities and controls.
      - 8) Progress cleaning.

- 9) Quality and work standards.
  - 10) Status of correction of deficient items.
  - 11) Field observations.
  - 12) Status of RFIs.
  - 13) Status of proposal requests.
  - 14) Pending changes.
  - 15) Status of Change Orders.
  - 16) Pending claims and disputes.
  - 17) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 31 00**

## SECTION 01 3113 - PROJECT COORDINATION DRAWINGS (BIM)

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Contractor shall coordinate construction operations, included in various Sections of Specifications as provided to assure efficient and orderly installation of all parts of Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
- B. Coordination drawings: Contractor shall produce a BIM Model in REVIT and provide reproducible drawings and PDF's as required in submittals showing work with horizontal and vertical dimensions to avoid interference with structural framing, ceilings, partitions, equipment, lights, mechanical, electrical, conveying systems, and other services:
  - 1. In the above ceilings.
  - 2. Within walls.
  - 3. Within chases.
  - 4. Entire structural system including foundation system.
  - 5. In mechanical spaces.
    - a. All ductwork.
    - b. All sprinkler piping.
    - c. All plumbing piping.
  - 6. In electrical spaces and rooms.
    - a. All conduit - 3/4" or larger.
    - b. All electrical items, such as but not limited to panels, transformers, disconnect switches, etc.
  - 7. Coordinate fitness equipment with electrical, and all related work including all penetrations, sleeves, and connections secured and watertight.
  - 8. Coordinate mechanical, electrical, plumbing, security, telcom, sewer, and all work including all penetrations, sleeves, and connections secured and watertight.
  - 9. Coordinate all exterior roof elements at or around rooftop equipment and penetrations of any type, panels, screens, windows, signage, both similar and dissimilar surfaces and elevations ensuring that all installations beneath and adjacent to the exterior envelope are secure, watertight, and tolerant of wind, rain, and storm loads and requirements called for in the specifications.
  - 10. Notify Architect of any conflicts prior to submittal of submittals so that any required modifications can be made prior to ordering any materials.
- C. Prepare BIM Model in REVIT. All coordination models should be developed to a LOD 350. The recommended platform for clash detection is Autodesk BIM 360 Glue. The contractor may use whatever software they wish to develop the various coordination models for each discipline, but they must be converted into an Autodesk Revit file 2021 or later) prior to being handed over to the Owner with the Record Drawings.
- D. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.
- E. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
- F. Work out all "tight" conditions involving Work of various Sections in advance of installation.
- G. Sleeve, coredrill and blockout layout drawings: Drawings showing proposed locations and sizes of sleeves, coredrills blockouts, and embedded items in concrete walls, columns, floors and beams.
- H. Prior to start of work and installation in any given area, Subcontractor to which Contractor is under contract shall approve, sign, coordination drawings affecting the Contractor/Subcontractor's work in that area.



- I. Modifications required as result of failure to resolve interferences, provide correct coordination drawings, or call attention to changes required in other work as result of modifications.
- J. Coordination meetings shall be scheduled by the Contractor, with all affected Subcontractors.

#### **1.02 PRODUCTION OF COORDINATION DRAWINGS**

- A. The Contractor shall "build" a BIM model in REVIT to be updated during construction and serve as the final As-Built drawings. A full time BIM Coordinator shall be assigned to the project, and is required to attend all project meetings on site, to facilitate REVIT model to be updated during Construction. Contractor shall also provide copies and PDFs of elevation and section drawings, both as paper hard copies showing:
  - 1. Partitions.
    - a. Fire/smoke rated barriers.
  - 2. Ceiling heights.
  - 3. Structural framing locations and elevations.
  - 4. Column lines.
  - 5. Location of fitness equipment.
  - 6. Location of electrical generators.
  - 7. Tie in locations of sewer, water, cable, telephone, electrical connections, fiber and all other connections to the building.
  - 8. Location of security equipment.
  - 9. Location of elevator equipment.
  - 10. Coordination between all the above.
- B. Contractor shall provide as is contracted per individual trade, coordination drawings in order for Subcontractor to produce combined coordination layout drawings plan and sections of HVAC ductwork, hydronic, steam, condensate, fuel oil, fire protection piping, plumbing, special water systems, gas systems, electrical cable tray, electrical generator, conduit, conveying systems, equipment and other work, where applicable.
- C. Contractor shall work to resolve major interferences at initial coordination meeting prior to production of any drawings.
- D. Contractor shall produce initial coordination drawings 90 days after contract award.
- E. Contractor at no cost to Owner, shall meet with Architects and Project Managers to resolve interference's and correct drawings.
- F. Contractor shall determine method used to resolve interference's not previously identified, and obtain Architect's approval of corrected deficiencies.
- G. Maintain one copy of current approved Coordination Drawings at project site and a copy of the BIM Model with computer capacity to access the model on site.

#### **1.03 PRODUCTION OF LAYOUT DRAWINGS**

- A. Contractor shall provide to Owner scale plan and elevation drawings, in CAD format preferably for use with REVIT.
- B. Subcontractors shall indicate to Contractor, proposed location and size of their required sleeves, coredrills, blockouts and embedded items.
  - 1. At floor slabs and walls to be core drilled or cut, Contractor shall find and mark all reinforcing in both faces located by means of x-ray, pach-ometer, or prof-ometer. Submit sketch showing location of rebar and proposed cores for review and approval by Architect.

#### **1.04 SUBMITTALS**

- A. Project information:
  - 1. BIM Coordination Model in REVIT.
  - 2. Contractor's approved Coordination Drawings.
    - a. Letter indicating one copy of approved Coordination Drawings available at project site.

- b. One copy of approved Coordination Drawings to the Owner/General Contractor for information, if requested.
  - c. Closeout documents shall include a BIM Model with As-Built conditions in REVIT.
3. Contractor's proposed sleeve, core drill and blockout layout drawings.

**END OF SECTION 01 31 13**

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## SECTION 01 3200 - CONSTRUCTION PROGRESS DOCUMENTATION

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Startup construction schedule.
  - 2. Contractor's construction schedule.
  - 3. Construction schedule updating reports.
  - 4. Daily construction reports.
  - 5. Material location reports.
  - 6. Site condition reports.
  - 7. Special reports.
- B. Related Requirements:
  - 1. Division 01 Section "Submittal Procedures" for submitting schedules and reports.

#### 1.03 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
  - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
  - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
  - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

#### 1.04 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. PDF electronic file.
- B. Startup construction schedule.

1. Approval of cost-loaded start-up construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
  1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
  1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
  2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
  3. Total Float Report: List of all activities sorted in ascending order of total float.
  4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit at weekly intervals.
- H. Material Location Reports: Submit at monthly intervals.
- I. Field Condition Reports: Submit at time of discovery of differing conditions.
- J. Special Reports: Submit at time of unusual event.
- K. Qualification Data: For scheduling consultant.

#### **1.05 QUALITY ASSURANCE**

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
  1. Review software limitations and content and format for reports.
  2. Verify availability of qualified personnel needed to develop and update schedule.
  3. Discuss constraints, including work stages and interim milestones.
  4. Review submittal requirements and procedures including review time required for review of submittals and resubmittals.
  5. Review requirements for tests and inspections by independent testing and inspecting agencies.
  6. Review time required for completion and startup procedures, including commissioning activities.
  7. Review and finalize list of construction activities to be included in schedule.
  8. Review procedures for updating schedule.

#### **1.06 COORDINATION**

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

- B. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from entities involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

## **PART 2 PRODUCTS**

### **2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL**

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
  - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 30 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  - 4. Startup and Testing Time: Include not less than 15 days for startup and testing.
  - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
  - 6. Punch List and Final Completion: Include not more than 30 days for punch list and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  - 1. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  - 2. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Uninterruptible services.
    - b. Partial occupancy before Substantial Completion.
    - c. Use of premises restrictions.
    - d. Provisions for future construction.
    - e. Seasonal variations.
    - f. Environmental control.
  - 3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards.
    - b. Submittals.
    - c. Purchases.
    - d. Mockups.
    - e. Fabrication.
    - f. Sample testing.
    - g. Deliveries.
    - h. Installation.
    - i. Tests and inspections.

- j. Adjusting.
  - k. Curing.
  - l. Startup and placement into final use and operation.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the following interim milestones:
- 1. Temporary enclosure and space conditioning.
- E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
- 1. Refer to Section 012900 "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
  - 2. Unanswered Requests for Information.
  - 3. Rejected or unreturned submittals.
  - 4. Notations on returned submittals.
  - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

## **2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)**

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Start-up Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's construction schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
- 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.
    - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
  - 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
  - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
  - 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to correlate with Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the start-up network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
    - a. Preparation and processing of submittals.
    - b. Mobilization and demobilization.
    - c. Purchase of materials.
    - d. Delivery.
    - e. Fabrication.
    - f. Utility interruptions.
    - g. Installation.
    - h. Work by Owner that may affect or be affected by Contractor's activities.
    - i. Testing.
    - j. Punch list and final completion.
    - k. Activities occurring following final completion.
  2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
  3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
  4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
    - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
  5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under principal subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
    - a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
    - b. Total cost assigned to activities shall equal the total Contract Sum.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
  2. Description of activity.
  3. Principal events of activity.
  4. Immediate preceding and succeeding activities.
  5. Early and late start dates.
  6. Early and late finish dates.
  7. Activity duration in workdays.
  8. Total float or slack time.
  9. Average size of workforce.
  10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
  2. Changes in early and late start dates.
  3. Changes in early and late finish dates.

4. Changes in activity durations in workdays.
  5. Changes in the critical path.
  6. Changes in total float or slack time.
  7. Changes in the Contract Time.
- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
  2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
  3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
  4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
    - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
    - b. Submit value summary printouts one week before each regularly scheduled progress meeting.

## 2.03 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site: Daily reports are to be submitted electronically via Centerline.co.
1. List of subcontractors at Project site.
  2. List of separate contractors at Project site.
  3. Approximate count of personnel at Project site.
  4. Equipment at Project site.
  5. Material deliveries.
  6. High and low temperatures and general weather conditions, including presence of rain or snow.
  7. Accidents.
  8. Meetings and significant decisions.
  9. Unusual events (refer to special reports).
  10. Stoppages, delays, shortages, and losses.
  11. Meter readings and similar recordings.
  12. Emergency procedures.
  13. Orders and requests of authorities having jurisdiction.
  14. Change Orders received and implemented.
  15. Construction Change Directives received and implemented.
  16. Services connected and disconnected.
  17. Equipment or system tests and startups.
  18. Partial completions and occupancies.
  19. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
  2. Material stored prior to previous report and since removed from storage and installed.
  3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for



Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

## **2.04 SPECIAL REPORTS**

- A. General: Submit special reports directly to Architect, Owner, Umbrella Agency and User Agency within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Architect in advance when these events are known or predictable.

## **PART 3 EXECUTION**

### **3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE**

- A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
  - 1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
  - 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
  - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  - 3. As the Work progresses, indicate final completion percentage for each activity.
- C. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
  - 1. Post copies in Project meeting rooms and temporary field offices.
  - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities

**END OF SECTION 01 32 00**

## SECTION 01 3233 - PHOTOGRAPHIC DOCUMENTATION

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Preconstruction photographs.
  - 2. Periodic construction photographs.
  - 3. Final Completion construction photographs.
  - 4. Web-based construction photographic documentation
- B. Related Requirements:
  - 1. Section 013000 "Submittal Procedures" for submitting photographic documentation.
  - 2. Section 017700 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.

#### 1.03 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files weekly within three days of taking photographs, via Centerline.co.
  - 1. Digital Camera: Minimum sensor resolution of 10 megapixels.
  - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
  - 3. Identification: Provide the following information with each image description in file metadata tag:
    - 4. Name of Project.
    - 5. Name and contact information for photographer.
    - 6. Name of Architect.
    - 7. Name of Contractor.
    - 8. Date photograph was taken.
    - 9. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - 10. Unique sequential identifier keyed to accompanying key plan.
- C. Web-Based Photographic Documentation: Submit time-lapse sequence video recordings simultaneously with recording.
  - 1. Submit time-lapse sequence video recordings by posting to [www.archittrek.com](http://www.archittrek.com).
  - 2. Identification: For each recording, provide the following information:
    - 3. Name of Project.
    - 4. Name and contact information for photographer.
    - 5. Name of Architect.
    - 6. Name of Contractor.
    - 7. Date(s) and time(s) video recording was recorded.
    - 8. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - 9. Weather conditions at time of recording.

#### **1.04 QUALITY ASSURANCE**

- A. Web-Based Photographic Documentation Service Provider: A firm specializing in providing photographic equipment, Web-based software, and related services for construction projects, with record of providing satisfactory services similar to those required for Project.

### **PART 2 PRODUCTS**

#### **2.01 PHOTOGRAPHIC MEDIA**

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 10 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

#### **2.02 WEB-BASED PHOTOGRAPHIC DOCUMENTATION**

- A. Project Cameras: Provide fixed exterior camera installation, mounted to provide unobstructed view of construction site from location(s) approved by Architect.
  - 1. Provide two (2) fixed-location cameras, with the following characteristics:
  - 2. Static view.
  - 3. Capable of producing minimum 3.0 megapixel pictures.
  - 4. Provide power supply, active high-speed data connection to service provider's network, and static public IP address for each camera.
- B. Web-Based Image Access: Password-protected access for Project team administered by Contractor, providing current image access and archival image access by date and time, with images downloadable to viewer's device.
  - 1. Provide public viewer open access to most recent project camera image.
- C. MATERIALS AND SOFTWARE PROVIDERS
  - 1. OxBlue® Corporation: Cameras and Software
  - 2. EarthCam, Inc: Cameras and Software
  - 3. Multivista Systems, LLC: Cameras and Software
  - 4. Or approved equal.

### **PART 3 EXECUTION**

#### **3.01 CONSTRUCTION PHOTOGRAPHS**

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.
  - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- C. Preconstruction Photographs: Before commencement of demolition, take extensive photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
  - 1. Flag construction limits before taking construction photographs.
  - 2. Take photographs to show existing conditions adjacent to property before starting the Work.
  - 3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Periodic Construction Photographs: Take photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

- E. Architect--Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- F. Final Completion Construction Photographs: Take color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
  - 1. Do not include date stamp.
- G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified.
  - 1. Three days' notice will be given, where feasible.
  - 2. In emergency situations, take additional photographs within 24 hours of request.
  - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
  - 4. Special events planned at Project site.
  - 5. Immediate follow-up when on-site events result in construction damage or losses.
  - 6. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
  - 7. Substantial Completion of a major phase or component of the Work.
  - 8. Extra record photographs at time of final acceptance.
  - 9. Owner's request for special publicity photographs.

### **3.02 WEB-BASED CONSTRUCTION PHOTOGRAPHIC DOCUMENTATION**

- A. Live Streaming Construction Site Images: Provide Web-accessible image of current site image from fixed location camera(s), updated at 15 minute intervals during daytime operation.
- B. Time-Lapse Sequence Construction Site Recordings: Provide video recording from a fixed-location camera to show status of construction and progress.
  - 1. Frequency: Record one frame of video recording every 15 minutes, from same vantage point each time, to create a time-lapse sequence of construction activities.
  - 2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during daylight construction work hours.
- C. Maintain cameras and Web-based access in good working order according to Web-based construction photographic documentation service provider's written instructions until final completion. Provide for service of cameras and related networking devices and software.

**END OF SECTION 01 32 33**

## SECTION 01 4000 - QUALITY REQUIREMENTS

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. The Owner shall engage and pay for the services of an independent testing laboratory to perform inspections and tests of materials and construction as defined in the General Conditions and indicated in these specification, except that in the event of a test failure the Contractor shall pay for any retesting. The Contractor is to select the testing lab and pay for all concrete design mix testing.
- C. Related Requirements:
  - 1. Divisions 02 through 33 Sections for specific test and inspection requirements.

#### 1.03 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project;

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being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

#### **1.04 CONFLICTING REQUIREMENTS**

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

#### **1.05 ACTION SUBMITTALS**

- A. Shop Drawings: For mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
  - 1. Indicate manufacturer and model number of individual components.
  - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

#### **1.06 INFORMATIONAL SUBMITTALS**

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
  - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
  - 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

#### **1.07 CONTRACTOR'S QUALITY-CONTROL PLAN**

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

#### **1.08 REPORTS AND DOCUMENTS**

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and re-inspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of technical representative making report.
  - 2. Statement on condition of substrates and their acceptability for installation of product.
  - 3. Statement that products at Project site comply with requirements.
  - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. **Factory-Authorized Service Representative's Reports:** Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. **Permits, Licenses, and Certificates:** For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.09 QUALITY ASSURANCE

- A. **General:** Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. **Specialists:** Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. **Testing Agency Qualifications:** An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.



- I. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. **Preconstruction Testing:** Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - f. When testing is complete, remove test specimens, assemblies and mockups; do not reuse products on Project.
  - 2. **Testing Agency Responsibilities:** Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. **Mockups:** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  - 2. Notify Architect seven (7) days in advance of dates and times when mockups will be constructed.
  - 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
  - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven (7) days for initial review and each re-review of each mockup.
  - 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 7. Demolish and remove mockups when directed unless otherwise indicated.
- L. **Integrated Exterior Mockups:** Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

#### **1.10 QUALITY CONTROL**

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. Payment for these services will be made by Owner via separate Contract.
  - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

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- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Architect, Commissioning Authority and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.

5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

### **1.11 SPECIAL TESTS AND INSPECTIONS**

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  2. Notifying Architect, Commissioning Authority, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Commissioning Authority, with copy to Contractor and to authorities having jurisdiction.
  4. Submitting a final report of special tests and inspections at Substantial Completion which includes a list of unresolved deficiencies.
  5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  6. Retesting and reinspecting corrected work.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION**

### **3.01 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's reference during normal working hours.

### **3.02 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible

as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 40 00**

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## SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

#### 1.03 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project site, testing agencies, and authorities having jurisdiction.
- B. Existing and Temporary Utility Services: Owner will pay use charges for any use of the existing and temporary utility services on the site as required for use by all construction operations.

#### 1.04 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent. Submit for local permits as required by the authority having jurisdiction.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

#### 1.05 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in ICC/ANSI A117.1. Provide temporary egress at locations as indicated on Drawings.

#### 1.06 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Chain-Link Construction Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 10 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

### **2.02 TEMPORARY FACILITIES**

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate the needs of construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
  - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
  - 2. Conference room of sufficient size to accommodate meetings of 20 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack and marker boards.
  - 3. Drinking water and private toilet.
  - 4. Coffee machine and supplies.
  - 5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
  - 6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  - 1. Store combustible materials apart from building.

### **2.03 EQUIPMENT**

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
  - 3. Permanent HVAC System: Owner authorizes use of permanent HVAC system for temporary use during construction, therefore provide filter with MERV of 13 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures."
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION, GENERAL**

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
  - 1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
  - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
  - 1. Install electric power service overhead, unless otherwise indicated.
  - 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
  - 2. Install lighting for Project identification sign.
- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install two telephone line for each field office.
  - 1. At each telephone, post a list of important telephone numbers.
    - a. Police and fire departments.
    - b. Ambulance service.
    - c. Contractor's home office.
    - d. Contractor's emergency after-hours telephone number.
    - e. Architect's office.
    - f. Engineers' offices.
    - g. Owner's office.
    - h. Principal subcontractors' field and home offices.
  - 2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

### 3.03 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.

2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
  1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: Provide temporary parking areas for construction personnel within limits of project site. Coordinate locations with Owner's representative to minimize interference of Owner's use of the Project site.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  1. Identification Signs: Provide Project identification signs. Location of signs to be coordinated at Pre-Construction Conference.
  2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  3. Maintain and touchup signs so they are legible at all times.
- F. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
  1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

### **3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION**

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
  1. Comply with work restrictions specified in Section 011000 "Summary."
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings or if not provided the requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.



- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
- F. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or as indicated on Drawings.
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
  - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

### 3.05 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Area: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
  - 1. Protect porous materials from water damage.
  - 2. Protect stored and installed material from flowing or standing water.
  - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
  - 4. Remove standing water from decks.
  - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Area: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
  - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  - 2. Keep interior spaces reasonably clean and protected from water damage.
  - 3. Periodically collect and remove waste containing cellulose or other organic matter.
  - 4. Discard or replace water-damaged material.
  - 5. Do not install material that is wet.
  - 6. Discard, replace, or clean stored or installed material that begins to grow mold.
  - 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Area of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
  - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
  - 2. Use permanent HVAC system to control humidity.

3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
  - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
  - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
  - c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

### **3.06 OPERATION, TERMINATION, AND REMOVAL**

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

**END OF SECTION 01 50 00**

## SECTION 01 6000 - PRODUCT REQUIREMENTS

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
  - 1. Section 012500 "Substitution Procedures" for requests for substitutions.

#### 1.03 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

#### 1.04 ACTION SUBMITTALS

- A. Comparable product requests or substitutions for the Contractor's convenience will not be considered after award of bid unless otherwise indicated.
- B. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
  - 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
    - a. Form of Approval: As specified in Section 013000 "Submittal Procedures."
    - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013000 "Submittal Procedures." Show compliance with requirements.

### 1.05 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.
  - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  - 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  - 6. Protect stored products from damage and liquids from freezing.
  - 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

### 1.07 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  - 3. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

## **PART 2 PRODUCTS**

### **2.01 PRODUCT SELECTION PROCEDURES**

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "as selected," Architect will make selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
    - a. Products specified with "or equal" provisions will only be considered after award of bid at the discretion of the Architect. Refer to Section 012500 "Substitution Procedures" for requests for "or equal" products.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered after award of bid unless otherwise indicated.
    - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
  4. Manufacturers:
    - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
    - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
    - c. Comparable products or substitutions for Contractor's convenience will not be considered after award of bid unless otherwise indicated.
  5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named

manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- a. Comparable products or substitutions for Contractor's convenience will not be considered after award of bid.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
  1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## **2.02 COMPARABLE PRODUCTS**

- A. Comparable products or substitutions for Contractor's convenience will not be considered after award of bid unless otherwise indicated.
- B. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
  1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  5. Samples, if requested.

## **PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 60 00**

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## SECTION 01 7300 - EXECUTION

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Progress cleaning.
  - 6. Starting and adjusting.
  - 7. Protection of installed construction.
  - 8. Correction of the Work.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for limits on use of Project site.
  - 2. Section 013000 "Submittal Procedures" for submitting surveys.

#### 1.03 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

#### 1.04 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
  - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.
  - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or

decreased operational life or safety. Other construction elements include but are not limited to the following:

- a. Water, moisture, or vapor barriers.
  - b. Membranes and flashings.
  - c. Sprayed fire-resistive material.
  - d. Equipment supports.
  - e. Piping, ductwork, vessels, and equipment.
  - f. Noise- and vibration-control elements and systems.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Existing Conditions: The existence and location of utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of utilities, mechanical and electrical systems, and other construction affecting the Work.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
1. Description of the Work.
  2. List of detrimental conditions, including substrates.
  3. List of unacceptable installation tolerances.
  4. Recommended corrections
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### **3.02 PREPARATION**

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.



- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

### **3.03 CONSTRUCTION LAYOUT**

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish limits on use of Project site.
  - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 4. Inform installers of lines and levels to which they must comply.
  - 5. Check the location, level and plumb, of every major element as the Work progresses.
  - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### **3.04 FIELD ENGINEERING**

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
  - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
  - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

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1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
  2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
  3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework. Survey shall indicate all information as required by local, state or federal authorities for finish floor grades to meet local requirements.

### 3.05 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
  2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
  4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  2. Allow for building movement, including thermal expansion and contraction.
  3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.06 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### **3.07 PROGRESS CLEANING**

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
  3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  1. Remove liquid spills promptly.
  2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### **3.08 STARTING AND ADJUSTING**

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

- E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

### **3.09 PROTECTION OF INSTALLED CONSTRUCTION**

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

### **3.10 CORRECTION OF THE WORK**

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

**END OF SECTION 01 73 00**

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## SECTION 01 7700 - CLOSEOUT PROCEDURES

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
  - 6. Correction period inspection.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for progress cleaning of Project site.
  - 2. Section 017800 "Closeout Submittals" for submitting record Drawings, record Specifications, record Product Data and operation and maintenance manual requirements.
  - 3. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

#### 1.03 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Acceptance.
- C. Certified List of Incomplete Items: Final submittal at Final Acceptance.

#### 1.04 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

#### 1.05 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

#### 1.06 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Final Acceptance/Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Acceptance/Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
  5. Submit test/adjust/balance records.
  6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Final Acceptance/Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Final Acceptance/Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
  6. Advise Owner of changeover in heat and other utilities.
  7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  9. Complete final cleaning requirements, including touchup painting.
  10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Final Acceptance/Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the State Final Acceptance Form after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### **1.07 FINAL COMPLETION PROCEDURES**

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to procedures outlined in General and Supplementary Conditions.
  2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On

receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### **1.08 LIST OF INCOMPLETE ITEMS (PUNCH LIST)**

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Punch list is to be generated with Bluebeam Software, using the Markups List to indicate items on record floor plans.
  1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  2. Organize items applying to each space by major element, including categories for doors, frames, hardware, wall repair, etc.
  3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Page number.
  4. Submit list of incomplete items in the following format:
    - a. PDF electronic file, as generated using Bluebeam Software. Architect will return annotated file.

#### **1.09 SUBMITTAL OF PROJECT WARRANTIES**

- A. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

#### **1.10 CORRECTION PERIOD INSPECTION**

- A. No later than eleven (11) months following the date of substantial completion a Contractor's one-year correction period inspection of the facility shall be conducted by the Contractor for the purpose of reviewing Work believed by the Owner not to be in accordance with the requirements of the Contract Documents. The Contractor, an Owner's representative and the Architect if requested by the Owner shall attend the inspection. The Contractor shall correct to the satisfaction of the Owner all work found to be deficient. Contractor's obligations under this paragraph are in addition to any other obligation, warranty and guaranties furnished in the



Contract Documents by the Contractor, the installer or the manufacturer of products, equipment or systems.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## **PART 3 EXECUTION**

### **3.01 FINAL CLEANING**

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - g. Sweep concrete floors broom clean in unoccupied spaces.
    - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    - j. Remove labels that are not permanent.
    - k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    - o. Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
    - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
    - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.

### **3.02 REPAIR OF THE WORK**

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 01 77 00**

## SECTION 01 7800 - CLOSEOUT SUBMITTALS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

#### 1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Submittal Procedures: Submittals, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

#### 1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed shop drawings, product data, and samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications:

1. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
    - a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
    - b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including prior approved substitutions and product options selected.
    - c. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
    - d. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
    - e. Note related Change Orders and record Drawings where applicable.
  2. Format: Submit record Specifications as paper copy.
    - a. Manufacturer's name and product model and number.
    - b. Product substitutions or alternates utilized.
    - c. Changes made by Addenda and modifications.
- F. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

- G. Record Drawings and Shop Drawings: Legibly mark with red erasable pencil each item to record actual construction including:
1. Measured depths of foundations in relation to finish first floor datum.
  2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  4. Field changes of dimension and detail.
  5. Details not on original Contract drawings.

### **3.02 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### **3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES**

- A. For Each Product, Applied Material, and Finish:
1. Product data, with catalog number, size, composition, and color and texture designations.
  2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- F. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

### **3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. For Each Item of Equipment and Each System:
1. Description of unit or system, and component parts.
  2. Identify function, normal operating characteristics, and limiting conditions.
  3. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Include test and balancing reports.
- O. Additional Requirements: As specified in individual product specification sections.

### **3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS**

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- D. Prepare data in the form of an instructional manual.
- E. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project name, project number, Site Code, State ID numbers; identify subject matter of contents.
- G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- H. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- I. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- L. Arrangement of Contents: Organize each volume in parts as follows:
  - 1. Project Directory.
  - 2. Table of Contents, of all volumes, and of this volume.
  - 3. Operation and Maintenance Data: Arranged by system, then by product category.
    - a. Source data.
    - b. Operation and maintenance data.
    - c. Field quality control data.

- d. Photocopies of warranties and bonds.
- M. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- N. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
  - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
  - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    - a. Significant design criteria.
    - b. List of equipment.
    - c. Parts list for each component.
    - d. Operating instructions.
    - e. Maintenance instructions for equipment and systems.
    - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
  - 3. Part 3: Project documents and certificates, including the following:
    - a. Shop drawings and product data.
- O. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
- P. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

### **3.06 WARRANTIES AND BONDS**

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

### **3.07 FINAL CLEANING**

- A. General: General cleaning during construction is required by the General Conditions.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
  - 1. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface, or final grade and dress with topsoil, sodding, or seeding if required elsewhere in the Specifications.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

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**END OF SECTION**

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## **SECTION 01 7900 - DEMONSTRATION AND TRAINING**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.02 SUMMARY**

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Demonstration and training video recordings.
- B. Related Requirements:
  - 1. Divisions 02 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

#### **1.03 INFORMATIONAL SUBMITTALS**

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
  - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For facilitator and instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

#### **1.04 QUALITY ASSURANCE**

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  - 1. Inspect and discuss locations and other facilities required for instruction.
  - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  - 3. Review required content of instruction.
  - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

#### **1.05 COORDINATION**

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

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- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

## **PART 2 PRODUCTS**

### **2.01 INSTRUCTION PROGRAM**

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections including the following:
  - 1. Motorized doors, including overhead coiling door.
  - 2. Equipment, including loading dock equipment, food-service equipment, and residential appliances.
  - 3. Fire-protection systems, including fire alarm and fire-extinguishing systems.
  - 4. Heat generation equipment and distribution piping.
  - 5. Refrigeration systems and distribution piping.
  - 6. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
  - 7. HVAC instrumentation and controls.
  - 8. Electrical service and distribution, including transformers, switchboards, panelboards uninterruptible power supplies, and motor controls.
  - 9. Packaged engine generators, including transfer switches.
  - 10. Lighting equipment and controls.
  - 11. Communication systems, including intercommunication, surveillance and voice and data equipment.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria if Contractor is delegated design responsibility.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
    - h. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project record documents.
    - e. Identification systems.
    - f. Warranties and bonds.
    - g. Maintenance service agreements and similar continuing commitments.
  - 3. Emergencies: Include the following, as applicable:
    - a. Instructions on meaning of warnings, trouble indications, and error messages.
    - b. Instructions on stopping.
    - c. Shutdown instructions for each type of emergency.
    - d. Operating instructions for conditions outside of normal operating limits.
    - e. Sequences for electric or electronic systems.

- f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
  - a. Startup procedures.
  - b. Equipment or system break-in procedures.
  - c. Routine and normal operating instructions.
  - d. Regulation and control procedures.
  - e. Control sequences.
  - f. Safety procedures.
  - g. Instructions on stopping.
  - h. Normal shutdown instructions.
  - i. Operating procedures for emergencies.
  - j. Operating procedures for system, subsystem, or equipment failure.
  - k. Seasonal and weekend operating instructions.
  - l. Required sequences for electric or electronic systems.
  - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
  - a. Alignments.
  - b. Checking adjustments.
  - c. Noise and vibration adjustments.
  - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
  - a. Diagnostic instructions.
  - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
  - a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.
  - c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.
  - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
  - a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017800 "Closeout Submittals."
- B. Set up instructional equipment at instruction location.

### **3.02 INSTRUCTION**

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
  2. Owner will furnish an instructor to describe Owner's operational philosophy.
  3. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
1. Schedule training with Owner, through Architect, with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

**END OF SECTION 01 79 00**

## **SECTION 01 8000 - ELECTRONIC REPORTING/COMMUNICATIONS**

**THE GENERAL CONTRACTOR SHALL BE REQUIRED TO HAVE E-MAIL AND WEB ACCESSIBILITY ON THE CONSTRUCTION SITE AND IN THE CONTRACTORS MAIN OFFICE TO ALLOW FOR ELECTRONIC COMMUNICATIONS. CONSTRUCTION SUPERINTENDENT AND THE PROJECT MANAGER SHALL HAVE INDIVIDUAL E-MAIL ADDRESSES FOR USE DURING THE CONSTRUCTION PHASE. NOTE: EMAIL IS ONLY FOR ACCESS TO CENTERLINE, E MAIL SHALL NOT BE USED IN THE EXECUTION OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, ALL COMMUNICATION SHALL BE MAINTAINED AND DOCUMENTED THRU CENTERLINE.**

**1.01 THE ONLY LOGS TO BE PROVIDED, REVIEWED AND ACCEPTED AT THE CONSTRUCTION MEETINGS ARE THOSE LISTED BELOW OBTAINED FROM CENTERLINE. THE GENERAL CONTRACTOR SHALL PROVIDE THE FOLLOWING ITEMS BOTH ELECTRONICALLY AND/OR HARD COPIES AS OUTLINED BELOW:**

### **1.02 DAILY FIELD REPORTS**

- A. Daily field reports shall be sent electronically the first working day after the date of the field report. File shall be sent as a PDF and shall be saved in the following method DFR\_001\_012016\_OJJ-Jetson.PDF, note the numbers in the middle are the report number and the date of the report.

### **1.03 WEEKLY FIELD REPORTS - FRIDAY**

- A. These shall be as Daily Field Reports but shall include a minimum of 10 electronic photographs. These photographs shall be of critical areas and shall be included in the same file as the Field Report.

### **1.04 REQUEST FOR INFORMATION**

- A. Request for Information shall be sent electronically to the Architect. All documents shall be sent in PDF format and saved in the following method RFI\_001\_OJJ-Jetson.PDF. Each Request for Information shall be in one file only. Each Request for Information shall be numbered in numerical order.

### **1.05 APPLICATION FOR PAYMENT**

- A. Application for Payment shall be sent in an electronic and hard copy to the Architect. All documents shall be sent in PDF format and saved in the following method, AFP011216\_OJJ-Jetson.PDF. Each Application for Payment shall be in one file only.

### **1.06 SHOP DRAWINGS**

- A. Shop Drawings shall be sent electrically to the Architect via [www.centerline.co](http://www.centerline.co), as per Section 013000. This document is also to be stored electronically at the project site for Architect and Contractor access during construction. All documents shall be sent in PDF format and saved in the following method SD\_023000\_01\_OJJ-Jetson.PDF. Each Shop Drawing shall have specification number and the submittal number for that specification section. The file above indicates specification section 023000 submittal number one. Upon completion of the project the contractor is to submit four (4) copies on CD of all Shop Drawings during the project closeout phase. These shall be in PDF format.

### **1.07 OPERATIONS AND MAINTENANCE MANUALS**

- A. Operations and Maintenance Manuals shall be sent hard copy to the Architect. After review and approval the Contractor shall submit an electronic copy to the Architect within seven (7) days of receipt of approved manuals. All documents shall be sent in PDF format and saved in the following method CM\_023000\_01\_OJJ-Jetson.PDF. Each O&M manual shall have specification number and the submittal number for that specification section. The file above indicates specification section 023000 submittal number one. Upon completion of the project the contractor is to submit four copies on CD of the entire O&M manual. These shall be in PDF format.

**END OF SECTION**

## SECTION 02 4100 - DEMOLITION

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Building demolition excluding removal of hazardous materials and toxic substances.
- B. Selective demolition of built site elements.
- C. Abandonment and removal of existing utilities and utility structures.

#### 1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

#### 1.03 SUBMITTALS

- A. Site Plan: Indicate:
  - 1. Areas for temporary construction and field offices.
- B. Demolition Plan: Submit demolition plan as required by OSHA and local AHJs.
  - 1. Indicate extent of demolition, removal sequencing, bracing and shoring, and location and construction of barricades and fences.
  - 2. Demolition firm qualifications.
  - 3. Include a summary of safety procedures.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

### PART 2 PRODUCTS -- NOT USED

### PART 3 EXECUTION

#### 3.01 DEMOLITION

- A. Remove portions of the existing buildings and structures, as indicated and as required to complete construction.
- B. Remove paving and curbs required to accomplish new work.
- C. Break up paving within site boundaries to permit natural moisture drainage; leave pieces not larger than 1 square yard.
- D. Remove concrete slabs on grade within construction limits indicated on drawings.
- E. Remove fences and gates.
- F. Remove creosote-treated wood utility poles.
- G. Remove other items indicated, for salvage and relocation.

#### 3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. Obtain required permits.
  - 2. Use of explosives is not permitted.

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3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
  4. Provide, erect, and maintain temporary barriers and security devices.
  5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
  6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
  7. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
  8. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
  9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
  - C. Do not begin removal until built elements to be salvaged or relocated have been removed.
  - D. Do not begin removal until vegetation to be relocated has been removed and vegetation to remain has been protected from damage.
  - E. Protect existing structures and other elements to remain in place and not removed.
    1. Provide bracing and shoring.
    2. Prevent movement or settlement of adjacent structures.
    3. Stop work immediately if adjacent structures appear to be in danger.
  - F. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
  - G. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
  - H. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

### **3.03 EXISTING UTILITIES**

- A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

### **3.04 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.

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- C. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

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## **SECTION 03 3000 - CAST-IN-PLACE CONCRETE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

#### **1.2 SUMMARY**

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
  - 1. Footings.
  - 2. Grade beams
  - 3. Slabs-on-grade.
  - 4. Above grade slabs (cast-in-place or on metal decks)
  - 5. CMU Grout Fill
- B. This specification section applies to all references in the contract documents to specification section 03 10 00, 03 20 00, or 03 30 00.
- C. Related Sections include the following:
  - 1. Division 31 Section "Earth Moving – Building Pad" for drainage fill under slabs-on-grade.

#### **1.3 DEFINITIONS**

- A. Cementitious Materials: Portland cement. None of the following are allowed in any concrete in this project: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

#### **1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: Submit a design mixture for each concrete mixture, proportioned on the basis of field experience or trial mixtures, or both, as required by ACI 318-14, chapter 26. Evidence of the ability of the proposed mixture to comply with concrete mixture requirements on the Drawings shall be included. The evidence shall be based on field test records or laboratory trial batches. For concrete mixtures with 28-day compressive strengths greater than 5000 psi, test data shall be provided in accordance with criteria of article 4.2.3 of ACI 301. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amount of mixing water to be withheld for later addition at Project site. The amount of water withheld shall not exceed five percent (5%) of the total batch water.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing but not limited to bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Reproductions made from contract drawings will not be accepted. Submit one (1) electronic print. Review of shop drawings by the Engineer will be for general compliance with contract documents.
  - 1. For reinforced concrete masonry walls, the shop drawings shall include a plan view layout of all filled cell locations, including filled cell locations above and below openings. Shop drawings shall include coordination of all embedded conduits, pipes, and sleeves within hollow cells of concrete masonry.

- D. Field quality-control test and inspection reports.
- E. The scope of the above submittals shall only include the items covered by this Section. Do not include items covered by other Sections such as site paving product data, site paving design mixtures, or site paving steel reinforcement shop drawings.

## **1.5 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site (with video teleconferencing capabilities) and verify acceptable date with Architect and Engineer a minimum of one week prior to scheduling.
  - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixtures.
    - c. Ready-mix concrete manufacturer.
    - d. Concrete Subcontractor.
  - 2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, methods for achieving specified floor and slab flatness and levelness, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.
  - 3. Contact vapor barrier manufacturer for preinstallation meeting and to coordinate review of the vapor barrier installation either by digital review or in person.

## **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified installer who employs qualified personnel on the Project, Flatwork Technicians with at least three (3) years experience, Finishers with at least three (3) years experience and a Supervisor with at least ten (10) years experience in concrete finishing and flatwork.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
  - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
  - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- E. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."

- F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  - 1. ACI 301, "Specification for Structural Concrete for Buildings,"
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
  - 3. ACI 318, "Building Code Requirements for Structural Concrete."
- G. Concrete Testing Service: Owner shall engage (and pay for) a qualified independent testing agency to perform material evaluation tests. Contractor shall engage and pay a qualified independent testing agency to design concrete mixtures.
- H. Materials and installed work may require testing and retesting, as directed by Architect, at anytime during progress of work. Allow free access to material stockpiles and facilities. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.
- I. For all concrete placement events, all steel reinforcement, other embedded items, and formwork shall be set and finalized a minimum of (3) three hours prior to the time of initial concrete placement to allow time for proper observation/inspection by the design team and the testing agency and time for resolution of any discrepancies.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B. Waterstops (if required): Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

### **PART 2 - PRODUCTS**

#### **2.1 FORM-FACING MATERIALS**

- A. Forms for Exposed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
  - 1. Plywood, metal, or other approved panel materials.
    - a. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- B. Forms for Unexposed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
  - 1. Form foundation elements as indicated on contract documents (typically placed in general notes of the structural plans).
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Chamfer Strips (if required): Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
  - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
  - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
  - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

## **2.2 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
  1. All reinforcing bars to be welded shall be ASTM A706, deformed.
- B. Plain-Steel Wire: ASTM A 82.
- C. Deformed-Steel Wire: ASTM A 1064.
- D. Plain-Steel Welded Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.
- E. Deformed-Steel Welded Wire Reinforcement: ASTM A 1064, flat sheet.

## **2.3 REINFORCEMENT ACCESSORIES**

- A. Joint Dowel Bars (if required): ASTM A 615/A 615M, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
  1. For concrete surfaces exposed to view or weather where legs of wire bar supports contact forms (or occur within 1-1/2 inches of surface), use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

## **2.4 CONCRETE MATERIALS**

- A. Cementitious Material: Use either of the following cementitious materials, of the same type, brand, and source, throughout Project:
  1. Portland Cement: ASTM C 150, Type I/II unless otherwise acceptable to Architect.
  2. Blended Hydraulic Cement: ASTM C 595, Type IL (10), 10% limestone substitution.
- B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
  1. Maximum Coarse-Aggregate Size: 1 inch nominal for regular sand and gravel mixtures.
  2. Maximum Coarse-Aggregate Size: 0.5 inch nominal for sand and pea gravel mixtures. Use a #8 stone aggregate gradation per ASTM C 33 for pea gravel aggregate.
  3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable. Clean and not detrimental to concrete.

## **2.5 ADMIXTURES**

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.6 WATERSTOPS

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Carlisle Coatings & Waterproofing Inc; MiraSTOP.
    - b. CETCO; Volclay Waterstop-RX.
    - c. Concrete Sealants Inc.; Con Seal CS-231.
    - d. Greenstreak; Swellstop.
    - e. Henry Company, Sealants Division; Hydro-Flex.
    - f. JP Specialties, Inc.; Earth Shield Type 20.

## 2.7 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape. The vapor retarder shall maintain a permeance of less than .01 perms as tested before and after mandatory conditioning tests (per ASTM E 1745 Section 7.1 and subparagraphs 7.1.2-5).
  1. Available Products:
    - a. Fortifiber Building Systems Group; Moistop Ultra.
    - b. Meadows, W. R., Inc.; Perminator.
    - c. Raven Industries Inc.; Vapor Block.
    - d. Reef Industries, Inc.; Griffolyn.
    - e. Stego Industries, LLC; Stego Wrap.
  2. Refer to contract plan documents for minimum vapor retarder thickness in mils.
  3. Vapor proofing mastic: water vapor transmission rate per ASTM E 96 of 0.3 perms or lower.
  4. Seam tape: must have a water vapor transmission rate of 0.3 perms or lower in accordance with ASTM E 96

## 2.8 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Curing compounds must be approved for use with types of floor finishes and sealers/hardeners specified in Contract Documents. Curing compound shall not interfere with bonding of floor covering. The following list of compounds does not indicate acceptance with the floor finishes utilized. Contractor shall only submit for approval curing compounds that are guaranteed not to interfere with bonding of any floor covering. Contractor assumes all responsibility for compliance of curing compounds with respect to this requirement.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
  1. Available Products:
    - a. Ashford Formula

- b. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
  - c. Burke by Edoco; Aqua Resin Cure.
  - d. ChemMasters; Safe-Cure Clear.
  - e. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; W.B. Resin Cure.
  - f. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
  - g. Euclid Chemical Company (The); Kurez DR VOX.
  - h. Kaufman Products, Inc.; Thinfilm 420.
  - i. Lambert Corporation; Aqua Kure-Clear.
  - j. L&M Construction Chemicals, Inc.; L&M Cure R.
  - k. Meadows, W. R., Inc.; 1100 Clear.
  - l. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
  - m. Symons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
  - n. Tamms Industries, Inc.; Horncure WB 30.
  - o. Unitex; Hydro Cure 309.
  - p. US Mix Products Company; US Spec Maxcure Resin Clear.
  - q. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- 1. Available Products:
    - a. Ashford Formula
    - b. Anti-Hydro International, Inc.; AH Clear Cure WB.
    - c. Burke by Edoco; Spartan Cote WB II.
    - d. ChemMasters; Safe-Cure & Seal 20.
    - e. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Cure and Seal WB.
    - f. Dayton Superior Corporation; Safe Cure and Seal (J-18).
    - g. Euclid Chemical Company (The); Aqua Cure VOX.
    - h. Kaufman Products, Inc.; Cure & Seal 309 Emulsion.
    - i. Lambert Corporation; Glazecote Sealer-20.
    - j. L&M Construction Chemicals, Inc.; Dress & Seal WB.
    - k. Meadows, W. R., Inc.; Vocomp-20.
    - l. Metalcrete Industries; Metcure.
    - m. Nox-Crete Products Group, Kinsman Corporation; Cure & Seal 150E.
    - n. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.
    - o. Tamms Industries, Inc.; Clearseal WB 150.
    - p. Unitex; Hydro Seal.
    - q. US Mix Products Company; US Spec Hydrasheen 15 percent
    - r. Vexcon Chemicals, Inc.; Starseal 309.

## 2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips (if required): ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, **[epoxy resin with a Type A shore durometer hardness of 80] [aromatic polyurea with a Type A shore durometer hardness range of 90 to 95]** per ASTM D 2240.
- C. Bonding Agent (if required): ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene. **[EM TO CONSIDER USE ON STRUCTURAL SLABS AND COMPOSITE SLABS AT CONSTRUCTION JOINTS]**.
- D. Epoxy Bonding Adhesive (if required): ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
  - 1. *Provide material "type", "grade" and "class" to suit project requirements.*
- E. Reglets (if required): Fabricate reglets of not less than 0.0217-inch- thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- F. Dovetail Anchor Slots (if required): Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

## 2.10 REPAIR MATERIALS

- A. Repair Underlayment (if required): Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
  - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
  - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
  - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
  - 4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment (if required): Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
  - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
  - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
  - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
  - 4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

## 2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

- C. The design mixtures for all exterior, exposed concrete shall provide a minimum of 4.5 percent entrained air.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
    - a. Do not use high-range water-reducing or super plasticizing admixtures in slabs.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, and concrete required to be watertight.
  - 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
  - 5. If more than one admixture is used in a concrete mix, assure that only compatible admixtures are used.
  - 6. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.
    - a. This requirement does not apply to lightweight concrete.
    - b. Air content for lightweight concrete shall comply with any fire-rated assembly requirements listed by Architect.
- E. Maximum W/C Ratio: 0.50 and as required to achieve specified concrete strength.

## **2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS**

- A. Design mixes to provide concrete with the properties as indicated on the structural drawings.

## **2.13 FABRICATING REINFORCEMENT**

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## **2.14 CONCRETE MIXING**

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information. The time concrete is unloaded shall be recorded on each batch ticket.
  - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
  - 2. Batch ticket information shall include information necessary to calculate total mixing water and the amount of water added by the receiver.
- B. Project-Site Mixing is not allowed.

# **PART 3 - EXECUTION**

## **3.1 FORMWORK**

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 117 and ACI 347R as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
  - 2. Class C, 1/2 inch for rough-formed finished surfaces.



- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
  - 1. Install keyways, reglets, recesses, and the like, for easy removal.
  - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete, unless otherwise indicated.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### **3.2 EMBEDDED ITEMS**

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
  - 2. Install and secure anchor rods prior to placing of concrete.
  - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
  - 4. Install dovetail anchor slots in concrete structures as indicated.
  - 5. Provide additional rebar if required to secure rebar dowels in proper location.
- B. Do not run any mechanical/electrical/plumbing pipes or conduit horizontally through concrete slabs, unless approved by the Engineer. These items shall also not bear continuously along grade beams and shall only cross perpendicular over top of grade beam in the concrete thickness below the slab at isolated locations.
- C. Do not run any mechanical/electrical/plumbing pipes or conduit through concrete footings and/or pile caps, unless approved by the Engineer. All mechanical/electrical/plumbing items shall be routed to avoid conflicts with concrete construction.

### **3.3 REMOVING AND REUSING FORMS**

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved its 28-day design compressive strength but in no case shall forms be removed sooner than 10 days from placing of concrete for such elements.
  2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

### 3.4 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
1. If vapor barrier is installed before the grade beam pour, seal vapor barrier to the inside face of grade beams along the entire vapor barrier perimeter using tape with a surface that creates a mechanical seal to freshly-placed grade beam concrete, per manufacturer's instructions.
  2. If vapor barrier is installed after the grade beam pour, seal vapor barrier to the inside face of grade beams along the entire vapor barrier perimeter using tape and termination bar per manufacturer's instructions. Ensure the grade beam surface is clean and dry prior to adhering tape.
  3. Lap joints 6 inches and seal with manufacturer's recommended tape.
  4. Repair damaged areas by cutting patches of required vapor retarder, overlapping damaged area 6 inches and taping all four sides with approved tape.
  5. Seal all penetrations (including pipes) per manufacturer's instructions.
  6. The vapor retarder shall be sealed at the perimeter.

### 3.5 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
1. Weld reinforcing bars according to AWS D1.4, where indicated.
- D. Maximum spacing of bar supports for slab/mat reinforcement shall be 48 inches on center or less as required to secure reinforcement during construction operations.
- E. Precast concrete blocks shall only be used to support reinforcement from the ground. Concrete blocks shall not be used for support of top reinforcement in concrete slabs or mats.
- F. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- G. Install bar reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap ends of bars **as indicated on the structural contract drawings**.
- H. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces as specified on drawings or a minimum of two full mesh if not otherwise specified. Offset laps of adjoining widths to prevent continuous laps in either direction.

### 3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  - 1. Place joints perpendicular to main reinforcement. Do not continue reinforcement through sides of strip placements of floors and slabs (unless noted otherwise on drawings).
  - 2. Form joints as indicated on drawings. Do not use metal keyways
  - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  - 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
  - 6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces, where indicated on drawings.
  - 7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces, where indicated on drawings.
  - 8. Construction joints shall not be placed in any slab areas with floor coverings prone to cracking, unless written approval is provided the Architect. When construction joints are allowed in slab areas with floor coverings prone to cracking, the contractor shall assure that joints are properly considered in floor covering installation as required to prevent reflective cracking.
- C. Isolation Joints in Slabs-on-Grade (if required): After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  - 1. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.
  - 2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- D. Doweled Joints (as indicated on drawings): Install dowel bars and support assemblies at joints where indicated.

### 3.7 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.
- B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.
  - 1. Place at locations indicated on plans.
  - 2. Place at concrete construction joints below site grade in order to avoid water intrusion into interior space.
    - a. Place at wall to slab (or mat foundation) joints below site grade.
    - b. Place at wall to wall joints below site grade.

### 3.8 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
  - 1. All embedded items, including anchor bolts, rebar dowels, etc., shall be set prior to placement of concrete.
  - 2. For foundation elements, verify that water is not present in the excavation prior to placement of concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 and in accordance with ASTM C94.
  - 1. Determine initial slump prior to any water addition at Project site and before any significant concrete discharge.
  - 2. Measure and record water added on Project site and resulting slump.
  - 3. The amount of water added shall not exceed the amount allowed in the approved design mixture.
  - 4. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
  - 5. Do not exceed specified W/C ratio or slump per approved design mixture.
  - 6. Do not add water to concrete delivered in equipment not acceptable for mixing.
  - 7. Do not add water if more than 0.25 cubic yards of concrete has already been discharged from the mixer.
  - 8. All water added shall be under the pressure and direction of flow required to achieve uniformity in concrete. Immediately after addition of water, the drum or blades of the truck mixer or agitator shall be turned an additional 30 revolutions or more if necessary, at mixing speed, until uniformity of concrete is achieved.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
  - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
  2. Do not place concrete when temperature is 36 deg F or below or if temperature is expected to reach 36 deg F (or below) within 12 hours of the anticipated time for completing a concrete pour.
  3. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  4. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- F. Hot-Weather Placement: Comply with ACI 301, ACI 305R, and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
- G. All elevated concrete slabs in shored construction shall be placed with the minimum slab thickness indicated on the Drawings and shall also be constructed level as required to comply with flatness and levelness requirements as defined in ACI 117. All elevated concrete slabs in unshored construction (e.g. decks over non-composite steel beam and/or joist systems) shall be placed to a constant thickness matching the thickness indicated on the Drawings.
- H. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

### **3.9 FINISHING FORMED SURFACES**

- A. Rough-Formed Finish: (For formed concrete surfaces not exposed to view) As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: (For formed concrete surfaces exposed to view) As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Unless noted otherwise, all exposed concrete surfaces shall receive a rubbed finish. Consult with Project Architect to determine the type of rubbed finish prior to pouring of concrete. Apply one of the following to smooth-formed finished as-cast concrete as indicated or directed by Architect:
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
  3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### **3.10 FINISHING FLOORS AND SLABS**

- A. General:
1. Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
  2. See architectural drawings for slab finish requirements or consult the Project Architect if finishes have not been supplied on the architectural drawings.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction.
1. Apply scratch finish to surfaces to receive concrete floor toppings and to receive mortar setting beds for bonded cementitious floor finishes.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated, to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces indicated, exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
    - a. Finish surfaces to the following tolerances, see structural drawings
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

2. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.
- G. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
1. Uniformly spread dampened slip-resistive aggregate over surface in 1 or 2 applications. Tamp aggregate flush with surface, but do not force below surface.
  2. After broadcasting and tamping, apply float finish.
  3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.

### **3.11 MISCELLANEOUS CONCRETE ITEMS**

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

### **3.12 CONCRETE PROTECTING AND CURING**

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

- a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
  - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
  - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project..
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
- a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

### **3.13 JOINT FILLING**

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
  - 1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints, unless noted otherwise in documents. Overfill joint and trim joint filler flush with top of joint after hardening.

### **3.14 CONCRETE SURFACE REPAIRS**

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.



1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

### **3.15 FIELD QUALITY CONTROL**

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Provide special inspections in accordance with Chapter 17 of the International Building Code for concrete construction.
- B. Inspections:
1. Steel reinforcement placement.
  2. Headed bolts and studs.
  3. Verification of use of required design mixture.
  4. Mixing and delivery time for concrete.
    - a. Record the time batched, time arrived, and the time unloaded for each batch of concrete.
  5. Concrete placement, including conveying and depositing.
  6. Curing procedures and maintenance of curing temperature.

7. Verification of concrete strength before removal of shores and forms from beams and slabs.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C 143/C 143M; one test at point of discharge for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change or is questionable.
    - a. Determine initial slump prior to any water addition to concrete at Project site and before any significant concrete discharge.
    - b. Measure and record water added to concrete on Project site and resulting slump.
    - c. Record amount of water indicated on batch ticket allowed to be added.
  3. Slump for Self-Consolidating Concrete (if applicable): ASTM C 1611/C 1611M-05; one test at point of discharge for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  4. Visual Stability Index Value (if applicable): Appendix X1.2 of ASTM C 1611/C 1611M-05; provide a Visual Stability Index Value for each composite sample taken for Self-Consolidating Concrete.
  5. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  6. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  7. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  8. Compression Test Specimens: ASTM C 31/C 31M.
    - a. Cast and laboratory cure five standard cylinder specimens for each composite sample.
    - b. Testing Agency shall be responsible for providing curing container for composite samples on Site as required for initial curing period and verifying that standard-cured composite samples are cured in accordance with ASTM C31/C31M. Testing Agency shall document method of initial curing.
    - c. The Contractor shall provide secured space, electrical power, and access for initial curing of test specimens.
  9. Compressive-Strength Tests: ASTM C 39/C 39M.
    - a. Test one specimen at 7 days, three specimens at 28 days, and hold one specimen for testing at 56 days, if necessary.

- b. A compressive-strength test shall be the average compressive strength from a set of three specimens obtained from same composite sample and tested at age indicated.
  - 10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
  - 11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work (illustrated via highlighting of elements on structural plans), design compressive strength at 28 days, concrete mixture proportions and materials, concrete unit weight, compressive breaking strength, and type of break for both 7- and 28-day tests. Deviations from the requirements of the Contract Documents shall be clearly identified and described on the reports.
  - 12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
  - 13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
  - 14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
  - 15. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness, per requirements on drawings, according to ASTM E 1155 within 72 hours of finishing.

**END OF SECTION 03 3000**

## SECTION 03 3500 - CONCRETE FINISHING

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Section Includes:
  - 1. Single application cure-seal-hardener for all new exposed concrete floors.
  - 2. Precautions for avoiding staining concrete before and after installation.

#### 1.02 REFERENCES

- A. ASTM International:
  - 1. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
  - 2. ASTM C 779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
  - 3. ASTM C 805 - Standard Test Method for Rebound Number of Hardened Concrete.
  - 4. ASTM C 1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
  - 5. ASTM D 3359 - Standard Test Methods for Measuring Adhesion by Tape Test.

#### 1.03 SUBMITTALS

- A. General: Submit listed submittals in accordance with conditions of the Contract and Section 013000 - Submittals.
- B. Product Data: Submit product data, including manufacturer's data sheets, installation instructions and technical bulletins for specified products.
- C. Certificates: Manufacturer's certification that the installer is acceptable.
- D. Maintenance Data: Maintenance instructions, including precautions for avoiding staining after application.

#### 1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Acceptable to the manufacturer.
- B. Regulatory Requirements: In accordance with Section 01 4000 - Quality Control.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with Division 1, Section 01 6000 - Product Requirements.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
- D. Handling: Protect materials from dirt, corrosion, oil, grease and other contaminants.

### PART 2 PRODUCTS

#### 2.01 MATERIAL

- A. Curecrete Distribution, Inc.
  - 1. 1203 W. Spring Creek Place, Springville, UT 84663-0551; Ph. (800) 998-5664; [www.ashfordformula.com](http://www.ashfordformula.com)
  - 2. Or approved equal
  - 3. Cure-Seal Hardener: Ashford Formula, a water-based chemically reactive penetrating sealer and hardener that seals by densifying concrete so that water molecules cannot pass through but air and water vapor can, and allows concrete to achieve full compressive strength, minimizing surface crazing and eliminating dusting.
    - a. Abrasion Resistance to Revolving Disks: At least a 32.5% improvement over untreated samples when tested in accordance with ASTM C 779.

- b. Surface Adhesion: At least a 22% increase in adhesion for epoxy when tested in accordance with ASTM D 3359.
- c. Hardening: As follows when tested in accordance with ASTM C 39:
- d. After 7 days: An increase of at least 40% over untreated samples.
- e. After 28 days: An increase of at least 38% over untreated samples.
- f. Coefficient of Friction: 0.86 dry, 0.69 wet when tested in accordance with ASTM C 1028.
- g. Rebound Number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C 805.
- h. Light Exposure Degradation: No evidence of adverse effects on treated samples when tested in accordance with ASTM G 23.

## **2.02 PRODUCT SUBSTITUTIONS**

- A. Substitutions: Substitutions in accordance with Section 01 6000 - Product Requirements.

## **PART 3 EXECUTION**

### **3.01 MANUFACTURER'S INSTRUCTIONS**

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

### **3.02 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared and are suitable for application of product.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.03 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Do not use frozen material. Thaw and agitate prior to use.
- D. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid or other liquids.

### **3.04 INSTALLATION**

- A. New Concrete: Apply cure-seal-hardener to new concrete as soon as the concrete is firm enough to work on after troweling; with colored concrete, wait a minimum of 30 days before application.
  - 1. Spray on at rate of 200 ft<sup>2</sup>/gal.
  - 2. Keep surface wet with cure-seal-hardener for a minimum soak-in period of 30 minutes without allowing it to dry out or become slippery. In hot weather, slipperiness may appear before the 30 minute time period has elapsed. If that occurs, apply additional cure-seal-hardener as needed to keep the entire surface in a non-slippery state for the first 15 minutes. For the remaining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state. In hot weather conditions, follow manufacturer's special application procedures.
  - 3. When the treated surface becomes slippery after this period, lightly mist with water until slipperiness disappears.
  - 4. Wait for surface to become slippery again, and then flush entire surface with water to remove all cure-seal-hardener residue.
  - 5. Squeegee surface completely dry, flushing any remaining slippery areas until no residue remains.
  - 6. Wet vacuum or scrubbing machines can be used in accordance with manufacturer's instructions to remove residue.

### **3.05 PROTECTION**

- A. Protect installed floors for at least 3 months until chemical reaction process is complete.
  - 1. Do not allow traffic on floors for 3 hours after application.
  - 2. Do not allow parking of vehicles on concrete slab.
  - 3. If vehicles must be temporarily parked on slab, place drop cloths under vehicles during entire time parked.
  - 4. Do not allow pipe cutting using pipe cutting machinery on concrete slabs.
  - 5. Do not allow temporary placement and storage of steel members on concrete slabs.
  - 6. Clean up spills immediately and spot-treat stains with degreaser or oil emulsifier.
  - 7. Clean floor regularly in accordance with manufacturer's recommendations.

**END OF SECTION**

## **SECTION 03 4713 - TILT-UP CONCRETE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Specification Section 03 3000 - Cast-in-Place Concrete shall be applicable to tilt-up wall construction. For tilt-up walls, Section 03 4713 shall supersede section 03 3000 where specific items are addressed in both specification sections.

#### **1.2 SUMMARY**

- A. Section includes load-bearing, tilt-up concrete, including the following:
  - 1. Monolithic panels.
- B. Related Requirements:
  - 1. Division 03 Section "Architectural Concrete" for specially finished formed concrete.
  - 2. Division 05 Section "Structural Steel" for embed plates and associated steel construction.
  - 3. Division 05 Section "Metal Fabrications" for embedded metal items and loose hardware.
  - 4. Division 07 Section "Sheet Metal Flashing and Trim" for flashing receivers and reglets.

#### **1.3 DEFINITIONS**

- A. Face-down Surface: Concealed surface of as-cast, tilt-up panel formed against the casting slab.
- B. Face-up Surface: Exposed upper surface of as-cast, tilt-up panel.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site (with video teleconferencing capabilities).
  - 1. Before submitting design mixes, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with tilt-up concrete to attend, including the following:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixtures.
    - c. Ready-mix concrete manufacturer.
    - d. Tilt-up concrete subcontractor.
  - 2. Review special inspection procedures; testing and inspecting agency procedures for field quality control; tilt-up concrete finishes and finishing; cold- and hot-weather concreting procedures; curing procedures; casting-slab construction, flatness and levelness, finish, and joint requirements; steel reinforcement installation; hoisting and erection plans; measurement of fabrication and erection tolerances; tilt-up concrete repair procedures; and tilt-up concrete protection.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Shop Drawings: Detail fabrication and installation of tilt-up concrete units. Indicate panel locations, plans, elevations, dimensions, shapes, cross sections, and details of steel embedments. Match panel identification designations on Shop Drawings with those on Contract Drawings. Match panel identification designations on Shop Drawings with those on Contract Drawings. Reproductions made from contract drawings will not be accepted. Submit one (1) electronic print. Review of shop drawings by the Architect/Engineer will be for general compliance with contract documents.
  - 1. Include steel reinforcement, detailing fabrication, bending, and placing. Include material, grade, bar schedules, stirrup spacing, bent-bar diagrams, arrangement, and supports of concrete reinforcement.
  - 2. Include additional steel reinforcement to resist hoisting and erection stresses.
  - 3. Include locations and details of hoisting points and lifting devices for handling and erection.
  - 4. Include locations and details of temporary braces and supports, and temporary foundations if required.
  - 5. Include engineering analysis data of additional steel reinforcement and hoisting, erection, and temporary support details, signed and sealed by the qualified professional engineer responsible for their preparation.
  - 6. Indicate welded connections by AWS standard symbols. Detail cast-in inserts, connections, and joints, including accessories.
  - 7. Indicate type of concrete finish on face-up surface.
  - 8. Show all openings in tilt-wall panels and indicate any openings which require dimension changes from those shown in the Contract Drawings based on coordination with subcontractors and suppliers.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and manufacturer.
- B. Welding certificates.
- C. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials.
  - 2. Admixtures.
  - 3. Steel reinforcement and accessories.
  - 4. Bondbreakers.
  - 5. Curing compounds.
  - 6. Inserts and embedments.
- D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
  - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- E. Field quality-control reports.

#### **1.7 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.



1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Installer Qualifications: A qualified installer who employs a supervisor on Project who is an ACI-certified Tilt-up Supervisor.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
  1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade I, according to ACI CP-1 or an equivalent certification program.
  2. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Welding Qualifications: Qualify procedures and personnel according to the following:
  1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  2. AWS D1.4/D1.4M, "Structural Welding Code - Reinforcing Steel."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- F. General Contractor shall perform all coordination with each trade requiring wall penetrations or embeds in the tilt-up wall panels prior to submittals being sent to A/E for review.

## **PART 2 - PRODUCTS**

### **2.1 TILT-UP CONCRETE**

- A. Comply with ACI 301, "Specifications for Structural Concrete," Sections 1 through 5, unless modified by requirements in the Contract Documents.
- B. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures from one source from a single manufacturer.

### **2.2 FORMS AND ACCESSORIES**

- A. Forms: Metal, dressed lumber, or other approved materials that are nonreactive with concrete and that will provide continuous, true, and smooth concrete surfaces.
- B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch
- C. Reveal Strips: Metal, PVC, rubber, straight dressed wood, or plywood; with sides kerfed.
- D. Sealer: Penetrating, clear, polyurethane wood form sealer formulated to reduce absorption of bleedwater and prevent migration of set-retarding chemicals from wood or plywood.

### **2.3 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- C. Plain-Steel Wire: ASTM A 82, as drawn.
- D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- E. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- F. Bar Supports: Manufactured according to CRSI's "Manual of Standard Practice" of plastic or CRSI Class 1 plastic-protected steel wire or Class 2 stainless-steel wire.

## **2.4 CONCRETE MATERIALS**

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I/II
- B. Coarse Aggregate: ASTM C 33, Class 4M coarse aggregate or better, graded. Provide aggregates from single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
  - 1. Maximum Coarse-Aggregate Size: 3/4 inch maximum.
- C. Fine Aggregate: ASTM C 33, manufactured or natural sand, from same source for Project, free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C 94/C 94M and potable.

## **2.5 ADMIXTURES**

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## **2.6 BONDBREAKERS**

- A. Solvent-Borne, Membrane-Forming Bondbreaker: Dissipating polymerized solution containing no oils, waxes, paraffins, or silicones, and compatible with casting-slab curing compound.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dayton Superior Corporation; Conspec Tilt-Eez VOC, Edoco Super Bondbreaker VOC.
    - b. Universal Building Products, Inc.; Unitilt VOC.

## **2.7 CURING MATERIALS**

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

## **2.8 CONNECTION MATERIALS**

- A. Embedded Metal Items and Loose Hardware: Materials for securing tilt-up concrete panels together and to supporting and adjacent construction are specified in Division 05 Section "Metal Fabrications."

- B. Loose Hardware: Materials for securing tilt-up concrete panels together and to supporting and adjacent construction are specified in Division 05 Section "Metal Fabrications."
- C. Carbon-Steel Shapes and Plates: ASTM A 36/A 36M.
- D. Carbon-Steel Bolts and Studs: ASTM A 307, Grade A; carbon-steel, hex-head bolts and studs; carbon-steel nuts; and flat, unhardened steel washers.
- E. Unheaded Carbon-Steel Rods and Nuts: ASTM A 36/A 36M, threaded rods with ASTM A 563, nuts.
- F. Welded Headed Studs: AWS D1.1/D1.1M, Type B headed studs, and cold-finished, carbon-steel bars.
- G. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- H. Chord Bar Sleeves: Tubular sheathing, plastic or moisture-resistance-treated cardboard.
- I. Welding Electrodes: Comply with AWS standards.
- J. Hot-Dip Galvanized Finish: Apply zinc coating to steel connections where indicated in drawings by hot-dip process, complying with ASTM A 123/A 123M or ASTM A 153/A 153M as applicable.
  - 1. Zinc Repair Paint: SSPC-Paint 20.
- K. Shop-Primed Finish: Prepare surfaces of steel connections, except those surfaces to be embedded in concrete, according to requirements in SSPC-SP 3, and shop-apply primer according to SSPC-PA 1.
  - 1. Primer: MPI#79, "Alkyd Anti-Corrosive Metal Primer."

## **2.9 LIFTING INSERTS AND ACCESSORIES**

- A. Furnish inserts, dowels, bolts, nuts, washers, and other items to be cast in panels for tilting and lifting.
  - 1. Manufacture inserts with feet of plastic, galvanized-steel wire, plastic-tipped steel wire, or stainless-steel-tipped steel wire.
- B. Furnish brace anchors and other accessories to be cast in panels and in casting slab for attaching bracing.
  - 1. Manufacture wall brace anchors and accessories with feet of galvanized-steel wire, plastic-tipped steel wire, or stainless-steel-tipped steel wire.
  - 2. Manufacture floor brace anchors that will not penetrate vapor retarder under slab-on-grade.

## **2.10 BEARING PADS**

- A. Elastomeric Pads: AASHTO M 251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer, molded to size or cut from a molded sheet; Type A Shore durometer hardness of 50 to 70, ASTM D 2240; and minimum tensile strength 2250 psi, ASTM D 412.
- B. Random, Fiber-Reinforced Elastomeric Pads: Preformed, randomly oriented synthetic fibers set in elastomer with a Type A Shore durometer hardness of 70 to 90, ASTM D 2240.
- C. Cotton-Duck-Fabric-Reinforced Elastomeric Pads: Preformed, horizontally layered cotton-duck fabric bonded in elastomer with a Type A Shore durometer hardness of 80 to 100, ASTM D 2240.
- D. High-Density Plastic Strips: Multimonomer, nonleaching plastic.

## **2.11 GROUT**

- A. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

- B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents; complying with ASTM C 1107, of consistency suitable for application.
- C. All grout shall have a minimum compressive strength of 6,500 psi at 28 days.

## **2.12 MISCELLANEOUS MATERIALS**

- A. Chemical Surface Retarder: Water-soluble, liquid set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to depth of reveal or etch required of specified finish.
- B. Form Retarder: Chemical liquid set retarder, for application on hardened horizontal concrete and capable of temporarily delaying final hardening of newly placed concrete to depth of reveal specified.
  - 1. Mold Release: Solution specially formulated by manufacturer for use under form retarder.
- C. Flashing Reglets: Open type having continuous groove not less than 1-1/8 inches deep by 3/16 inch wide at opening and sloped upward to 45 degrees. Temporarily fill or cover face openings of reglets to prevent intrusion of concrete or debris.
  - 1. Stainless Steel: ASTM A 240/A 240M, Type 304, soft annealed, not less than 0.0187 inch thick.
  - 2. Copper Strip: ASTM B 370, Temper H00 or O60, not less than 16 oz./sq. ft..
  - 3. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 coating, not less than 0.0217 inch thick.

## **2.13 REPAIR MATERIALS**

- A. Bonding Agent: ASTM C 1059, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- B. Patching Mortar: Dry-pack mix consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing No. 16 sieve, using only enough water for handling and placing.

## **2.14 CONCRETE MIXTURES**

- A. Prepare design mixtures for each type and strength of concrete, proportioned on basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures based on laboratory trial mixtures.
- B. Design mixes to provide concrete with the properties as indicated on the structural drawings.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.1 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- E. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

## **2.15 CONCRETE MIXING**

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
  - 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

## **PART 3 - EXECUTION**

### **3.1 FORMS**

- A. Construct and brace formwork so tilt-up concrete panels are of size, shape, alignment, elevation, and position indicated.
  - 1. Construct forms on slab-on-grade or on temporary casting slab, at Contractor's option.
  - 2. Provide for openings, offsets, recesses, reveals, rustications, reglets, and blockouts.
- B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Use kerfed inserts, such as those forming reglets, rustications, and recesses, for easy removal.
- C. Set edge forms for panels to achieve required panel thickness.
- D. Chamfer exposed corners and edges, unless otherwise indicated, using chamfer strips fabricated to produce uniform, smooth lines and tight edge joints.
- E. Coat contact surfaces of wood forms and chamfers with sealer before placing reinforcement.

### **3.2 BONDBREAKERS**

- A. Uniformly and continuously apply two coats of bondbreaker to casting-slab surfaces by power spray or roller according to manufacturer's written instructions, before placing steel reinforcement. Recoat areas subjected to moisture before drying. Maintain continuity of coating until concrete placement.
- B. After placing steel reinforcement, touch up or recoat worn or damaged areas with bondbreaker. Do not splash or coat steel reinforcement and inserts.

### **3.3 FORM RETARDER**

- A. Uniformly and continuously apply form retarder to slab surfaces by power spray, roller, or brush according to manufacturer's written instructions, before placing steel reinforcement. Recoat areas subjected to moisture before drying. Maintain continuity of coating until concrete placement.
  - 1. Uniformly apply mold release according to manufacturer's written instructions and allow it to dry before applying form retarder.
- B. After placing steel reinforcement, touch up or recoat worn or damaged areas with form retarder. Do not splash or coat steel reinforcement and inserts.

### **3.4 REINFORCEMENT AND INSERTS**

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating and placing reinforcement.
- B. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
  - 1. Field weld reinforcement according to AWS D1.4/D1.4M, where indicated.
  - 2. Do not tack-weld crossing reinforcing bars.
  - 3. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- C. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- D. Accurately place and securely support embedded items, anchorages, inserts, cramps, retainers, bar chords and sleeves, and other items to be built into panels. Coordinate with other trades for installing cast-in items.

### **3.5 PANEL CASTING, GENERAL**

- A. Comply with ACI 301 for handling, placing, and consolidating concrete.
- B. Maintain position of steel reinforcement, inserts, and anchors during concrete placement, consolidation, and finishing.
- C. Screed panel surfaces to correct level with a straightedge and strike off.
  - 1. Begin initial floating before excess moisture or bleedwater appears on the surface. Use bull floats or darbies to form a uniform and open-textured surface plane free of humps or hollows. Do not disturb panel surfaces before beginning finishing operations.
- D. Form chamfers at top edges of panel perimeters, openings, and similar locations not formed by chamfer strips unless otherwise indicated.
- E. Surface Defects: Limit visible surface defects to those permitted by TCA's "Tilt-up Concrete Association's Guideline Specifications" for Grade A, Architectural panel surfaces.

### **3.6 CASTING TOLERANCES**

- A. Cast tilt-up concrete panels without exceeding the following tolerances:
  - 1. Height and Width of Panels:
    - a. For Panels up to 20 Feet Tall: 1/4 inch wide.
    - b. For Panels 20 to 30 Feet Tall: 3/8 inch wide.
    - c. Each Additional 10 Feet in Excess of 30 Feet Tall: 1/8 inch wide.
  - 2. Thickness: 3/16 inch.
  - 3. Skew of Panel or Opening: Difference in length of diagonals of 1/8 inch per 72 inches with a maximum difference of 1/2 inch.
  - 4. Openings Cast into Panel:
    - a. Size of Opening: 1/4 inch.
    - b. Location of Centerline of Opening: 1/4 inch.
  - 5. Location and Placement of Embedded Items:
    - a. Inserts, Bolts, and Pipe Sleeves: 3/8 inch.
    - b. Lifting and Bracing Inserts: As required by manufacturer.
    - c. Lateral Placement of Weld Plate Embedments: 1 inch.
    - d. Tipping and Flushness of Weld Plate Embedments: 1/4 inch.
  - 6. Deviation of Steel Reinforcement Cover: Maintain minimum cover required by ACI 301.

### **3.7 FACE-UP FINISHES**

- A. Consult project Architect for required face up surface finish.
- B. Float Finish: Consolidate surface of plastic concrete with power-driven floats or by hand floating. Restraighten and cut down high spots and fill low spots. Repeat float passes and restraighten until surface is left with a uniform, smooth, granular texture.
- C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate plastic concrete by hand trowel or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and is uniform in texture and appearance.
- D. Trowel and Fine-Broom Finish: After applying float finish, apply a partial trowel finish to plastic concrete, stopping after second troweling. Immediately after second troweling, and when concrete is still plastic, slightly scarify the surface with a fine broom.

1. Broom surface in a top-to-bottom or side-to-side direction as directed by Project Architect.

### **3.8 FACE-DOWN FINISHES**

- A. Smooth, As-Cast Finish: Cast panel to produce a surface free of pockets, sand streaks, and honeycombs. Produce a surface appearance of uniform color and texture.

### **3.9 CONCRETE PROTECTING AND CURING**

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures according to ACI 301.
  1. Apply evaporation retarder in hot, dry, or windy weather to protect concrete from rapid moisture loss before and during finishing operations. Apply according to manufacturer's written instructions after screeding and bull floating concrete, but before float finishing.
- B. Begin curing immediately after finishing concrete. Cure by one or a combination of the following methods according to ACI 308.1:
  1. Moisture Curing: Keep surfaces continuously moist for no fewer than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for no fewer than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
  3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### **3.10 ERECTION**

- A. Use erection equipment with care to prevent damage to floor slabs and panels.
- B. Lift, support, and erect panels only at designated lifting or supporting points indicated on Shop Drawings.
- C. Do not erect panels until 68 percent of 28-day compressive strength of concrete has been verified.
- D. Install tilt-up concrete panels level, plumb, square, and true. Place panels on leveled grout-setting pads or shims in correct position. Maintain joint width of 1/2 inch between panels.
  1. Install tilt-up concrete panels with face-down surfaces exposed to exterior of building.
- E. Temporarily brace and support panels securely in position against loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure and decking has been completed and permanent connections to panels are secured. Provide temporary concrete foundations outside of building for support of temporary panel braces as required.
- F. Anchor panels in place and, if indicated, to one another.

1. Weld steel connectors to steel supports and embedments indicated, complying with AWS D1.1/D1.1M.
- G. Solidly grout-fill gaps between foundation system and bottom of panel with non-shrink grout. Grout shall have been set and placed for a minimum of 7 days prior to application of floor or roof load on tilt-up concrete panels.

### **3.11 FIELD QUALITY CONTROL**

- A. Testing and Inspecting: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Inspections:
  1. Steel reinforcement placement.
  2. Steel reinforcement welding.
  3. Headed bolts and studs.
  4. Verification of use of required design mixture.
  5. Concrete placement, including conveying and depositing.
  6. Curing procedures and maintenance of curing temperature.
  7. Verification of concrete strength before erection of tilt-up panels.
- C. Testing Services: Tests shall be performed according to ACI 301.
- D. Tilt-up concrete panels will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

### **3.12 ERECTION TOLERANCES**

- A. Install tilt-up concrete panels without exceeding the following erection tolerances:
  1. Joint Width Variation (Exterior Face): Without decreasing or increasing more than 50 percent from specified joint width, maintain joint width as follows:
    - a. For Panels up to 20 Feet Tall: 1/4 inch.
    - b. Each Additional 10 Feet in Excess of 20 Feet Tall: 1/8 inch.
  2. Joint Taper: Maximum 3/8 inch over length, but not greater than the following:
    - a. For Panels up to 20 Feet Tall: 1/4 inch.
    - b. Each Additional 10 Feet in Excess of 20 Feet Tall: 1/8 inch.
  3. Panel Alignment:
    - a. Alignment of Horizontal and Vertical Joints: 1/4 inch.
    - b. Offset in Exterior Face of Adjacent Panels: 1/4 inch.

### **3.13 FILLING AND REPAIRS**

- A. Patch holes and voids left by erecting and bracing inserts on tilt-up panels and slabs-on-grade. Cut or chip edges of voids perpendicular to concrete surface. Fill blockouts where indicated.
  1. Clean, dampen with water, and brush-coat holes, voids, and blockouts with bonding agent. Fill and compact with patching mortar of a stiff consistency before bonding agent has dried.
  2. Finish surfaces of fills and repairs to Architect's approval, with materials of same colors and textures as finishes on surrounding surfaces.
- B. Repair damaged galvanized-steel surfaces of connectors by cleaning and applying a coat of zinc repair paint.
- C. Repair damage to tilt-up panels and slabs-on-grade resulting from tilt-up work, as directed by Architect.



- D. Remove and replace tilt-up panels that do not comply with requirements in this Section.
- E. Demolish and remove temporary concrete casting slabs.
- F. Demolish and remove temporary concrete foundations provided for anchorage of temporary wall braces.

**END OF SECTION 03 4713**

## SECTION 03 5416 - HYDRAULIC CEMENT UNDERLAYMENT

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Section includes hydraulic-cement-based, polymer-modified, self-leveling underlayment for application below interior floor coverings.

#### 1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

#### 1.03 INFORMATIONAL SUBMITTALS

- A. Product certificates.

#### 1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.
- B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

### PART 2 PRODUCTS

#### 2.01 HYDRAULIC-CEMENT-BASED UNDERLAYMENTS

- A. Underlayment: Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thickness of 1/4 inch (6 mm) and that can be feathered at edges to match adjacent floor elevations.
  - 1. Products: Subject to compliance with requirements, provide available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Ardex; K-15 Self-Leveling Underlayment Concrete.
    - b. BASF Construction Chemicals, Inc; Chemrex Self-Leveling Underlayment.
    - c. Bonsal American, an Oldcastle company; ProSpec Level Set 200
    - d. CGM, Incorporated; PRO S.L.U. Self-Leveling Underlayment.
    - e. CMP Specialty Products, Inc.; Level Finish.
    - f. Dayton Superior Corporation; EconoLevel.
    - g. Dependable Chemical Co., Inc.; Skimflow ES.
    - h. Euclid Chemical Company (The); Super Flo-Top.
    - i. L&M Construction Chemicals, Inc.; Levelex.
    - j. Lambert Corporation; Lambco L-16 Self-Level.
    - k. MAPEI Corporation; Novoplan Easy.
    - l. Maxxon Corporation; Level-Right.
    - m. Metalcrete Industries; Flowpave.
    - n. RAECO, Inc.; S.L.U.
    - o. Specialty Construction Brands, Inc., an H.B. Fuller company; TEC Smooth Start.
    - p. Teck Specialties; Teck 2800.
    - q. USG Corporation; Levelrock SLC 300.
    - r. US SPEC, Division of US Mix Products Company; US SPEC Self-Leveling Underlayment.
  - 2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
  - 3. Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 109/C 109M.
  - 4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.
- B. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm); or coarse sand as recommended by underlayment manufacturer.

1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.
- C. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).
- D. Reinforcement: For underlayment applied to wood substrates, provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.
- E. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
  1. Primer shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D.
  2. Primer shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
  1. Treat nonmoving substrate cracks to prevent cracks from telegraphing (reflecting) through underlayment.
  2. Fill substrate voids to prevent underlayment from leaking.
- B. Concrete Substrates: Mechanically remove laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
  1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft. (1.36 kg of water/100 sq. m)] in 24 hours.
- C. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment.

### **3.02 APPLICATION**

- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
  1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
  2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
  3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply underlayment to produce uniform, level surface.
  1. Apply a final layer without aggregate to product surface.
  2. Feather edges to match adjacent floor elevations.
- D. Cure underlayment. Prevent contamination during application and curing processes.
- E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

**END OF SECTION 035416**

## **SECTION 04 2200 - CONCRETE UNIT MASONRY**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Mortar and grout.
  - 3. Steel reinforcing bars.
  - 4. Masonry-joint reinforcement.
  - 5. Miscellaneous masonry accessories.
- B. Related Requirements:
  - 1. Section 033000 "Cast-in-Place Concrete" for dovetail slots for masonry anchors.
  - 2. Section 033000 "Cast-in-Place Concrete" shall be applicable to CMU grout fill construction; however, Section 042200 shall supersede section 033000 where specific items are addressed in both specification sections.
  - 3. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
  - 4. Section 071900 "Water Repellents" for water repellents applied to unit masonry assemblies.
  - 5. Section 076200 "Sheet Metal Flashing and Trim" for sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.
  - 6. Section 089516 "Wall Vents" for wall vents (brick vents).
  - 7. This specification section also applies to all references to section 040519 in the contract documents.

#### **1.3 DEFINITIONS**

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Reproductions made from contract drawings will not be accepted. Submit one (1) electronic print. Review of shop drawings by the Architect/Engineer will be for general compliance with contract documents. Submit shop drawings for the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
  - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
  - 4. Control and Expansion Joints: layout exact locations of control and expansion joints on a scaled building plan.

5. Vertical Filled Cell Layout: Provide plan view drawings indicating exact layout of CMU blocks and location of filled cells. Plan views shall filled cells at floor levels and above all openings in wall.
- C. Samples for Initial Selection:
1. Weep holes/vents.
- D. Samples for Verification: For each type and color of the following:
1. Exposed CMUs.

## **1.6 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For testing agency.
- B. Material Certificates: For each type and size of the following:
1. Masonry units.
    - a. Include material test reports substantiating compliance with requirements.
  2. Integral water repellant used in CMUs.
  3. Cementitious materials. Include name of manufacturer, brand name, and type.
  4. Mortar admixtures.
  5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  6. Grout mixes. Include description of type and proportions of ingredients.
  7. Reinforcing bars.
  8. Joint reinforcement.
  9. Anchors, ties, and metal accessories.
- C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
  2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
    - a. Also refer to requirements provided in Division 03 Section "Cast-in-Place Concrete" for required mix design submittal requirements.
- D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.
- E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

## **1.7 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mockup of typical wall area as shown on Drawings.
  2. Build mockups for each type of exposed unit masonry construction in sizes approximately 72 inches long by 48 inches high by full thickness, including face and backup wythes and accessories.
    - a. Include a sealant-filled joint at least 16 inches long in each mockup.

- b. Include lower corner of window opening at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
  - c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
- 3. Protect accepted mockups from the elements with weather-resistant membrane.
- 4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
  - a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
  - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

## **1.9 FIELD CONDITIONS**

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

### **2.2 UNIT MASONRY, GENERAL**

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
  - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

### **2.3 CONCRETE MASONRY UNITS**

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C 90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2,000 psi.
  - 2. Density Classification: Normalweight (greater than 125 pcf).
  - 3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
  - 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
  - 5. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

### **2.4 MASONRY LINTELS**

- A. General: Provide one of the following:

- B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with grout. Temporarily support built-in-place lintels until cured.

## **2.5 MORTAR AND GROUT MATERIALS**

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
  - 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Aggregate for Mortar: ASTM C 144.
  - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
  - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
  - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
  - 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- E. Aggregate for Grout: ASTM C 404.
- F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
    - a. Euclid Chemical Company (The); an RPM company; Accelguard 80.
    - b. GCP Applied Technologies (formerly Grace Construction Products); Morset.
- G. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
    - a. ACM Chemistries; RainBloc for Mortar.
    - b. BASF Corporation - Admixture Systems; MasterPel 240MA (Pre-2014: Rheopel Plus Mortar Admixture) or MasterPel 210D (Pre-2014: Rheopel Plus D).
    - c. GCP Applied Technologies (formerly Grace Construction Products); Dry-Block Mortar Admixture.
- H. Water: Potable.

## **2.6 REINFORCEMENT**

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:



- a. Dur-O-Wal; a Hohmann & Barnard company; D/A 810, D/A 812 or D/A 817.
  - b. Heckmann Building Products, Inc.; No. 376 Rebar Positioner.
  - c. Hohmann & Barnard, Inc; #RB or #RB-Twin Rebar Positioner.
  - d. Lock Rite; Rebar Positioners.
  - e. Wire-Bond; Core Lock Rebar Positioner.
- C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A 951/A 951M.
  - 1. Description: Prefabricated ladder type only welded-wire units with deformed continuous side rods and transverse rods,
  - 2. Interior Walls: Hot-dip galvanized carbon steel.
  - 3. Exterior Walls: Hot-dip galvanized carbon steel.
  - 4. Wire Size for Side Rods: 0.148-inch diameter (9 gauge).
  - 5. Wire Size for Cross Rods: 0.148-inch diameter (9 gauge).
  - 6. Spacing of Cross Rods: Not more than 16 inches o.c.
  - 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

## 2.7 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
  - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
  - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
  - 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Partition Top Anchors: 0.105-inch-thick metal plate with a 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication, unless noted otherwise in contract documents.

## 2.8 MISCELLANEOUS ANCHORS

- A. Anchor Bolts: Headed steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.
  - 1. Also see requirements on structural drawings.
- B. Postinstalled Anchors: Torque-controlled expansion anchors.
  - 1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.
  - 3. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.
  - 4. Also see requirements on structural drawings.

## 2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).

## **2.10 MORTAR AND GROUT MIXES**

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
  - 2. Use portland cement-lime mortar unless otherwise indicated.
  - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
  - 1. For masonry below grade or in contact with earth, use Type S.
  - 2. For reinforced masonry, use Type S.
  - 3. For mortar parge coats, use Type S or Type N.
  - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type S.
  - 5. For interior nonload-bearing partitions, use Type O may be used instead of Type N or Type S.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
  - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
  - 2. Proportion grout in accordance with requirements on drawings.
  - 3. Provide grout with a slump as indicated on drawings, as measured according to ASTM C 143/C 143M.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  - 2. Verify that foundations are within tolerances specified.
  - 3. Verify that reinforcing dowels are properly placed.
  - 4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION, GENERAL**

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

### **3.3 TOLERANCES**

- A. Dimensions and Locations of Elements:
  - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
  - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
  - 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
  - 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
  - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
  - 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
  - 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
  - 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
  - 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
  - 7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.
- C. Joints:
  - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
  - 2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
  - 3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
  - 4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

### **3.4 LAYING MASONRY WALLS**

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build non load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
  - 1. Install compressible filler in joint between top of partition and underside of structure above.
  - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
  - 3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
  - 4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

### **3.5 MORTAR BEDDING AND JOINTING**

- A. Lay hollow CMUs as follows:
  - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  - 3. Bed webs in mortar in all grouted masonry (at all webs adjacent to filled cells), including starting course on footings.
  - 4. Bed webs in mortar at all joint reinforcement cross rod locations.
  - 5. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
  - 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
  - 2. Wet joint surfaces thoroughly before applying mortar.
  - 3. Rake out mortar joints for pointing with sealant.

- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- E. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- F. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

### **3.6 MASONRY-CELL FILL**

- A. Pour normalweight-aggregate fill into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet.

### **3.7 MASONRY-JOINT REINFORCEMENT**

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 12 inches.
  - 1. Space reinforcement not more than 16 inches o.c.
  - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
  - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at[ **corners,**] returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### **3.8 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE**

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
  - 1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
  - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
  - 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

### **3.9 CONTROL AND EXPANSION JOINTS**

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. If location of control joints is not indicated on drawings (contract documents), place vertical joints spaced not more than 30 feet o.c. Locate control joints at points of natural weakness in masonry work.
  - 1. Locate control joints at the following locations:
    - a. Changes in wall height.
    - b. At intersecting walls forming a "T" or cross shape (but not at wall corners).
    - c. The corners of openings (including window and door openings).
      - 1) Control joint is only required at one side of openings less than 15 feet in width unless noted otherwise.

- C. Form control joints in concrete masonry as follows:
  - 1. Install preformed control-joint gaskets designed to fit standard sash block.

### **3.10 LINTELS**

- A. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.
  - 1. See general notes on structural drawings for additional requirements.
- C. Where vertical reinforcement is indicated to be continuous through lintel blocks (U-blocks), a 3-1/2"x3-1/2" portion of the block bottom shall be removed to allow for proper grouting. Do not splice vertical reinforcement at lintel blocks.

### **3.11 REINFORCED UNIT MASONRY INSTALLATION**

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
  - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
  - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
  - 1. Reinforcement shall be secured against displacement prior to grouting by wire positioners or other suitable devices such as wire tying, at intervals not exceeding 200 bar diameters.
  - 2. All vertical reinforcing bars shall either be continuous or lap spliced as indicated on drawings and tied with wire at both ends of the lap:
  - 3. Clearance between reinforcing steel and the surface of the masonry shall be not less 1/4 inch for fine grout and 1/2 inch for coarse grout.
  - 4. Do not bend reinforcement after it is embedded in grout or mortar, unless directed by the Architect.
  - 5. Lap splices of reinforcement shall occur entirely in one grout placement and shall not extend across grout joints.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for grout placement.
  - 2. Limit height of vertical grout pours and vertical grout lifts to not more than 64 inches. Each grout pour shall consist of one single grout lift.
- D. Do not place embedded conduits, pipes, and sleeves in grouted cells of reinforced masonry. Adjust locations of grouted cells as required to accommodate required conduits, pipe, and sleeves while maintaining minimum spacing indicated on Drawings. Grouted cells required on the Drawings at jambs, heads, and sills of openings are not allowed to be relocated. Contact Engineer prior to submittal of wall reinforcement shop drawings if conflicts cannot be resolved with adjustment of grouted cell locations. All conduits, pipes, and sleeves embedded in hollow cells of masonry shall be compatible with masonry and shall be properly isolated from masonry in accordance with TMS 402/ACI 530/ASCE 5.

### **3.12 FIELD QUALITY CONTROL**

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections shall be in accordance with the requirements of TMS 402/ACI 530/ASCE 5 for Level A, B, or C depending on the lateral design risk category listed in the structural drawing general notes.
  - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
  - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
  - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 1000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for compressive strength.
- H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

### **3.13 PARGING**

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

### **3.14 REPAIRING, POINTING, AND CLEANING**

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

### **3.15 MASONRY WASTE DISPOSAL**

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  1. Crush masonry waste to less than 3 inches in each dimension.
  2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
  3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- D. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

**END OF SECTION 04 2200**



## SECTION 05 0550 - SECURITY FASTENERS

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. The general provisions of the Contract, including General and Supplementary Conditions, apply to the work specified in this Section. Refer to Division 1 for additional requirements which may affect the work of this Section.

#### 1.02 SECTION INCLUDES

- A. Products furnished but not installed under this Section. All fasteners exposed in project including those on building exterior and on project site shall be security type. In addition exposed fasteners on project components shall be security type. Exposed fasteners excluded from this requirement shall be within the following areas:
  - 1. Mechanical, electrical, telephone, security equipment rooms
  - 2. Above suspended ceilings, behind locked access panels
  - 3. Pipe chases

#### 1.03 PERFORMANCE REQUIREMENTS

- A. Security fasteners shall be operable only by special tools produced for use on security fasteners. They shall be able to withstand numerous removals and replacements with a specific tool.

#### 1.04 SUBMITTALS

- A. Manufacturer's Data. Submit product data in accordance with Section 013000 for approval on security fasteners proposed by each vendor or subcontractor. Include with submittal data for the item to be secured.
- B. Samples. Upon request, provide actual samples of fasteners.

#### 1.05 QUALITY ASSURANCE

- A. General Contractor and Detention Equipment Contractor shall be responsible for coordinating security fastener types and manufacturers for all trades responsible for installation of security fasteners for their work.

### PART 2 PRODUCTS

#### 2.01 APPROVED MANUFACTURERS

- A. Products of the following manufacturers are approved for this project:
  - 1. Riteloc Co., Freeport, NY
  - 2. Safety Socket Screw Corp., Chicago, IL
  - 3. Tamper-Pruf Screws, Paramount, GA
- B. Security Screws. Provide material head style and plating as appropriate for installation requirements, strength and finish of adjacent materials. Provide stainless fasteners for fasteners in painted material.
  - 1. Head type allowed: Pinned Allen socket and snake eyes spanners.
  - 2. Diameters: No 4 through 3/4 "
  - 3. Material Austenitic Stainless Steel, or Martensitic Stainless Steel as required for particular strength and finish
  - 4. Head Styles: Sockets head cap, button, flat or low head as required by application or as specified. Provide Allen Head type for screw sizes No. 6, No. 8, and No. 10.
  - 5. Plating: Cadmium, zinc, nickel, phosphate, and chrome to match adjacent materials.
- C. Tools. Provide tool sets for removal of security fasteners. Sets shall include bits for all sizes hand drivers, keys for socket pin-head, spanner nuts and pin heads. Provide 6 sets of tools for pinned Allen type and 6 sets of tools for the snake eye spanner type. Package each set in a tool kit design for easy handling and storage.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. General. Each manufacturer, supplier and installer of items requiring security fasteners shall provide and install the proper size and type of fastener for each required application. Installation shall be in accordance with security fastener manufacturer's directions.

**END OF SECTION**

|                                      |             |                    |
|--------------------------------------|-------------|--------------------|
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## **SECTION 05 1200 - STRUCTURAL STEEL FRAMING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Structural steel.
  - 2. Field-installed shear connectors.
  - 3. Grout.
- B. Related Requirements:
  - 1. Division 05 Section "Steel Decking" for field installation of shear connectors through deck.
  - 2. Division 05 Section "Metal Fabrications" for miscellaneous steel fabrications and other metal items not defined as structural steel.
  - 3. Division 09 painting Sections for surface preparation and priming requirements.
  - 4. Division 13 Section "Metal Building Systems" for structural steel.

#### **1.3 DEFINITIONS**

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

#### **1.4 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.
- C. The general contractor is responsible for coordinating the structural steel shop drawing submittal with all other submittals for elements which attach to structural steel or have an effect on structural steel design or detailing. This includes, but is not limited to, mechanical/electrical equipment, steel joists, railings, medical equipment, sliding doors, suspended lights, glass storefront/curtainwall, roll-up doors, guy wire supports, etc. Hold shop drawing production, ordering of material, fabrication, and other work associated with such elements as required until these other submittals are reviewed and approved. Provide separate submittals for these elements as required. The general contractor shall coordinate between steel supplier and these other suppliers as required.

#### **1.5 PREINSTALLATION CONFERENCE**

- A. Preinstallation Conference: Conduct conference at Project site (with video teleconferencing capabilities).

#### **1.6 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Show fabrication of structural-steel components.
  - 1. Include erection plans, sections, elevations, and details.

2. Include details of cuts, connections, splices, camber, holes, and other pertinent data. Provide details of all non-standard connections not specifically indicated on the drawings for approval. Comply with all AISC minimum edge distance and spacing requirements.
  3. Include embedment Drawings.
  4. Include a layout plan for all embedment plates in concrete/CMU walls at open web steel joist support points. Layout plan shall be coordinated with approved submittal of cold-formed metal roof trusses/open web steel joists. Layout plan shall be provided in separate submittal as required.
  5. Include exact layout of all kicker braces which attach to open-web steel bar joists.
  6. Indicate size, material specification, surface preparation and coating for all members and components.
  7. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds when backing bars are to remain. Provide welding process and joint designation for all complete-joint-penetration and partial-joint-penetration welds.
  8. All required field welding shall be indicated on the erection drawings using erection details.
  9. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
  10. All column piece drawings shall indicate the grid location of the column.
  11. Reproductions made from contract drawings will not be accepted.
  12. For structural-steel connections indicated to comply with design loads, include structural analysis data by the qualified professional engineer responsible for their preparation.
  13. Shop drawings shall be computer generated using three-dimensional detailing software.
  14. **The final three-dimensional model shall be transmitted electronically to the Engineer along with submittal of shop drawings. Model is provided for information only. All comments from review will be made on 2D shop drawings. The three-dimensional model shall be submitted in IFC (.ifc) format. A three-dimensional model shall also be sent for all pre-engineered metal stairs.**
  15. Allow 21 days for review of structural steel shop drawings, excluding delivery time to and from the contractor.
  16. On projects where submittals are processed electronically, provide Engineer with a minimum of one half-sized copy of shop drawings for office use only.
  17. For shop drawings that are marked "Make Corrections Noted", provide Architect/Engineer with an electronic record set of the shop drawings and three-dimensional model for informational purposes once all revisions are made.
- C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1, "Structural Welding Code – Steel," for each welded joint qualified by testing, including the following:
1. Power Source.
- 1.7 INFORMATIONAL SUBMITTALS**
- A. Welding certificates.
  - B. Qualification Data: For Installer and fabricator.

- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with top coats.
- D. Mill test reports for structural steel, including chemical and physical properties.
- E. Product Test Reports: For the following:
  - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  - 2. Direct-tension indicators.
  - 3. Tension-control, high-strength bolt-nut-washer assemblies.
  - 4. Shear stud connectors.
  - 5. Shop primers.
  - 6. Nonshrink grout.
- F. Source quality-control test reports.
- G. Survey of existing conditions.
- H. Field quality-control and special inspection reports.

## **1.8 QUALITY ASSURANCE**

- A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."
- B. Comply with applicable provisions of the following specifications and documents:
  - 1. AISC 303.
  - 2. AISC 360.
  - 3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

## **1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
  - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
  - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repacking and seals containers.
  - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
  - 3. Comply with manufacturer's written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

## **PART 2 - PRODUCTS**

### **2.1 STRUCTURAL-STEEL MATERIALS**

- A. W-Shapes: ASTM A 992/A 992M or ASTM A 572/A 572M, Grade 50.
- B. Channels, Angles-Shapes: ASTM A 36/A 36M.
- C. Plate and Bar: ASTM A 36/A 36M.
- D. Corrosion-Resisting Structural Steel: ASTM A 588/A 588M, Grade 50.
- E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade C, structural tubing.
- F. Corrosion-Resisting, Cold-Formed Hollow Structural Sections: ASTM A 847, structural tubing.
- G. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
  - 1. Weight Class: Standard, unless otherwise noted on drawings.
  - 2. Finish: Black, except where indicated to be galvanized.

- H. Steel Castings: ASTM A 216/A 216M, Grade WCB with supplementary requirements S11.
- I. Steel Forgings: ASTM A 668/A 668M.
- J. Welding Electrodes: Comply with AWS requirements.

## **2.2 BOLTS, CONNECTORS, AND ANCHORS**

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563, Grade C heavy hex carbon-steel nuts; and ASTM F 436, Type 1 hardened carbon-steel washers; all with plain finish.
- B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852 (also referred to as ASTM A 325 Tension-Control), Type 1, heavy hex head steel structural bolts with splined ends; ASTM A 563, Grade C (or Grade DH if indicated to be galvanized) heavy hex carbon-steel nuts; and ASTM F 436, Type 1 hardened carbon-steel washers.
  - 1. Finish: Plain, except where indicated to be galvanized.
- C. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
- D. Threaded and Nutted Anchor Rods (or Anchor Bolts): ASTM F 1554, Grade 55, weldable, straight.
  - 1. Nuts: ASTM A 563 heavy hex carbon steel.
  - 2. Plate Washers: ASTM A 36 carbon steel.
  - 3. Washers: ASTM F 436 hardened carbon steel.
  - 4. Finish: Plain, except where indicated to be galvanized.
- E. Threaded Rods: ASTM A 36
  - 1. Nuts: ASTM A 563 heavy hex carbon steel.
  - 2. Washers: ASTM A 36 carbon steel.
  - 3. Finish: Plain, except where indicated to be galvanized.
- F. Eye Bolts and Nuts: ASTM A 108, Grade 1030, cold-finished carbon steel.
- G. Sleeve Nuts: ASTM A 108, Grade 1018, cold-finished carbon steel.

## **2.3 PRIMER**

- A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.
- B. Primer chosen shall be compatible with any additional coatings required.
- C. For exposed structural steel, refer to Division 09 sections
- D. Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20 or ASTM A 780.
  - 1. Dry film shall have at least 94% metallic zinc by weight
  - 2. Coordinate with Division 09 Sections of field painting if exposed.

## **2.4 GROUT**

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
  - 1. All grout shall have a minimum compressive strength of 5,000 psi at 28 days.

## **2.5 FABRICATION**

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303 "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
  - 1. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
  - 2. Mark and match-mark materials for field assembly.

3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces. Do not thermally cut bolt holes in the field or enlarge holes by burning.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning."
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.
- G. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
1. Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes in the field or enlarge holes by burning.
  2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
  3. Weld threaded nuts to framing and other specialty items indicated to receive other work.
- H. All reinforcing bars to be welded to structural steel shall be ASTM A706, deformed, and fabricated in accordance with CRSI's "Manual of Standard Practice."

## **2.6 SHOP CONNECTIONS**

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
1. Joint Type: Pretensioned.
  2. Use standard bolt holes. Slotted holes are not permitted unless indicated.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth for architecturally exposed structural steel members
  2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC 303 for mill material.
  3. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
    - a. Grind butt welds flush.
    - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.
  4. All flare bevel groove welds shall be filled flush with top of round surface, unless noted otherwise.

## **2.7 SHOP PRIMING**

- A. Shop prime steel surfaces except the following:
1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches. This does not apply to columns.
  2. Surfaces to be field welded.

3. Surfaces to be high-strength bolted with slip-critical connections.
  4. Surfaces to receive sprayed fire-resistive materials. This does not apply to intumescent coatings.
  5. Galvanized surfaces.
  6. Top flanges of composite steel beams that are specified to have headed shear studs attached.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
1. SSPC-SP 3, "Power Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
  2. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.
- D. Painting: Prepare steel and apply a 1-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils (0.038 mm).
- E. All structural steel shall be prepared in manner compatible with architectural requirements such as intumescent coatings, applied fire-proofing, high performance coatings, etc. Coordinate to verify compatibility between products chosen and/or methods of preparation. Identify any conflicts to Architect prior to fabrication of structural steel.

## **2.8 GALVANIZING**

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
1. Fill vent holes and grind smooth after galvanizing.
  2. Galvanize steel lintels and shelf angles attached to structural frame and located in exterior walls.
  3. Galvanize steel exposed to weather, U.N.O.
  4. Galvanize all other steel specifically indicated on Drawings.
  5. Galvanized anchors and nuts shall be purchased from same supplier and shall be shipped preassembled.

## **2.9 SOURCE QUALITY CONTROL**

- A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Inspect shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1 and the following inspection procedures, at testing agency's option:
1. Liquid Penetrant Inspection: ASTM E 165.



2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
  3. Ultrasonic Inspection: ASTM E 164.
  4. Radiographic Inspection: ASTM E 94.
- E. In addition to visual inspection, test and inspect shop-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:
1. Perform bend tests if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
  2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.
- F. Prepare test and inspection reports.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.
1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.
1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

#### **3.3 ERECTION**

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Baseplates and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
  2. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.
  3. Promptly pack grout solidly between bearing surfaces and base or bearing plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
  4. All grout shall be placed under steel column base plates and achieve 70% of its required 28-day strength prior to placement of concrete for elevated floors which are supported by the steel columns.
  5. Grout shall be placed with fluid consistency if column blockouts are used at ground floor slab.

- C. Maintain erection tolerances of structural steel and architecturally exposed structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  - 1. Level and plumb individual members of structure.
  - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with plug welds; and grind smooth at exposed surfaces.
- G. Do not use thermal cutting during erection.
- H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- I. Do not cut holes in structural steel framing unless indicated on structural drawings.
- J. Headed Stud Anchors: Prepare steel surfaces as recommended by manufacturer of headed stud anchors. Use automatic end welding of headed stud anchors according to AWS D1.1 and manufacturer's written instructions. Welding shall develop full capacity of headed stud anchor.
- K. All structural steel diagonal brace members shall be set and attached to the steel frame prior to placement of concrete for elevated floors.
- L. Remove all factory piece markings (especially if welded on to the member) by grinding smooth on all elements to be exposed prior to field painting.

### **3.4 FIELD CONNECTIONS**

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
  - 1. Joint Type: Pretensioned
  - 2. Provide and install a tension-control, high-strength bolt-nut-washer assembly for all bolts on field bolted connections.
  - 3. Use standard bolt holes. Slotted holes are not permitted unless indicated.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
  - 1. Comply with AISC 303 and AISC 360 for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
  - 2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth for architecturally exposed structural steel connections.
  - 3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC 303, "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
  - 4. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
    - a. Grind butt welds flush.
    - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.
  - 5. All flare bevel groove welds shall be filled flush with top of round surface, unless noted otherwise.

### **3.5 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Verify structural-steel materials and inspect steel frame joint details.
  - 2. Verify weld materials and inspect welds.
  - 3. Verify connection materials and inspect high-strength bolted connections.
  - 4. Verify all other applicable items as required per Chapter N of AISC 360.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspection.
- C. All inspection and tests shall be performed in accordance with Chapter N of AISC 360.
- D. Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Welded Connections: Visually inspect field welds according to AWS D1.1. See structural drawings for additional requirements on weld inspection.
  - 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1 and the following inspection procedures, at testing agency's option or as specified on structural drawings:
    - a. Liquid Penetrant Inspection: ASTM E 165.
    - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
    - c. Ultrasonic Inspection: ASTM E 164.
    - d. Radiographic Inspection: ASTM E 94.
- F. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:
  - 1. Perform bend tests if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
  - 2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.
- G. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
  - 1. All corrections shall be submitted to the Project Architect and Engineer for review and approval. Correction work shall not proceed until approval has been provided.
  - 2. Significant deficiencies in construction which require substantial engineering to resolve may require the contractor to secure the services of a professional engineer at no additional cost to the owner. The Project Architect and/or Engineer of Record will determine if a contractor hired engineer is required depending on the severity of the deficiency and the extent of work involved.

### **3.6 REPAIRS AND PROTECTION**

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780 and manufacturer's written instructions.
- B. Touchup Priming: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

2. Remove all factory piece markings (especially if welded on to the member) by grinding smooth on all elements to be exposed prior to field touchup priming operations. Touchup prime all repaired spots that required field grinding and cleanup which damaged the shop priming.
- C. Touchup Painting: Cleaning and touchup painting for exposed steel are specified in Division 09 painting Sections.

### **3.7 MISCELLANEOUS STEEL**

- A. Unless otherwise indicated on the structural drawings, provide angles, tubes, plates, channels, and other steel members shown on the architectural and connect with 1/4" fillet weld at all material interfaces. Unless otherwise indicated, the following assumptions shall be made regarding spacing and member size in order to establish an all-inclusive structural steel bid price. Plates- 5/16", Cont. Bent Plate- 5/16", Angle-L5x5x3/8, Channel Horizontally Oriented- C12x30, Channel Vertically Oriented-C6x8.2, Wide Flange-W18x35, Tube-HSS 6x6x5/16. Members/pieces shown in section shall be assumed continuous unless otherwise noted. Spacing intervals of stiffeners, hangers, kickers, -30"OC. Columns W12x79." It is the contractor's responsibility to coordinate and verify all structural steel shapes indicated in architectural drawings, prior to bid.

**END OF SECTION 05 1200**

## **SECTION 05 2100 - STEEL JOIST FRAMING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. K-series steel joists.
  - 2. KCS-type K-series steel joists.
  - 3. K-series steel joist substitutes.
  - 4. LH- and DLH-series long-span steel joists.
  - 5. Joist accessories.
- B. Related Requirements:
  - 1. Section 033000 "Cast-in-Place Concrete" for installing bearing plates in concrete.
  - 2. Section 042200 "Concrete Unit Masonry" for installing bearing plates in Concrete unit masonry.
  - 3. Section 051200 "Structural Steel Framing" for associated steel framing work.

#### **1.3 DEFINITIONS**

- A. SJI's "Specifications": Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."
- B. Special Joists: Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of joist, accessory, and product.
- B. Shop Drawings: Reproductions made from contract drawings will not be accepted. Submit one (1) electronic print. Review of shop drawings by the Architect/Engineer will be for general compliance with contract documents.
  - 1. Include layout, designation, number, type, location, and spacing of joists.
  - 2. Include joining and anchorage details; bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.
  - 3. Indicate locations and details of bearing plates to be embedded in other construction.
  - 4. Indicate that joists are designed for all special loading as given on the structural drawings.
  - 5. All special loading shall be clearly identified and located on joist placement plan in shop drawings.
  - 6. Includes details for discontinuous bridging placement where required.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For manufacturer.
- B. Welding certificates.
- C. Manufacturer certificates.
- D. Mill Certificates: For each type of bolt.

- E. Comprehensive engineering analysis of special joists signed and sealed by the qualified professional engineer responsible for its preparation.
- F. Field quality-control reports.

## **1.6 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications."
  - 1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.
- B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle joists as recommended in SJI's "Specifications."
- B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

## **1.8 SEQUENCING**

- A. Deliver steel bearing plates to be built into cast-in-place concrete and/or masonry construction.

# **PART 2 - PRODUCTS**

## **2.1 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Provide special joists and connections capable of withstanding design loads indicated.
  - 1. Use ASD; data are given at service-load level, unless otherwise indicated.
  - 2. Design special joists to withstand design loads with live-load deflections no greater than the following:
    - a. Roof Joists: Vertical deflection of 1/360 of the span.
    - b. Deflection limits above apply to all spans of joist, including cantilevered extensions.
  - 3. All special loads indicated on Drawings shall be in addition to allowable loads required by SJI for given span of joist.
  - 4. All joist top chords shall pass bend-check for 300 pound concentrated live load.

## **2.2 K-SERIES STEEL JOISTS**

- A. Manufacture steel joists of type indicated according to "Standard Specification for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.
  - 1. Joist Type: K-series steel joists and/or KCS-type K-series steel joists.
- B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.
- C. Provide holes in chord members for connecting and securing other construction to joists. Deduct area of holes from the area of chord when calculating strength of member.
- D. Top-Chord Extensions: Extend top chords of joists with SJI's Type S top-chord extensions where indicated, complying with SJI's "Specifications."
- E. Extended Ends: Extend bearing ends of joists with SJI's Type R extended ends where indicated, complying with SJI's "Specifications."
- F. Unless noted otherwise, all cantilevered joist extensions shall at a minimum have a capacity equal to the capacity of the main joist span designation.

- G. Camber joists according to SJI's "Specifications". Reduce camber at adjacent joists with varying lengths or at adjacent non-cambered structural steel beams or walls as required to prevent deck installation problems.
- H. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

### 2.3 LONG-SPAN STEEL JOISTS

- A. Manufacture steel joists according to "Standard Specification for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members; of joist type and end and top-chord arrangements[ **as follows:**][ **as indicated.**]
  - 1. Joist Type: LH-series steel joists and/or DLH-series steel joists.
  - 2. End Arrangement: [**Underslung**] [**Square**].
  - 3. Top-Chord Arrangement: [**Parallel**] [**Pitched 1/8 inch per 12 inches, one way**] [**Pitched 1/8 inch per 12 inches, two ways**] <Insert pitch>.
- B. Provide holes in chord members for connecting and securing other construction to joists.
- C. Camber long-span steel joists [**according to SJI's "Specifications."**] [**as indicated.**] <Insert camber requirements.>
- D. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

### 2.4 PRIMERS

- A. Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.
- B. Primer: Provide shop primer that complies with Division 09 Painting Sections applicable to location and requirements of joist framing.

### 2.5 JOIST ACCESSORIES

- A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.
- B. Fabricate steel bearing plates from ASTM A 36/A 36M steel with integral anchorages of sizes and thicknesses indicated. Shop prime paint.
- C. Furnish ceiling extensions, either extended bottom-chord elements or a separate extension unit of enough strength to support ceiling construction. Extend ends to within 1/2 inch of finished wall surface unless otherwise indicated. Provide ceiling extensions at all locations required to accommodate architectural detailing.
  - 1. Finish: Same as joist material.
- D. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
  - 1. Finish: Plain.
- E. Welding Electrodes: Comply with AWS standards.
- F. Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20.
- G. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

### 2.6 CLEANING AND SHOP PAINTING

- A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2 or power-tool cleaning, SSPC-SP 3.
- B. Do not prime paint joists and accessories to receive sprayed fire-resistive materials.

- C. Apply one coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION**

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written instructions, and requirements in this Section.
  - 1. Before installation, splice joists delivered to Project site in more than one piece.
  - 2. Space, adjust, and align joists accurately in location before permanently fastening.
  - 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
  - 4. Delay rigidly connecting bottom-chord extensions to columns or supports until dead loads are applied.
- C. Field weld joists to supporting steel bearing plates and framework as per SJI minimum standards or as otherwise indicated on the drawings if the drawings indicate welds which exceed SJI welding standards. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- D. Bolt joists to supporting steel framework using high-strength structural bolts. Comply with RCSC's "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts" for high-strength structural bolt installation and tightening requirements.
- E. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.
- F. Install and connect L1-1/2x1-1/2x3/16 stiffening angles on each side of joist at all concentrated loads applied to joist in accordance with typical detail on structural plans. Weld each end of stiffening angles all around.
- G. Do not make attachments to joist which induce twisting in the joist. All attachments shall be concentric to the joist member.
- H. Where bottom chord bridging conflicts with architectural, mechanical, electrical, plumbing, or other components with fixed locations, omit bridging as required and provide diagonal bridging in adjacent bays as approved by joist supplier and in accordance with joist supplier's requirements. Coordinate bridging locations with other fixed components prior to bridging installation. Adjust and/or provide additional bridging as required to comply with joist supplier's requirements.

#### **3.3 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner shall engage a qualified independent testing agency to perform tests and inspections and prepare test and inspection reports. Tests and inspection shall be in accordance with Chapter 17 of the International Building Code.
- B. Visually inspect field welds according to AWS D1.1/D1.1M.
  - 1. In addition to visual inspection, test field welds according to AWS D1.1/D1.1M and the following procedures, at testing agency's option:
    - a. Liquid Penetrant Inspection: ASTM E 165/E 165M.



- b. Magnetic Particle Inspection: ASTM E 709.
  - c. Ultrasonic Testing: ASTM E 164.
  - d. Radiographic Testing: ASTM E 94.
- C. Visually inspect bolted connections.
- D. High-strength, field-bolted connections will be tested and verified according to procedures in RCSC's "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts."
- E. Prepare test and inspection reports.
- F. Correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements.
- G. Additional testing will be performed to determine compliance of corrected Work with specified requirements.

### **3.4 PROTECTION**

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.
- B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, bearing plates, abutting structural steel, and accessories.
  - 1. Clean and prepare surfaces by hand-tool cleaning according to SSPC-SP 2 or power-tool cleaning according to SSPC-SP 3.
  - 2. Apply a compatible primer of same type as primer used on adjacent surfaces.
- C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that joists and accessories are without damage or deterioration at time of Substantial Completion

**END OF SECTION 05 2100**

## **SECTION 05 3100 - STEEL DECKING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Roof deck.
  - 2. Noncomposite form deck.
- B. Related Requirements:
  - 1. Division 03 Section "Cast-in-Place Concrete" for normal-weight structural concrete fill over steel deck.
  - 2. Division 05 Section "Structural Steel" for shop- and field-welded shear connectors.
  - 3. Division 05 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.
  - 4. Division 09 painting Sections for repair painting of primed deck and finish painting of deck.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings: Reproductions made from contract drawings will not be accepted. Submit one (1) electronic print. Review of shop drawings by the Architect/Engineer will be for general compliance with contract documents.
  - 1. Include plans showing layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Product Certificates: For each type of steel deck.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
  - 1. Power-actuated mechanical fasteners.
- D. Evaluation Reports: For steel deck.
- E. Field quality-control reports.

#### **1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

### **2.2 ROOF DECK**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Canam Steel Corporation.
  - 2. Epic Metals Corporation.
  - 3. New Millennium Building Systems, LLC.
  - 4. Nucor Corp.; Vulcraft Group. (design basis on structural plans)
  - 5. Valley Joist.
  - 6. DACS, Inc.
  - 7. Cordeck.
  - 8. Consolidated Systems, Inc.
- B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
  - 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 50 (minimum yield stress in ksi), G60 zinc coating. At all exposed conditions, galvanized deck shall be cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer. Verify compatibility with top coat specified by Architect.
  - 2. Deck Profile: As indicated.
  - 3. Profile Depth: As indicated.
  - 4. Design Uncoated-Steel Thickness: As indicated.
  - 5. Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: As indicated.
  - 6. Span Condition: Triple span or more unless not permitted by geometry.
  - 7. Side Laps: Overlapped.

### **2.3 NONCOMPOSITE STEEL FORM DECK**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Canam Steel Corporation.
  - 2. Epic Metals Corporation.
  - 3. New Millennium Building Systems, LLC.
  - 4. Nucor Corp.; Vulcraft Group. (design basis on structural plans)
  - 5. Valley Joist.
  - 6. DACS, Inc.
  - 7. Cordeck.
  - 8. Consolidated Systems, Inc.

- B. Noncomposite Steel Form Deck: Fabricate ribbed-steel sheet noncomposite form-deck panels to comply with "SDI Specifications and Commentary for Noncomposite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 50 (minimum yield stress in ksi), G60 zinc coating.
  2. Profile Depth: As indicated.
  3. Design Uncoated-Steel Thickness: As Indicated.
  4. Span Condition: Triple span or more unless not permitted by geometry.
  5. Side Laps: Overlapped.

## **2.4 ACCESSORIES**

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Fasteners indicated on plans as "Tek Screws" shall be self-drilling tapping screws complying with the material, process, and performance requirements of ASTM C1513. Tek screws shall be corrosion resistant and meet the minimum requirements of ASTM F1941. Provide larger screws if required for attachment to structural steel. Provide screws penetrating joined members by not less than three exposed screw threads
- E. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- F. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- G. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.
- H. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
- I. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- J. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- K. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch- wide flanges and level recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.
- L. Galvanizing Repair Paint: ASTM A 780.
- M. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION, GENERAL**

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work. See structural drawings for 12 gage reinforcement plate required at small openings in the deck.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Deck fasteners shall be in accordance with structural contract drawings.

### **3.3 ROOF-DECK INSTALLATION**

- A. Fasten roof-deck panels to steel supporting members as indicated on the plans.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels as indicated on the plans.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
  - 1. End Joints: Lapped 2 inches minimum or butted at Contractor's option (do not butt at open web steel joist).
- D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 4 inches apart with at least one fastener at each corner.
  - 1. Install reinforcing channels or zees in ribs to span between supports and mechanically fasten.
- E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. mechanically fasten to substrate to provide a complete deck installation.
- F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

### **3.4 FLOOR-DECK INSTALLATION**

- A. Fasten floor-deck panels to steel supporting members as indicated on the plans.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels as indicated on the plans.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
  - 1. End Joints: Lapped 2 inches minimum at non-composite deck. Butted at centerline of support at composite deck (1/2" maximum gap).
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.
  - 1. Girder filler shall be provided on both sides of composite girder beams (spanning parallel to composite deck span) to ensure full concrete coverage over top flange of girder beam.

- E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck. Continuous closure pieces shall be cut at deck valleys as deemed necessary by Engineer.
- F. Provide shoring of floor deck if indicated on Drawings.
- G. Weld stud shear connectors through steel deck to structural members below.

### **3.5 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests and inspections shall be performed in accordance with SDI-QA/QC "Standard for Quality Control and Quality Assurance for Installation of Steel Deck."
- C. Field welds will be subject to inspection.
- D. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- E. Remove and replace work that does not comply with specified requirements.
- F. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.
- G. Prior to placement of roofing material over metal roof deck, the Contractor shall notify Testing Agency to perform inspection of roof deck fastening to supporting elements. Roofing material shall not be placed until inspection results are reviewed by Architect and all corrective work is complete.

### **3.6 PROTECTION**

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
  - 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
  - 2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Division 09 Section.
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

**END OF SECTION 05 3100**

## **SECTION 05 4000 - COLD-FORMED METAL FRAMING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Exterior non load-bearing wall framing (Delegated design. See Performance Requirements).
  - 2. Exterior soffit framing (Delegated design).
- B. This specification section applies to all references in the contract documents to specification section 05 41 00 as well as section 05 40 00.
- C. Related Sections include the following:
  - 1. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
  - 2. Division 9 Section "Gypsum Board Assemblies" for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.

#### **1.3 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads shown in plans and for resisting wind pressures determined from the wind speeds, exposure and risk category provided on plans.
  - 1. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
    - a. Exterior Non Load-Bearing Wall Framing: Horizontal deflection of 1/600 of the wall height for walls supporting brick/masonry veneer. Horizontal deflection of 1/360 of wall height for all other walls. Ultimate wind loads may be multiplied by 0.42 as allowed by IBC for purposes of wall deflection limits.
    - b. The above deflection limits apply at all spans of the framing member, including cantilever spans and overhangs.
  - 2. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
  - 3. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
    - a. Upward and downward movement of 3/4 inch.
  - 4. Design cold-formed framing systems to withstand any design loads and forces acting onto the cold-formed framing systems from any storefront/glass assemblies. Proper consideration of point loads from mullions shall be indicated in the design calculations.
  - 5. Design cold-formed framing systems to accommodate connections of any storefront/glass assemblies.

6. All framing conditions which preclude the complete usage of cold-formed metal framing as indicated on the construction documents shall be identified prior to bidding or be resolved after bidding at no additional cost to the owner. Provide fixed connections to the structure where required for stability at cantilever conditions. Connections to structure shall be designed and provided by cold-formed metal framing supplier. Only provide fixed connections to structure when required for stability. Do not add kicker braces to reduce the span length of exterior wall studs. Do not attach to bottom flange of steel beams unless indicated on structural drawings.
  7. Design all exterior soffit ceilings to resist positive and negative wind pressure in accordance with ASCE 7. Design soffit framing for dead weight of soffit and for a vertical construction live load of 10 psf minimum and a simultaneous 300 pound point load where erector can stand and otherwise load such framing.
  8. Design interior wall framing for a net horizontal differential pressure of 5 psf perpendicular to the wall surface (in either direction) due to differential interior air pressure between rooms and incidental loading.
  9. Thickness of cold-formed metal framing shall be minimum required for anchorage at all louvers, doors, windows, and other wall openings. Coordinate with applicable supplier for minimum thickness of material for anchorage at framed wall openings.
- B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
  2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

#### **1.4 SUBMITTALS**

- A. Product Data: For each type of cold-formed metal framing product and accessory indicated.
- B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work. Layout for metal stud wall framing shall include building elevations and/or wall plans indicating applicable wall sections in shop drawings. Provide wall sections for all unique exterior wall framing conditions around perimeter of building, including applicable locations where sections have not been provided in contract drawings. Contact Architect/Engineer prior to submittal of Shop Drawings if any additional information is required.
1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  2. Submit shop drawings, sealed and signed by a qualified Louisiana Registered Civil Engineer.
    - a. Shop drawings shall be computer generated using two-dimensional drafting software (minimum).
    - b. Shop drawings (and all other information necessary for field construction) shall be on completely separate sheets from structural analysis data (calculations).
  3. For shop drawings that are marked "Mark Corrections Noted", provide Architect/Engineer with an electronic record set of the shop drawings for informational purposes once all revisions are made.



4. Do not submit shop drawings prior to review and approval of storefront/glass assembly submittals and pre-engineering metal building submittals.

C. Welding certificates (if any welding is required).

## **1.5 QUALITY ASSURANCE**

- A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- D. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, ductility, and metallic-coating thickness.
- E. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- F. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- G. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
  1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
  2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."
- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
- I. The general contractor is responsible for coordinating with the cold-formed metal framing Design Engineer to ensure the metal framing is installed in accordance with the approved shop drawings. The Architect/Engineer is not responsible for verifying proper installation of cold-formed metal framing.
- J. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, the Steel Framing Alliance, or the Steel Stud Manufacturers Association.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing, not including pre-engineered roof trusses, by one of the following:
  1. AllSteel & Gypsum Products, Inc.
  2. California Expanded Metal Products Company.

3. ClarkDietrich Building Systems
4. Consolidated Fabricators Corp.; Building Products Division.
5. Custom Stud, Inc.
6. Marino\Ware; a division of Ware Industries.
7. SCAFCO Corporation.
8. Steel Construction Systems.
9. Steeler, Inc.
10. United Metal Products, Inc.
11. Super Stud Building Products, Inc.

## **2.2 MATERIALS**

- A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
  1. Grade: As required by structural performance.
  2. Coating: G60, A60, AZ50, or GF30.
- B. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
  1. Grade: As required by structural performance.
  2. Coating: G90.
- C. Screws: All screws used in the manufacture of steel roof trusses shall be exterior rated zinc coated self-drilling screws.

## **2.3 EXTERIOR NON-LOAD-BEARING WALL FRAMING**

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
  1. Minimum Base-Metal Thickness: As required by design but in no case less than 0.0428 inch.
  2. Minimum Flange Width: 1-5/8 inches.
  3. Section Properties: As required by design. See drawings for required depth of wall.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
  1. Minimum Base-Metal Thickness: As required by design but in no case less than 0.0428.
  2. Minimum Flange Width: 1-1/4 inches.
  3. Section Properties: As required by design. See drawings for required depth of wall.
- C. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
  1. Minimum Base-Metal Thickness: As required by design but in no case less than 0.0428 inch.
  2. Flange Width: 1 inch plus the design gap for 1-story structures.
  3. Section Properties: As required by design. See drawings for required depth of wall.

- D. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.
1. Outer Track: Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
    - a. Minimum Base-Metal Thickness: As required by design but in no case less than 0.0428 inch.
    - b. Minimum Flange Width: 1 inch plus twice the design gap.
    - c. Section Properties: As required by design. See drawings for required depth of wall.
  2. Inner Track: Of web depth indicated, and as follows:
    - a. Minimum Base-Metal Thickness: As required by design but in no case less than 0.0428 inch.
    - b. Minimum Flange Width: width equal to the sum of outer deflection track flange width plus 1 inch.
    - c. Section Properties: As required by design. See drawings for required depth of wall.
- E. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure.

## **2.4 EXTERIOR SOFFIT FRAMING**

- A. Steel Joists: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: As required by design but in no case less than 0.0329 inch.
  2. Minimum Flange Width: 1-5/8 inches.
  3. Minimum section: as required structurally or as specified on plans. See drawings for maximum allowed depth of element.

## **2.5 FRAMING ACCESSORIES**

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
1. Supplementary framing.
  2. Bracing, bridging, and solid blocking.
  3. Web stiffeners.
  4. Anchor clips.
  5. End clips.
  6. Foundation clips.
  7. Gusset plates.
  8. Stud kickers, knee braces, and girts.
  9. Joist hangers and end closures.
  10. Hole reinforcing plates.
  11. Backer plates.

## **2.6 ANCHORS, CLIPS, AND FASTENERS**

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel headless, hooked bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

## **2.7 MISCELLANEOUS MATERIALS**

- A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.
- B. Cement Grout (if required): Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Nonmetallic, Nonshrink Grout (if required): Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.
- D. Shims (if required): Load bearing, high-density multimonomer plastic, nonleaching.
- E. Sealer Gaskets (if required): Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

## **2.8 FABRICATION**

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
  - 1. Fabricate framing assemblies using jigs or templates.
  - 2. Cut framing members by sawing or shearing; do not torch cut.
  - 3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
  - 4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
  - 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
  - 2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
- C. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
- D. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

#### **3.3 INSTALLATION, GENERAL**

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
  - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
  - 1. Cut framing members by sawing or shearing; do not torch cut.
  - 2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation, specified in Division 7 Section "Building Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
  - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
- K. Exterior Soffit Framing: Provide horizontal and vertical members as required for support of all exterior soffit ceilings. Vertical members shall be provided at all structural steel beam and open web steel joist locations to uniformly distribute weight and loading of soffit ceiling to structure above. Vertical members may attach to underside of composite-concrete metal decks where required and the attachments shall be made such that a line load is imposed perpendicular to the deck span direction. Vertical members shall not attach directly to non-composite concrete metal floor decks and metal roof decks. All attachments to open web steel joists shall be made at each panel point location. All kickers shall only be provided between metal stud framing member where required for stability and without interfering with other work or requirements indicated by the drawings. Kicker brace configurations shall not induce torsion or twisting into floor beams or joists and attachments shall be made for direct transfer of horizontal to floor or roof deck, where required for stability.

### **3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION**

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
  - 1. Maximum Stud Spacing: 16 inches, or as indicated.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
  - 1. At Contractor's option, single or double deflection tracks may be used.
  - 2. Install single deflection track and attach to building structure.
  - 3. Install double deep-leg deflection tracks and anchor outer track to building structure.
  - 4. Connect drift clips to cold formed metal framing and anchor to building structure.
- E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 72 inches apart. Fasten at each stud intersection.
  - 1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.

2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
  3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system. Provide miscellaneous framing and connections as required for support of all masonry veneer, cast stone bands, and other wall covering elements.

### **3.5 FIELD QUALITY CONTROL**

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### **3.6 REPAIRS AND PROTECTION**

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

**END OF SECTION 05 4000**

## SECTION 05 5000 - METAL FABRICATIONS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Shop fabricated steel items including:
  - 1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
  - 2. Miscellaneous steel trim.
  - 3. Metal bollards.
  - 4. Metal downspout boots.
- B. Prefabricated ladders.
- C. Products includes in this Section:
  - 1. Loose steel lintels.
  - 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
  - 3. Interior Access ladder
  - 4. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

#### 1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 03 4713 - Tilt-Up Concrete: Placement of metal fabrications for tilt-up concrete.
- C. Section 04 2200 - Concrete Unit Masonry: Placement of metal fabrications in unit masonry.
- D. Section 05 1200 - Structural Steel Framing: Structural steel column anchor bolts.
- E. Section 05 2100 - Steel Joist Framing: Structural joist bearing plates, including anchorage.
- F. Section 05 3100 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.
- G. Section 09 9000 - Painting and Coating: Paint finish.

#### 1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.
- D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.
- E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- H. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Errata (2026).
- I. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019, with Editorial Revision (2025).
- J. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.
- K. SSPC-SP 2 - Hand Tool Cleaning; 2024.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.



- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
  - 2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer, licensed in the State of the project..
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

## **1.05 QUALITY ASSURANCE**

- A. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

### **2.02 FABRICATION**

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

### **2.03 FABRICATED ITEMS**

- A. Steel tubing as required within walls for support of new detention frames and doors, as indicated in Drawings.
- B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
- C. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.
- D. Lintels: As detailed; prime paint finish.
- E. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; prime paint finish.

### **2.04 PREFABRICATED LADDERS**

- A. Prefabricated Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
  - 1. Materials: Aluminum; AA DAF-45 6063 alloy, T52 temper.
  - 2. Finish: Manufacturer's standard clear anodized coating, comply with AAMA 611, Class 1.
  - 3. Manufacturers:
    - a. **Basis of Design:** O'Keeffe's, Inc; Model 500: [www.okeeffes.com](http://www.okeeffes.com).
    - b. Cotterman Co.: Series F.
    - c. Or prior approved equal..

## 2.05 DOWNSPOUT BOOTS

- A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
  - 1. Configuration: As indicated in drawings.
  - 2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
  - 3. Color: To be selected by Architect from manufacturer's full range.
  - 4. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.

## 2.06 FINISHES - STEEL

- A. Prime paint steel items.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.

## 2.07 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips, flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
  - 1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

## 2.08 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.

- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## **2.09 MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
  - 1. Fabricate units from slotted channel framing where indicated.
  - 2. Furnish inserts for units installed after concrete is placed.
- C. Galvanize miscellaneous framing and supports where indicated.
- D. Prime miscellaneous framing and supports with primer specified in Section 09 9000, or Section 09 9600 where indicated.

## **2.10 METAL DOWNSPOUT BOOTS**

- A. Provide downspout boots made from cast iron in heights indicated with inlets of size and shape to suit downspouts. Provide units with flanges and holes for countersunk anchor bolts.

## **2.11 LOOSE STEEL LINTELS**

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches, unless otherwise indicated.
- C. Prime loose steel lintels located in exterior walls with primer specified in Section 09 9000, as indicated.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

## **3.02 PREPARATION**

- A. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

## **3.03 INSTALLATION, GENERAL**

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation, with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
  - 1. Cast Aluminum: Heavy coat of bituminous paint.
  - 2. Extruded Aluminum: Two coats of clear lacquer.

#### **3.04 INSTALLATION**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Obtain approval prior to site cutting or making adjustments not scheduled.
- E. After erection, prime welds, abrasions and surfaces not shop primed or galvanized , except surfaces to be in contact with concrete.

#### **3.05 TOLERANCES**

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

**END OF SECTION**

## SECTION 06 1000 - ROUGH CARPENTRY

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Rough opening framing for doors, windows, and roof openings.
- B. Roofing nailers.
- C. Roofing cant strips.
- D. Preservative treated wood materials.
- E. Fire retardant treated wood materials.
- F. Communications and electrical room mounting boards.
- G. Concealed wood blocking, nailers, and supports.
- H. Miscellaneous wood nailers, furring, and grounds.

#### 1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Setting anchors in concrete.
- B. Section 07 2726 - Fluid-Applied Non-Permeable Air-Barrier.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Sill flashings.
- D. Section 07 7200 - Roof Accessories: Coping
- E. Section 07 7200 - Roof Accessories: Prefabricated roof curbs.

#### 1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.
- C. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.
- D. PS 1 - Structural Plywood; 2023.
- E. PS 2 - Performance Standard for Wood Structural Panels; 2019.
- F. PS 20 - American Softwood Lumber Standard; 2025.
- G. SPIB (GR) - Standard Grading Rules; 2021.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions, fasteners.
- C. Fastener type and spacing.
- D. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

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## **PART 2 PRODUCTS**

### **2.01 GENERAL REQUIREMENTS**

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
  - 1. Species: Southern Pine, unless otherwise indicated.
  - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at [www.alsc.org](http://www.alsc.org), and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.
- C. Provide dressed lumber, S4S, unless otherwise indicated.

### **2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS**

- A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Stud Framing (2 by 2 through 2 by 6 ):
  - 1. Species: Southern Pine.
  - 2. Grade: No. 2.
- E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
  - 1. Lumber: S4S, No. 2 or Standard Grade.
  - 2. Boards: Standard or No. 3.

### **2.03 CONSTRUCTION PANELS**

- A. Wall Sheathing: PS 2 type.
  - 1. Bond Classification: Exterior.
  - 2. Grade: Structural I Sheathing.
  - 3. Span Rating: 24., MINIMUM 5/8" THICKNESS
  - 4. Performance Category: 5/16 PERF CAT.
  - 5. Edge Profile: Square edge.
  - 6. Provide preservative treated plywood sheathing at all exterior sheathing locations.
- B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
- C. Other Applications:
  - 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
  - 2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
  - 3. Other Locations: PS 1, C-D Plugged or better.

### **2.04 ACCESSORIES**

- A. Metal and Finish of Fasteners:
  - 1. Untreated Wood: Unfinished steel.
- B. Fasteners and Anchors:
  - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
  - 2. Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
    - a. Where rough carpentry is in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
  - 3. Nails, Brads, and Staples: ASTM F 1667.

4. Power-Driven Fasteners: NES NER-272.
5. Wood Screws: ASME B18.6.1.
6. Lag Bolts: ASME B18.2.1.
7. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
8. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
  - a. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
  - b. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.
9. Metal Framing Anchors
  - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1) Alpine Engineered Products, Inc.
    - 2) Cleveland Steel Specialty Co.
    - 3) Harlen Metal Products, Inc.
    - 4) KC Metals Products, Inc.
    - 5) Simpson Strong-Tie Co., Inc.
    - 6) Southeastern Metals Manufacturing Co., Inc.
    - 7) USP Structural Connectors.
  - b. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
  - c. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

## 2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWWA U1 - Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
  1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
  2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWA standards.
  3. Preservative Chemicals: Acceptable to authorities having jurisdiction.
  4. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Fire Retardant Treatment:
  1. Manufacturers:
    - a. Lonza Group: [www.wolmanizedwood.com/#sle](http://www.wolmanizedwood.com/#sle).
    - b. Hoover Treated Wood Products, Inc: [www.frtw.com/#sle](http://www.frtw.com/#sle).
    - c. Koppers, Inc: [www.koppers.com/#sle](http://www.koppers.com/#sle).
  2. Interior Type A: AWWA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with

ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.

- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
  - b. Treat rough carpentry items as indicated .
  - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Application: Treat items indicated on Drawings, and the following:
1. Retain subparagraph below if Project includes wood adjacent to roofing or waterproofing.
  2. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  3. Retain applicable items below. Insert other items that require treatment but are not likely to be indicated on Drawings.
  4. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  5. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  6. Wood floor plates that are installed over concrete slabs-on-grade.
- D. Preservative Treatment:
1. Manufacturers:
    - a. Lonza Group: [www.wolmanizedwood.com/#sle](http://www.wolmanizedwood.com/#sle).
    - b. Viance, LLC: [www.treatedwood.com/#sle](http://www.treatedwood.com/#sle).
  2. Preservative Pressure Treatment of Lumber Above Grade: AWP A U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
    - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
    - b. Treat lumber exposed to weather.
    - c. Treat lumber in contact with roofing, flashing, or waterproofing.
    - d. Treat lumber in contact with masonry or concrete.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Where wood framing bears on cementitious foundations, masonry and concrete construction install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
- B. Coordinate installation of rough carpentry members specified in other sections.

### **3.02 INSTALLATION - GENERAL**

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

### **3.03 BLOCKING, NAILERS, AND SUPPORTS**

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.



- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- F. Provide nonstructural framing and blocking to support the following:
  - 1. Cabinets and shelf supports.
  - 2. Wall brackets.
  - 3. Handrails.
  - 4. Grab bars.
  - 5. Towel and bath accessories.
  - 6. Wall-mounted door stops.
  - 7. Chalkboards and marker boards.
  - 8. Wall paneling and trim.
  - 9. Joints of rigid wall coverings that occur between studs.
  - 10. Other wall- or ceiling-mounted items indicated on drawings.

### **3.04 ROOF-RELATED CARPENTRY**

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

### **3.05 INSTALLATION OF CONSTRUCTION PANELS**

- A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
  - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
  - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
  - 3. Install adjacent boards without gaps.
  - 4. Size and Location: As indicated on drawings.

### **3.06 TOLERANCES**

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

### **3.07 CLEANING**

- A. Waste Disposal: See Section 01 7419 - Construction Waste Management and Disposal.
  - 1. Comply with applicable regulations.
  - 2. Do not burn scrap on project site.
  - 3. Do not burn scraps that have been pressure treated.
  - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

**END OF SECTION**

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## SECTION 06 2000 - FINISH CARPENTRY

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Finish carpentry items.
  - 1. Wood Moldings

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 06 4100 - Architectural Wood Casework: Shop fabricated custom cabinet work.
- C. Section 09 9000 - Painting and Coating: Painting and finishing of finish carpentry items.

#### 1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data:
  - 1. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
  - 2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- D. Samples: Submit two samples of wood trim 24 inch long.

#### 1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
  - 1. Company with at least one project within the past 5 years with value of woodwork within 20 percent of cost of woodwork for this project.
- B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Build mockups of typical finish carpentry items as shown on Drawings.
  - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect from moisture damage.

### PART 2 PRODUCTS

#### 2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Interior Woodwork Items:
  - 1. Moldings, Bases

#### 2.02 LUMBER MATERIALS

- A. Medium Hardness Lumber: Poplar species, Plain Sawn sawn, maximum moisture content of 13 percent for interior wood.
  - 1. AWI: Grade 1
  - 2. Grading: In accordance with rules certified by ALSC; [www.alsc.org](http://www.alsc.org).

### **2.03 WOOD BASES FOR PAINTED FINISH**

- A. Wood species **(WB-1)**: Poplar, as indicated in Drawing Finish Key.
- B. Profile: As indicated on the Drawings.
- C. Finish: As indicated on Drawing Finish Key.

### **2.04 FASTENINGS**

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application; Galvanized finish in concealed locations and Galvanized finish in exposed locations, set for application of wood filler.

### **2.05 ACCESSORIES**

- A. Lumber for Shimming and Blocking: Softwood lumber of any species. To meet 06 1000 Rough Carpentry specifications.
- B. Wood Filler: Solvent base, tinted to match surface finish color.

### **2.06 FABRICATION**

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify adequacy of backing, blocking and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

### **3.02 PREPARATION**

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

### **3.03 INSTALLATION**

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Set and secure materials and components in place, plumb and level. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- D. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary.
  - 1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base is finished.

2. Install trim with no more variation from a straight line than 1/8 inch in 96 inches.

#### **3.04 PREPARATION FOR SITE FINISHING**

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

#### **3.05 ADJUSTING AND CLEANING**

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

**END OF SECTION**

## SECTION 06 4100 - ARCHITECTURAL WOOD CASEWORK

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Cabinet and drawer hardware.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry.
- B. Section 06 2000 - Finish Carpentry
- C. Section 12 3600 - Simulated Stone Countertops.

#### 1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene preinstallation meeting not less than one week prior to completion of framing behind casework; require attendance of contractor, framing contractor, and casework fabricator.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. See Section 01 3000 - Submittal Procedures.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
- D. Samples for verification of the following:
  - 1. Laminate-clad panels, 8 by 10 inches (200 by 250 mm), for each type, color, pattern, and surface finish, with separate samples of unfaced panel product used for core.
  - 2. Exposed cabinet hardware, one unit for each type and finish.
  - 3. Edge banding 10 inches for each type, color, pattern and surface finish.
- E. Product certificates signed by woodwork fabricator certifying that products comply with specified requirements.
- F. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

#### 1.06 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience. With sufficient production capacity to produce required units without delaying the Work.
- B. Single-Source Responsibility for Fabrication and Installation: Engage a pre-qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing interior architectural woodwork specified in this Section.
- C. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.
  - 1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
  - 2. Provide designated labels on shop drawings as required by certification program.
  - 3. Provide designated labels on installed products as required by certification program.

4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

#### **1.07 MOCK-UPS**

- A. Mockups: Prior to fabricating or installing paneling, casework, and laminate casework, construct mockups of each separate finish to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups of the size requested, using materials indicated for final unit of work, and complying with the following requirements.
  1. Locate mockups on site in the location indicated or, if not indicated, as directed by Architect.
  2. Notify Architect one week in advance of the date and time when fabrication of mockup will begin.
  3. Notify Architect one week in advance of the date and time when mockups will be installed.
  4. Demonstrate the proposed range of aesthetic effects and workmanship.
  5. Obtain Architect's acceptance of mockups before start of final unit of Work.
  6. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
    - a. Accepted mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Field Conditions" below.

#### **1.09 FIELD CONDITIONS**

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.
  2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Filler panels are not to exceed 1 ½" each side of a run.

#### **1.10 COORDINATION**

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

### **PART 2 PRODUCTS**

#### **2.01 ARCHITECTURAL WOOD CASEWORK**

- A. Provide casework and casework components in sizes and profiles as indicated on drawings.

## 2.02 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade.
  - 1. AWI Type of Cabinet Construction: Flush overlay. Unless otherwise indicated in drawings.
  - 2. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
    - a. Surfaces Other than Drawer Bodies: High-pressure decorative laminate, Grade GP-28.
    - b. Drawer Sides and Backs: Solid hardwood lumber, shop finished.
  - 3. Colors, Patterns, and Finishes: As indicated on finish schedule.
  - 4. Wood Trim: Comply with the following:
    - a. Opaque: Poplar.
  - 5. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers except where located directly under tops.

## 2.03 WOOD-BASED COMPONENTS

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," for lumber and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
  - 1. SPIB - Southern Pine Inspection Bureau.
  - 2. WWPA - Western Wood Products Association.
- C. Softwood Plywood: Comply with U.S. Commercial Standards, CS45.
- D. Hardwood Plywood: Comply with U.S. Commercial Standards, CS45.
- E. Hardboard (including soft hardwoods) and Lumber Core Hardwood Veneer: All finish exposed hardwood to comply with grading of American Woodworking Institute.

## 2.04 CONCEALED CABINET BASE COMPONENTS

- A. Cabinet Base Toe-Kick Subfronts:
- B. Cabinet Base Blocking and Stretchers:
- C. Cabinet Base Sleepers:

## 2.05 WOOD AND WOOD-BASED MATERIALS

## 2.06 LAMINATE MATERIALS

- A. Manufacturers:
  - 1. Arborite: [www.arborite.com/#sle](http://www.arborite.com/#sle).
  - 2. Formica Corporation: [www.formica.com/#sle](http://www.formica.com/#sle).
  - 3. Panolam Industries International, Inc; Nevamar & Pionite: [www.panolam.com/#sle](http://www.panolam.com/#sle).
  - 4. Wilsonart: [www.wilsonart.com/#sle](http://www.wilsonart.com/#sle).
  - 5. InteriorArts . [www.ialaminates.com](http://www.ialaminates.com)
  - 6. Or prior approved equal.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications, unless indicated other wise on finish schedule.
- C. Provide specific types as indicated.
  - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, finish as scheduled.
  - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, finish as scheduled.

3. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, through color, color as selected, finish as scheduled.
4. Edges: GHGS, 0.048 inch (1.22 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.

D. Adhesive for Bonding Plastic Laminate: Urea-formaldehyde.

## **2.07 COUNTERTOPS**

- A. Solid Surface Countertops are specified in Section 12 3600.
- B. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, conventionally fabricated and self-edge banded.

## **2.08 ACCESSORIES**

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- D. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface. Size as selected by Architect.

## **2.09 HARDWARE**

- A. Provide hardware and accessory materials associated with architectural cabinets.
  1. Approved cabinet hardware manufacturers as follows or as specified in drawings:
    - a. Grant.
    - b. Knap & Vogt Manufacturing Company
    - c. Lescoa.
    - d. Stanley.
    - e. Blum.
  2. Cabinet hardware to be supplied and installed by millworks shall include all drawer slides, and shelf and countertop supports.
- B. Hardware Standard: Comply with BHMA A156.9 for items indicated by reference to BHMA numbers or referenced to this standard.
- C. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated.
  1. Bronze: BHMA 613 or Satin Stainless Steel, Stainless-Steel Base: BHMA 630. (Or as specified in drawings).
- D. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.
- E. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
- F. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.
- G. Drawer Slides:
  1. Type: Full extension.
  2. Static Load Capacity: Commercial grade.
  3. Mounting: Side mounted.
  4. Stops: Integral type.
  5. Features: Provide self closing/stay closed type.
  6. Manufacturers:
    - a. Accuride International, Inc; Light-Duty Drawer Slides: [www accuride.com/#sle](http://www accuride.com/#sle).



- b. Knappe & Vogt Manufacturing Company; Light-Duty Drawer  
Slides: [www.knappeandvogt.com/#sle](http://www.knappeandvogt.com/#sle).
- H. Hinges: European style concealed self-closing type, steel with polished finish.
  - 1. Manufacturers:
    - a. Grass America Inc: [www.grassusa.com/#sle](http://www.grassusa.com/#sle).
    - b. Hardware Resources: [www.hardwareresources.com/#sle](http://www.hardwareresources.com/#sle).
    - c. Blum, Inc: [www.blum.com/#sle](http://www.blum.com/#sle).

## 2.10 FABRICATION

- A. Fabricate to maximum extents plausible, including doors, drawers, and hardware; fabricate units in sizes transportable through building openings.
- B. When necessary to cut and fit on site, provide materials with sufficient allowance for cutting.
- C. Wood Casework with Laminate Cladding: Apply laminates in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline.
- D. Provide cutouts for plumbing fixtures; verify locations of cutouts from on-site dimensions. Sand and seal cut edges.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify casework and materials required for installation have been delivered, handled and stored as specified.
- B. Verify wood blocking that provides casework backing is installed as indicated on drawings.
- C. Verify location and sizes of rough-in plumbing and rough-in electrical associated with work of this section.

### 3.02 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

### 3.03 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level (including tops).
- C. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- D. Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
  - 1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

### 3.04 ADJUSTING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

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- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.
- D. Adjust hardware for smooth operation in accordance with hardware manufacturer's documented instructions.

### **3.05 PROTECTION**

- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion

### **3.06 CLEANING**

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Clean exposed surfaces of casework, shelving, and hardware.

### **3.07 CABINET HARDWARE AND ACCESSORY SCHEDULE**

- A. BHMA are used below to designate hardware requirements, except as otherwise indicated.
  - 1. Concealed (European Type) Hinges: B01602 (100° operation, unless otherwise noted).
  - 2. Pulls: Wire pulls, 4 inches (100 mm) long, 2-1/2 inches (62 mm) deep, and 5/16 inches (8 mm) in diameter, or as specified in drawings.
  - 3. Magnetic Catches: B03141.
  - 4. Shelf Rests: B04081.
  - 5. Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings, complying with BHMA A156.9, Grade 1 and rated for the following loads:
    - a. Box Drawer Slides: 100 lbf (440 N) at full extension.
    - b. File Drawer Slides: 200 lbf (890 N) at full extension.
    - c. Pencil Drawer Slides: 45 lbf (200 N) at full extension.
  - 6. Door Locks: E07121.
  - 7. Drawer Locks: E07041.
  - 8. Grommets for cable passage through countertops: 2 inch OD, molded-plastic grommets, color selected from manufacturer's full range, with 3/4-inch (19-mm) hole and plastic cap with slot for wire passage thru plastic laminate surfaces or as specified in drawings.
  - 9. Under Counter Bracket: Basis of Design: Doug Mockett SWS2 18 1/8" Inter-Arc Work Support or Approved Equal. Color: Metallic Silver.
  - 10. All cabinets shall be lockable and keyed per room. Verify with Architect prior to installation.

**END OF SECTION**

## SECTION 06 8200 - COMPOSITE TRIM

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Fiber-reinforced polymer (FRP) trim .

#### 1.02 REFERENCE STANDARDS

#### 1.03 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Manufacturer's data for base moldings.
- C. Shop Drawings: For each type of composite trim, indicate:
  - 1. Plans and Elevations: Include panel layout and dimensions; indicate location of fabricated units.
- D. Manufacturer's installation instructions
- E. Shop Drawings: Indicate design load parameters, dimensions, adjacent construction, materials, thicknesses, fabrication details, required clearances, field jointing, tolerances, colors, finishes, methods of support, integration of plumbing components, and anchorages.
- F. Samples: Submit two panel, 2 x 2 inch in size, illustrating color, texture, and finish.
- G. Operation and Maintenance Data: Maintenance instructions, including recommended cleaning procedures and materials.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in architectural glass fiber and resin components with two years documented experience.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to the site in original packages, containers or bundles bearing brand name and identification.
- B. Store products under cover, elevated above grade, and in dry, well-ventilated areas not exposed to heat or sunlight. Protect from moisture damage.
- C. Handle products to prevent damage to edges, ends, or surfaces.
- D. Protect components from damage by retaining shipping protection in place until installation.

#### 1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for FRP panels. Complete forms in Owner's name and register with manufacturer.

#### 1.07 FIELD CONDITIONS

- A. Do not install site fabricated components when site conditions may be detrimental to successful installation.
- B. Maintain temperature and humidity conditions favorable to proper curing of resin during and after installation.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Fiber-Reinforced-Polymer (FRP) Composite Trim:
  - 1. **Basis of Design:** Valto Engineered Materials, formerly Crane Composites, Inc.: [www.valtoem.com](http://www.valtoem.com)
  - 2. Marlite
  - 3. Nudo Products, Inc.
  - 4. Or prior approved equal.

## **2.02 FIBER-REINFORCED-POLYMER (FRP) TRIM**

- A. Fiber-Reinforced-Polymer (FRP) Trim: Nonstructural plastic fabrications formed into various trim profiles and panels using resins, fillers, additives, and fiber reinforcement in open-mold processes.
  - 1. Fiber Type: Glass.
- B. Resin: As recommended by manufacturer.
- C. Surface Finishes:
  - 1. Texture: Embossed.
- D. Applications: Wall panels.
  - 1. Style: As indicated on drawings.
  - 2. Finish: As indicated on drawings.
  - 3. Width: As indicated on drawings.
  - 4. Depth: As indicated on drawings.

## **2.03 FABRICATION**

- A. Mold Material: FRP type.
- B. Mold Surface: Textured to achieve pebble texture finish.
- C. Finish trim corners, Batten strips, and edges.
- D. Coat exposed surfaces with gel coat of colored resin.
- E. Cure components prior to shipment and remove material that may be toxic to plant or animal life.

## **2.04 FINISH**

- A. Color: As selected by Architect from manufacturer's full range.

## **2.05 ACCESSORIES**

- A. Trim Accessories: Manufacturer's standard vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.
  - 1. Color: Match panels.
- B. Exposed Fasteners: Nylon drive rivets as recommended by panel manufacturer.
- C. Concealed Mounting Splines: Continuous H-shaped aluminum extrusions designed to fit into grooves routed in edges of factory-laminated panels and to be fastened to substrate.
- D. Adhesive: As recommended by plastic paneling manufacturer.
  - 1. VOC Content: 50g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Sealant: Sealant as recommended by plastic paneling and complying with requirements in Division 07 Section "Joint Sealants".

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Acceptance of Surfaces and Conditions: Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.

## **3.02 INSTALLATION, GENERAL**

- A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to following, unless otherwise specified:
  - 1. Respective manufacturer's written installation instructions.
  - 2. Accepted submittals.

3. Contract Documents.

**3.03 PREPARATION**

- A. General: Comply with manufacturer's instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.
- B. Clean substrates of substances that could impair bond of adhesive, including oil, grease, dirt, and dust.
- C. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
- D. Lay out paneling before installing. Locate panel so that trimmed panels at corners are not less than 12 in. wide.
  - 1. Mark plumb lines on substrate at trim accessory locations for accurate installation.
  - 2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

**3.04 INSTALLATION**

- A. Install plastic paneling according to manufacturer's written instructions.
- B. Install panels in a full spread of adhesive.
- C. Install trim accessories with adhesive.
- D. Fill grooves in trim accessories with sealant before installing panels and bed inside corner trim in a bead of sealant.
- E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.

**3.05 TOLERANCES**

- A. Maximum Variation from Level: 1/4 inch in 10 feet.
- B. Maximum offset from true alignment: 1/8 inch.

**3.06 CLEANING**

- A. Clean components of foreign material without damaging finished surface.
- B. Hand rub smooth surfaces with polishing cream.
- C. Clean exposed surfaces of installed units in accordance with manufacturer's instructions.

**3.07 PROTECTION**

- A. Protect installed composite trim units from subsequent construction operations.

**END OF SECTION**

## SECTION 07 1616 - CRYSTALLINE WATERPROOFING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Crystalline waterproofing at locations of adhered flooring systems.
- B. Liquid waterproofing admixtures.

#### 1.02 RELATED REQUIREMENTS

- A. Section 09 6500 - Resilient Flooring
- B. Section 09 6813 - Tile Carpeting

#### 1.03 REFERENCE STANDARDS

- A. ASTM C157/C157M - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete; 2024, with Editorial Revision.
- B. ASTM C1260 - Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method); 2023.
- C. COE CRD-C 48 - Handbook for Concrete and Cement Standard Test Method for Water Permeability of Concrete; 1992.
- D. NSF 61 - Drinking Water System Components - Health Effects; 2024.
- E. UL (DIR) - Online Certifications Directory; Current Edition.
- F. NRCA (WM) - The NRCA Waterproofing Manual; 2021.
- G. ASTM E-96 - Standard Test Method for Water Vapor Transmission of Materials
- H. ASTM 1869- Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- I. ASTM F 2170- Standard Test Method for Determining Relative Humidity in Floor Slabs Using In Situ Probes

#### 1.04 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Test data showing hydraulic permeability.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
  - 5. Details for waterproofing at joints, intersections, and other special conditions.
- B. Specimen warranty.

#### 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
- B. Product shall be free of Volatile Organic Compounds (VOC's).
- C. Product shall be USDA chemically acceptable as a coating for application to structural surfaces where there is a possibility of incidental food contact in establishments operating under the Federal Meat and Poultry Products Inspection Program.
- D. Product shall be approved for use by The Regulatory Enforcement and Animal Care (REAC) division of the U.S. Dept. of Agriculture approved for use in all animal clinics and in holding and shelter facilities.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Take necessary precautions to keep cementitious materials dry.

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## 1.07 FIELD CONDITIONS

- A. Maintain environmental conditions, such as temperature, humidity, and ventilation within limits recommended by manufacturer for acceptable results; do not install products under environmental conditions outside the manufacturer's indicated limits.

## 1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide manufacturer's 20 year warranty against damaging moisture and vapor migration, alkali and efflorescence. Warranty shall cover 100% of the cost to repair or replace areas damaged including wood flooring, carpet, sheet vinyl / rubber, and vinyl / rubber composition tile.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Crystalline Waterproofing:
  - 1. **Basis of Design:** Bone Dry Pro Permanent Penetrating Concrete Sealer by Bone Dry Products, Inc. 6520 67th Street, Kenosha, WI 53142, Tel: 262-694-9748, E-mail: jim@bonedryproducts.com, Website: www.bonedryproducts.com.
  - 2. W. R. Meadows, Inc; CEM-KOTE CW PLUS: www.wrmeadows.com/#sle.
  - 3. Xypex Chemical Corporation; Xypex Concentrate: www.xypex.com/#sle.
  - 4. Or prior approved equal.
- B. Liquid Waterproofing Admixture:

### 2.02 ASSEMBLIES

- A. All concrete surfaces to receive glue down or adhered flooring.

### 2.03 MATERIALS

- A. Crystalline Waterproofing: Portland cement, quartz or silica sand, and other active chemicals that when applied to surface of concrete forms insoluble crystals in capillary pores preventing passage of liquids, while having no adverse effect on normal properties of concrete.
  - 1. Water Permeability of Applied Concrete: No measurable leakage or water flow at pressure ranging from 175 psi to 200 psi when tested in accordance with COE CRD-C 48, using at least 2-inch thick sample, and with applied surface preparation and installation in accordance with NRCA (WM).
  - 2. Toxicity: Non-toxic.
    - a. Potable Water and Drinking Water Safe: Provide UL (DIR) listed and labeled waterproofing; tested safe for use in potable drinking water applications in accordance with NSF 61.
- B. Liquid Waterproofing Admixture: Nontoxic liquid admixture, free of Volatile Organic Compounds (VOCs), manufactured with deionized water, and formulated to react with hydroxide ion products by cement hydration process. Specifically formulated for use in normal and lightweight structural concrete mixes.
  - 1. Mitigating Effects: Alkali-Silica Reaction (ASR) mitigation in accordance with ASTM C1260, and mitigating effect on shrinkage in accordance with ASTM C157/C157M.
  - 2. Toxicity: Nontoxic.
  - 3. VOCs: None.
  - 4. Products:

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Plug water leaks.
- C. Patch holes, construction joints, and cracks; remove defective concrete.
- D. Obtain approval of manufacturer's field representative before beginning installation.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's written instructions, maintain environmental conditions required and recommended by manufacturer, and keep a copy of manufacturer's instructions on site.
- B. Coordinate waterproofing installation with installation of products that must penetrate waterproofed surfaces.
- C. Prevent excessive drying of surface.
  - 1. Cure waterproofing for at least three days, or length of time required by manufacturer, with water spray and adequate air circulation.
  - 2. Do not use chemical curing agents unless explicitly approved by waterproofing manufacturer.
- D. Do not backfill, fill water or liquid holding structures, or apply finish coatings until time period recommended by manufacturer has passed.

### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Flood test waterproofing application by filling water holding structures to capacity and allowing to stand for not less than 24 hours.
- C. If any leaks appear, notify Architect and drain.
  - 1. Repair leaks at no additional cost to Owner.
  - 2. Repeat flood test until any leakage is eliminated.

### **3.05 PROTECTION**

- A. Protect from damage by weather; do not cover with vapor impermeable sheathing or films unless air circulation is provided.
- B. Touch-up, repair or replace damaged waterproofing after Date of Substantial Completion.

**END OF SECTION**



## SECTION 07 2100 - THERMAL INSULATION

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Board insulation at cavity wall construction, exterior wall behind wall finish, and tilt wall and at exterior applications, as indicated in drawings.
- B. Batt insulation in wall construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.
- B. Section 07 5400 - Thermoplastic Membrane Roofing: Insulation specified as part of roofing system.
- C. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
- D. Section 13 3419 - Metal Building Systems: Insulation provided and installed as part of this section.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2025.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.
- D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2026.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

#### 1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

### PART 2 PRODUCTS

#### 2.01 APPLICATIONS

- A. Insulation Inside Masonry Cavity Walls: Polyisocyanurate board.
- B. Insulation Over Metal Stud Framed Walls, Continuous: Polyisocyanurate board.
- C. Insulation on Inside of Concrete and Masonry Exterior Walls: Polyisocyanurate board.
- D. Insulation in Metal Framed Walls: Batt insulation with no vapor retarder.
- E. Insulation Above Lay-In Acoustical Ceilings: Batt insulation with no vapor retarder.

## 2.02 FOAM BOARD INSULATION MATERIALS

- A. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board with Facers Both Sides: Complying with ASTM C1289.
  - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  - 2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  - 3. Board Size: 48 inch by 96 inch.
  - 4. Board Thickness: As indicated on drawings.
  - 5. Board Edges: Shiplap on long edges.
  - 6. Products:
    - a. Carlisle Coatings & Waterproofing, Inc; R2+ Sheathe: [www.carlisleccw.com/sle](http://www.carlisleccw.com/sle).
    - b. Dow Chemical Company; THERMAX Sheathing: [www.dow.com/#sle](http://www.dow.com/#sle).
    - c. GAF; EnergyGuard Polyiso Insulation: [www.gaf.com/#sle](http://www.gaf.com/#sle).
    - d. Rmax Inc; ECOMAXci FR: [www.rmax.com/#sle](http://www.rmax.com/#sle).
    - e. Or prior approved equal.

## 2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

- A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.
- B. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
  - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
  - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
  - 3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
  - 4. Thermal Resistance: R-value of 19 minimum at exterior walls.
  - 5. Thickness: As indicated on drawings, unless otherwise required to meet required R-value.
  - 6. Facing: Unfaced.
  - 7. Products:
    - a. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
    - b. Johns Manville: [www.jm.com](http://www.jm.com).
    - c. Owens Corning Corporation; EcoTouch PINK FIBERGLAS Insulation: [www.owenscorning.com/en-us/#sle](http://www.owenscorning.com/en-us/#sle).
    - d. Or prior approved equal.
- C. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.
  - 1. Mineral fiber batt insulation to be used where walls are indicated as "Acoustic" or "Sound" rated.
  - 2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
  - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
  - 4. Thermal Resistance: R-value of R-19. at exterior walls.
  - 5. Thickness: As required to fill wall cavity.
  - 6. Products:
    - a. Johns Manville; MinWool Sound Attenuation Fire Batts: [www.jm.com/#sle](http://www.jm.com/#sle).
    - b. Knauf Insulation; EcoBatt Insulation: [www.knaufinsulation.com/#sle](http://www.knaufinsulation.com/#sle).
    - c. Or prior approved equal.

## 2.04 ACCESSORIES

- A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
- B. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.
- C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
  - 1. Length as required for thickness of insulation material and penetration of deck substrate.

- D. Adhesive: Type recommended by insulation manufacturer for application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

### **3.02 BOARD INSTALLATION AT EXTERIOR WALLS**

- A. Adhere 6 inches wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
- B. Install boards horizontally on walls.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- D. Tape insulation board joints.

### **3.03 BOARD INSTALLATION AT CAVITY WALLS**

- A. Install boards to fit snugly between wall ties.
- B. Install boards horizontally on walls.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

### **3.04 BOARD INSTALLATION USING CLADDING AND CONTINUOUS INSULATION SUPPORTS**

- A. Install supports in accordance with manufacturer's installation instructions.
- B. Install supports in compliance with system orientation, sizes, and locations as indicated on drawings and in accordance with approved shop drawings.
- C. Install supports to fill in exterior wall spaces without gaps or voids in insulation.
- D. Trim insulation neatly to fit spaces and provide a continuous thermal layer.

### **3.05 BATT INSTALLATION**

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Tape insulation batts in place.
- G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- H. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over face of member
- I. Tape seal tears or cuts in vapor retarder.
- J. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

### **3.06 PROTECTION**

- A. Do not permit installed insulation to be damaged prior to its concealment.

## SECTION 07 2119 - FOAMED-IN-PLACE INSULATION

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Spray Polyurethane Foam insulation.
  - 1. In masonry cavity walls.
  - 2. In exterior framed walls.
  - 3. In exterior wall crevices.
  - 4. At junctions of dissimilar wall and roof materials.
  - 5. In underside of roofs and ceilings.

#### 1.02 RELATED REQUIREMENTS

- A. Section 042000 - Unit Masonry: Concrete Unit masonry walls.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- B. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2010.
- C. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics; 2008.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.
- E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.
- F. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- G. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- H. NFPA 286 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish.
- I. UL 1715 - Fire Test of Interior Finish Material

#### 1.04 PERFORMANCE REQUIREMENTS

- A. Conform to applicable code for flame and smoke, concealment, and over coat requirements.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittals, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with a minimum of ten years experience manufacturing products in this Section shall provide all products listed.
- B. Installer Qualifications: Products listed in this Section shall be installed by a single organization with at least five years experience successfully installing insulation on projects of similar type and scope as specified in this Section.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Storage: Store materials in dry locations with adequate ventilation, protected from freezing rain, direct sunlight and excess heat and in such a manner to permit easy access for inspection and handling. Store at temperature between 55 and 80 degrees F.
- C. Handling: Handle materials to avoid damage.

#### **1.08 SEQUENCING**

- A. Ensure that products of this Section are supplied to affected trades in time to prevent interruption of construction progress.

#### **1.09 PROJECT CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Surfaces must be dry prior to application of spray foam. Excess humidity may cause poor adhesion, and result in product failure.
- C. To avoid overspray, product should not be applied when conditions are windy.
- D. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Basis of Design Manufacturer: Bayer Material Science LLC, Ph. (800) 221-3626. [www.baysystemsspray.com](http://www.baysystemsspray.com)
- B. Other Acceptable Manufacturers:
  1. BASF Corporation: [www.spf.basf.com/#sle](http://www.spf.basf.com/#sle).
  2. Carlisle Spray Foam Insulation: [www.carlislesfi.com/#sle](http://www.carlislesfi.com/#sle).
  3. Huntsman Building Solutions: [www.huntsmanbuildingsolutions.com/#sle](http://www.huntsmanbuildingsolutions.com/#sle).
  4. Or prior approved equal.
- C. Qualified Installers:
  1. Installers for foamed in place insulation included as part of this Section are subject to approval by Architect prior to installation of work.
- D. Closed Cell Spray Foam Insulation: Bayseal CC two-component, closed cell polyurethane foam with a nominal density of 1.9 pcf, as manufactured by BaySystems. Bayseal CC foam shall have the following minimum physical properties when cured:
  1. Core Density: 1.9 - 2.2 lbs/ft<sup>3</sup> when tested in accordance with ASTM D 1622.
  2. Compressive Strength: 25 psi when tested in accordance with ASTM D 1621.
  3. R-Value (aged): When tested in accordance with ASTM C 518:
    - a. 6.9 at 1 inch
    - b. 24 at 3.5 inches
    - c. 38 at 5.5 inches
    - d. 54 at 7.9 inches
  4. Closed Cell Content: Greater than 90 percent when tested in accordance with ASTM D 2856.
  5. Surface Burning Characteristics: Less than 25 when tested in accordance with ASTM E 84 and SDI less than 450 when tested in ASTM E 84.

6. Tensile Strength: 60 psi when tested in accordance with ASTM D 1623.
7. Moisture Vapor Transmission (permeance) when tested in accordance with ASTM E 96.
  - a. 0.80 Perms at 1 inch
  - b. 0.23 Perms at 3.5 inches
  - c. 0.16 Perms at 5 inches
  - d. 0.10 Perms at 7.9 inches
8. Dimensional Stability: (7 days at 158 degrees F, 95 percent RH) less than 10 percent change in volume when tested in accordance with ASTM D 2126.
9. Air Leakage Rate: Less than 0.02 (L/s)m<sup>2</sup> when tested in accordance with ASTM E 283 and ASTM E 2178.
10. Fungi Resistance: Zero Rating when tested in accordance with ASTM G 21.

## **2.02 PRIMER COATING**

- A. Bayblock Prime SG: A water-based, low solids, resin-rich primer to achieve superior adhesion and penetration on concrete, masonry or wood, as supplied by BaySystems, or approved equal.

## **2.03 ACCESSORIES**

- A. Bayseal IC intumescent coating for spray foam insulation in attic and crawlspace applications, manufactured by Bayer Material Science.
- B. Flameseal TB or DC-315 intumescent coating for spray foam insulation in attic and crawlspace applications for 15 minute barrier alternative for use with Bayseal CC, manufactured by Bayer Material Science.
- C. Primer: As required by insulation manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that all surfaces to receive polyurethane foam insulation are clean, dry and free of dust, dirt, debris, oil, solvents and all materials that may adversely affect the adhesion of the polyurethane foam.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Mask and protect adjacent surfaces from over spray.
- C. Prepare surfaces using the methods recommended by the spray foam manufacturer for achieving the best result for the substrate under the project conditions.
- D. Steel:
  1. Primed: Clean primed metal surfaces free of loose scale, rust, weathered or chalking paint. Remove grease, oil, or other contaminants with proper cleaning solutions.
  2. Previously Painted: Clean painted metal surface using hand or power tools to remove loose scale and dirt. Remove grease, oil, and other surface contaminants using a power wash technique or proper cleaning solutions.
  3. Galvanized: Clean galvanized steel as recommended by manufacturer. Steel should be primed with Bayblock Prime RI at the rate of 1 gallon per 300 square feet.
  4. Unpainted Steel: Clean as recommended by manufacturer to prepare the steel surface for the primer. Prime with Bayblock Prime RI at the rate of 1 gallon per 300 square feet.
- E. Concrete Masonry: Must be cured and loose dirt and any other contaminants, including asphaltic materials removed. If primer is required, prime with Bayblock Prime SG, at the rate of 1 gallon per 200 square feet.

### 3.03 PRIMER APPLICATION

- A. Prepare surfaces and apply primer in accordance with manufacturer's instructions.
- B. Apply primer to the properly prepared substrates in accordance with the manufacturer's instructions to achieve a minimum thickness of dry film thickness. Allow primer to cure 24 hours prior to application of spray polyurethane foam or other products.

### 3.04 INSTALLATION

- A. Install in spray foam in accordance with manufacturer's instructions.
- B. Spray polyurethane foam components (A) and (B) shall be processed in accordance with instructions found on the manufacturer's product datasheet.
- C. Schedule application to anticipate climatic conditions prior to application to ensure highest quality foam and to maximize yield. All substrates to be sprayed must be dry at the time of application. Moisture in the form of rain, fog, frost, dew, or high humidity greater than 85 percent R.H. is not permitted unless Contractor reviews means and methods of spraying with manufacturer's representative prior to installation. Use screens, masking and other precautions to prevent damage to adjacent areas from fugitive overspray.
- D. Where spray foam system is installed within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 and IRC Section R314.5.4, as applicable. The ignition barrier must be installed in a manner so that the foam plastic insulation is not exposed. Bayseal spray foam insulation, as described in these sections, may be installed in unvented attics in accordance with IRC Section R806.4.
- E. Exothermic Caution:
  - 1. Polyurethane foam shall be sprayed in minimum 1/2 inch thick passes or lifts. Overall thickness applied in one pass shall be limited to a maximum of 3 inches for Bayseal CC closed cell foam to avoid fire hazards resulting from excessive heat generation. When applying SPF on chlorinated polyvinyl chloride the pass thickness for Bayseal CC must be limited to 2 inches. If additional thickness is required it must be applied within 15 minutes.
  - 2. If a second pass is needed, wait 10 to 15 minutes between passes to allow reaction heat to dissipate. If more passes are needed, wait 30 minutes between passes to allow reaction heat to dissipate.
  - 3. The exothermic reaction can cause temporary substrate thermal rises in excess of 150 degrees F, which may result in substrate thermal expansion. If the substrate then contracts when the reaction heat dissipates, substrate deformation can occur.
  - 4. The full thickness of spray polyurethane foam to be applied within any given area should be completed in one day.
- F. Vapor Retarder Application:
  - 1. When required, a vapor retarder shall be applied to the substrate to be insulated or to the finished spray polyurethane foam insulation. The predominant direction of the vapor drive determines the location of the vapor retarder relative to the spray polyurethane foam. A minimum of one inch of Bayseal CC closed cell foam constitutes a vapor retarder where permitted by code.
  - 2. Apply thermal barriers and vapor retarder (if required) according to ICC recommendations.

### 3.05 ACCESSORY APPLICATION

- A. Joint Filler Foam and Caulk: Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc. Expansion of joint filler foam in a confined space can tighten window frames and door jambs. Use care in these areas to avoid distortion of these members.

### 3.06 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Protect installed products until completion of project.

- C. Field inspection and testing will be performed under provisions of Section 014000.
- D. Inspection will include verification of insulation and overcoat thickness and density.

**3.07 PROTECTION**

- A. Protect installed products until completion of project.
- B. After completing work, clean glass and spattered surfaces.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

|                                      |             |                            |
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## SECTION 07 2726 - FLUID APPLIED NON PERMABLE AIR BARRIER

### PART 1 - GENERAL

#### 1.01 GENERAL REQUIREMENTS

- A. General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.

#### 1.02 DESCRIPTION

- A. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
  - 1. Connections of the walls to the roof air barrier.
  - 2. Connections of the walls to the foundations.
  - 3. Seismic and expansion joints.
  - 4. Openings and penetrations of window and door frames, store front, curtain wall.
  - 5. Piping, conduit, duct and similar penetrations.
  - 6. Masonry ties, screws, bolts and similar penetrations.
  - 7. All other air leakage pathways in the building envelope.
- B. Materials and installation methods of the primary air/vapor barrier membrane system and accessories.
- C. Materials and installation methods of through-wall flashing membranes.

#### 1.03 REFERENCES

- A. The following standards are applicable to this section:
  - 1. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials.
  - 2. ASTM E 283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - 3. E 1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
  - 4. ASTM E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  - 5. ASTM E 331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
  - 6. ASTM E 96: Water Vapor Transmission of Materials.
  - 7. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.
  - 8. AMMA 2400: Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction.
  - 9. ASTM E 2112: Standard Practice for Installation of Exterior Windows, Doors and Skylights.
  - 10. ASTM D 5590: Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay

#### 1.04 SUBMITTALS

- A. Submit documentation from an approved independent testing laboratory certifying the air leakage and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E 2178.
  - 1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.
- B. Submit manufacturers' current product data sheets for the air barrier membrane system.
- C. Submit manufacturer's installation Instructions.
- D. Submit document stating the applicator of the primary air/vapor barrier membranes specified in this section is qualified by the manufacturer as suitable for the execution of the Work.

### **1.05 QUALITY ASSURANCE**

- A. Perform Work in accordance with manufacturer's written instructions and this specification.
- B. Maintain one copy of manufacturer's written instructions on site.
- C. Allow access to Work site by the air barrier membrane manufacturer's representative.
- D. Components used shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.
- E. Single-Source Responsibility:
  - 1. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
  - 2. Provide products which comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).

### **1.06 MOCK-UP**

- A. Provide mock-up of air/vapor barrier materials under provisions of Section 01 3000 Submittals.
- B. Where directed by architect, construct typical exterior wall panel, 6 foot long by 6 foot wide, incorporating substrate, window frame, attachment of insulation and showing air barrier membrane application details.
- C. Allow 48 hours for observation of mock-up by architect before proceeding with air barrier work. Mock-up may remain as part of the Work.

### **1.07 PRE-INSTALLATION CONFERENCE**

- A. Contractor shall convene week prior to commencing Work of this section.
- B. Ensure all contractors responsible for creating a continuous plane of air tightness are present.

### **1.08 DELIVERY, STORAGE AND HANDLING**

- A. Refer to current Product MSDS for proper storage and handling.
- B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- C. Store roll materials on end in original packaging. Protect rolls from direct sunlight until ready for use.
- D. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.
- E. Keep solvent away from open flame or excessive heat.
- F. Wasted Management and Disposal
  - 1. Separate and recycle waste materials in accordance with Section 01 7419 - Construction Waste Management and Disposal.
- G. Contractor to verify compliance for Volatile Organic Compounds (VOC) limitations of products to comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).

### **1.09 COORDINATION**

- A. Ensure continuity of the air seal throughout the scope of this section.

### **1.10 WARRANTY**

- A. Provide manufacturer's standard 10-year material warranty.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

- A. Air/vapor barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
  - 1. Acceptable Manufacturers:

- a. Henry Company  
999 N Sepulveda Blvd, Suite 800  
El Segundo, CA 90245  
(800) 598-7663  
www.Henry.com
- b. Grace Construction Products
- c. Carlisle - Barritech VP

## 2.02 MEMBRANES (BASIS-OF-DESIGN)

- A. Primary liquid air/vapor barrier membrane for temperatures above 40 degrees F shall be Air-Bloc 32MR manufactured by Henry, Perm-A-Barrier Liquid manufactured by Grace Construction Products, or approved equal; a one component elastomeric membrane, trowel or spray applied, compatibility with substrates, transition membranes and insulation. Membrane shall have the following physical properties:
  - 1. Meets the air leakage requirements of the Massachusetts Commercial Energy Code (780 CMR, Ch. 13) Energy Conservation Requirements for the Building Envelope,
  - 2. Air permeability: 0.00012 CFM/ft<sup>2</sup> @ 1.6 lbs/ft<sup>2</sup> to ASTM E 2178 and ASTM E 283 and have no increased air leakage when subjected to a sustained wind load of 10.5 lbs/ft<sup>2</sup> for 1 hour and gust wind load pressure of 62.8 lbs/ft<sup>2</sup> for 10 seconds when tested at 1.6 lbs/ft<sup>2</sup> to ASTM E 331,
  - 3. Rating 0 -No fungal growth as tested to ASTM D 5339,
  - 4. Water vapor permeance: 0.08 perms to ASTM E 96,
  - 5. VOC Content: No appreciable VOC (less than 100g/L),
  - 6. Elastic Recovery: 90% to CAN/CGSB 37.58M86,
  - 7. Meets CAN/CGSB-51-33 Type I Water Vapor Permeance requirements
- B. Self-adhering transition membrane shall be Blueskin SA, LT, or HT manufactured by Henry, Perm-A-Barrier Detail Membrane manufactured by Grace Construction Products; an SBS modified bitumen, self-adhering sheet membrane complete with a blue engineered thermoplastic film. Membrane shall have the following physical properties:
  - 1. Air leakage: <0.0001 CFM/ft<sup>2</sup> @1.6 lbs/ft<sup>2</sup> to ASTM E2178,
  - 2. Vapor permeance: 0.03 perms to ASTM E 96,
  - 3. Membrane Thickness: 0.0394 inches (40 mils),
  - 4. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M,
  - 5. Elongation: 200% to ASTM D412-modified
- C. Through-wall flashing membrane (Self-Adhering) shall be Blueskin TWF manufactured by Henry, or Perm-A-Barrier Wall Flashing manufactured by Grace Construction Products ; an SBS modified bitumen, self-adhering sheet membrane complete with a yellow engineered thermoplastic film. Membrane shall have the following physical properties:
  - 1. Membrane Thickness: 0.0394 inches (40 mils),
  - 2. Film Thickness: 4.0 mils,
  - 3. Flow (ASTM D5147): Pass @ 212 degrees F,
  - 4. Puncture Resistance: 134 lbf to ASTM E 154,
  - 5. Tensile Strength (film): 5000 psi minimum ASTM D 882,
  - 6. Tear Resistance: 45lbs.-MD, 17lbs.-CD to ASTM D1004,
  - 7. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M

## 2.03 ADHESIVE AND PRIMERS

- A. Primer for self-adhering membranes at temperatures above 25 degrees F shall be Aquatacä Primer manufactured by Henry, or Perm-A-Barrier primer manufactured by Grace Construction Products; a polymer emulsion based adhesive, quick setting. Primer shall have the following physical properties:
  - 1. Color: Aqua,
  - 2. Weight: 8.3 lbs/gal,
  - 3. Solids by weight: 53%,

4. Water based, no solvent odors,
  5. Drying time (initial set): 30 minutes at 50% RH and 70 degrees F
- B. Adhesive for self-adhering membranes at all temperatures shall be Blueskin Adhesive manufactured by Henry, or Perm-A-Barrier adhesive approved by Grace Construction Products, a synthetic rubber based adhesive, quick setting, having the following physical properties:
1. Color: Blue,
  2. Weight: 6 lbs/gal,
  3. Solids by weight: 35%,
  4. Drying time (initial set): 30 minutes
- C. Adhesive with low VOC content for self-adhering membranes at all temperatures shall be Blueskin LVC Adhesive manufactured by Henry, or approved adhesive manufactured by Grace Construction Products; a synthetic rubber based adhesive, quick setting, having the following physical properties:
1. Color: Blue,
  2. VOC: <240 g/L,
  3. Solids by weight: 40%,
  4. Drying time (initial set): 30 minutes

#### **2.04 JOINT TREATMENT, PENETRATION & TERMINATION SEALANT**

- A. Joint Treatment, penetration and termination Sealant shall be HE925 BES Sealant manufactured by Henry; a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,
  2. Complies with Fed. Spec. TT-S-00230C, Type II, Class A,
  3. Complies with ASTM C 920, Type S, Grade NS, Class 25,
  4. Elongation: 450 – 550%,
  5. Remains flexible with aging,
  6. Seals construction joints up to 1 inch wide
- B. Alternate joint treatment fabric: HE 183 yellow open weave glass fabric or approved equal.

#### **2.05 INSULATION ADHESIVE**

- A. Insulation adhesive shall be Air-Bloc 21 Insulation Adhesive manufactured by Henry; a synthetic, trowel applied, rubber based adhesive, having the following physical properties:
1. Compatibility: With air barrier membrane, substrate and insulation,
  2. Air leakage: 0.0026 CFM/ft<sup>2</sup> @ 1.6 lbs/ft<sup>2</sup> to ASTM E283,
  3. Water vapor permeance: 0.03 perms to ASTM E96,
  4. Long term flexibility: CGSB 71-GP-24M

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify architect in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrates.
- B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.
- C. Where curing compounds are used they must be clear resin based without oil, wax or pigments.
- D. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.
- E. Condition materials to room temperature prior to application to facilitate handling.

#### **3.02 SURFACE PREPARATION**

- A. Water Based Elastomeric Emulsion Air Barrier Membrane: liquid applied water based air barrier membrane may be applied to green concrete 16 hours after forms are removed.

- B. Ensure all preparatory Work is complete prior to applying primary air barrier membrane.
- C. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.

### 3.03 INSTALLTION OF AIR VAPOR BARRIER SYSTEM

#### A. JOINT TREATMENT

1. Seal joints ¼ inch and less between panels of exterior grade gypsum sheathing, plywood, OSB or cementitious panels with joint treatment sealant.
  - a. Fill joint between sheathing with approved joint treatment sealant ensuring contact with all edges of sheathing board. Strike flush any excess sealant over joint layer to form a continuous layer over the joint.
  - b. Seal gaps and voids or irregular joints greater than ¼ inch between panels of exterior grade gypsum, exterior grade gypsum sheathing, plywood, OSB or cementitious panels with a strip of self-adhering air/vapor barrier transition membrane lapped a minimum of 1-1/2 inches on both sides of the joint.
    - 1) Prime surfaces as per manufacturers' instructions and allow to dry.
    - 2) Align and position self-adhering air/vapor barrier transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
    - 3) Roll all laps and membrane with a counter top roller to ensure seal.
  - c. Alternately, joints not exceeding 1/8 inch can be sealed with yellow open weave glass fabric.
    - 1) Apply yellow open weave glass fabric centered over joint followed by a 1/8 inch (120mils) thick trowel application of air/vapor barrier membrane.
    - 2) Allow to dry prior to application of primary air/vapor barrier membrane.

#### B. INSIDE AND OUTSIDE CORNERS

1. Seal inside and outside corners of sheathing boards with a strip of self-adhering air/vapor barrier transition membrane extending a minimum of 3 inches on either side of the corner detail.
  - a. Prime surfaces as per manufacturers' instructions and allow to dry.
  - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
  - c. Roll all laps and membrane with a counter top roller to ensure seal.

#### C. CRACK TREATMENT – MASONRY AND CONCRETE

1. Seal cracks over 1/16 inches in masonry and concrete with a strip of self-adhering air/vapor barrier transition membrane lapped a minimum of 1 1/2 inches on both sides of the crack.
  - a. Prime surfaces as per manufacturers' instructions and allow to dry.
  - b. Align and position self-adhering air/vapor barrier transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
  - c. Roll all laps and membrane with a counter top roller to ensure seal.
  - d. Alternately, static cracks 1/16 inch to 1/8 inch can be sealed with primary air/vapor barrier membrane.
    - 1) Fill crack with primary air barrier membrane.
    - 2) Allow to dry prior to application of primary air/vapor barrier membrane.

#### D. TRANSITION AREAS

1. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhering air/vapor barrier transition membrane.
  - a. Prime surfaces as per manufacturers' instructions and allow to dry.

- b. Align and position self-adhering air/vapor barrier transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.
  - c. Ensure minimum 2 inch overlap at all end and side laps of membrane.
  - d. Roll all laps and membrane with a counter top roller to ensure seal.
- E. WINDOWS AND ROUGH OPENINGS
  - 1. Wrap rough openings with self-adhering membrane as detailed.
    - a. Prime surfaces as per manufacturers' instructions and allow to dry.
    - b. Align and position self-adhering air/vapor barrier transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.
    - c. Roll all laps and membrane with a counter top roller to ensure seal.
- F. THROUGH-WALL FLASHING MEMBRANE
  - 1. Apply through-wall flashing membrane along the base of masonry veneer walls and over shelf angles as detailed.
    - a. Prime surfaces and allow to dry, press membrane firmly into place, over lap minimum 2 inches at all end and side laps. Promptly roll all laps and membrane to ensure the seal.
    - b. Applications shall form a continuous flashing membrane and shall extend up a minimum of 8 inches up the back-up wall.
    - c. Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.
    - d. Install through-wall flashing membrane and extend 1/2 inch from outside edge of veneer. Provide "end dam" flashing as detailed.
- G. PRIMARY AIR/VAPOR BARRIER
  - 1. Apply by spray or flat trowel a complete and continuous unbroken film of liquid air/vapor and rain barrier membrane.
    - a. For temperatures above 40 degrees F and rising, apply one component water based elastomeric emulsion air/vapor barrier membrane at a rate of 20 sq.ft/gallon to a uniform wet film thickness of 75 mils for smooth surfaces depending upon surface texture and porosity. For rough surfaces, apply elastomeric emulsion air/vapor barrier membrane at a rate of 14 sq.ft/gallon to a uniform wet film thickness of 110 mils depending upon surface texture and porosity.
    - b. Spray-apply or trowel around all projections and penetrations ensuring a complete and continuous air barrier membrane. Lap liquid applied membrane 1 inch over self-adhering membranes to seal leading edge.
    - c. Allow air barrier membrane to dry as per manufacturers recommendations prior to placement of insulating materials.

### **3.04 APPLICATION OF TERMINATION SEALANT**

- A. Seal membrane terminations, heads of mechanical fasteners, masonry tie fasteners, around penetrations, duct work, electrical and other apparatus extending through the primary water resistive air barrier membrane and around the perimeter edge of membrane terminations at window and door frames with specified termination sealant.

### **3.05 FIELD QUALITY CONTROL**

- A. Make notification when sections of Work are complete to allow review prior to covering air barrier system.

### **3.06 INSTALLATION OF INSULATION**

- A. Apply insulation adhesive in a serpentine pattern over the air barrier membrane.
  - 1. Dab Method: Apply walnut-sized dabs of insulation adhesive spaced 6 inches on center to substrate. Apply insulation using sufficient hand pressure to compress dabs up to 2 inches in diameter.

2. Bead Method: Apply ¼ inch beads 6 inches on center in a serpentine pattern.
- B. Immediately embed insulation into the adhesive and press firmly into place to ensure full contact. Apply additional adhesive if allowed to skin over.

### **3.07 PROTECTION**

- A. Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.
- B. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Drying time varies depending on temperature and relative humidity. Protect air barrier Work against wet weather conditions for a minimum of 24 hours.
- C. Air barrier membranes are not designed for permanent exposure. Good practice calls for covering as soon as possible. Special consideration must be given to the exposed un-insulated membrane during winter months of construction so as to avoid the risk of condensation.

**END OF SECTION**

## SECTION 07 4213 - METAL WALL AND SOFFIT PANELS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Manufactured metal panels for walls and soffits and related flashings and accessory components.
- B. Concealed fastener single skin metal wall panels installed using the back ventilated rainscreen design principle.
- C. Accessories including fasteners, perimeter trim and penetration treatments.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 4000 - Cold-Formed Metal Framing: Wall panel substrate.
- B. Section 07 2100 - Thermal Insulation.: Rigid Board Insulation
- C. Section 07 2726 - Fluid Applied Non-Permeable Air Barriers.
- D. Section 07 9200 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

#### 1.03 REFERENCE STANDARDS

- A. ASTM A240; Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- C. ASTM A666; Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- D. ASTM A792; Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- E. ASTM B209; Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- F. ASTM C612; Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- G. ASTM C645; Standard Test Method for Nonstructural Steel Framing Members.
- H. ASTM D2244; Standard practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
- I. ASTM D4214; Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
- J. ASTM E283; Standard Test Method for determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors under Specified Pressure Differences across the Specimen.
- K. ASTM E331; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- L. ASTM E1592; Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
- M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.

#### 1.04 DESIGN REQUIREMENTS

- A. Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with International Building Code, 2015 code. Design pressure of, as required per code lb/sq ft.
- B. Maximum Allowable Deflection of Panel: 1/90 of span.
- C. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter



components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.

- D. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
- E. Water Penetration under Static Pressure: Provide metal wall panel systems designed to resist penetration of water under static pressure. Testing shall be based on ASTM E331. Wall panels when tested shall have no water leakage at 6 pounds per square foot.
- F. Air Infiltration: Provide metal wall panel assemblies designed to resist air infiltration. Testing shall be done based on ASTM E283. Wall panels when tested shall have a maximum air leakage of 0.01 cfm per square feet of fixed wall area at a minimum static air-pressure differential of 1.57 foot pounds per square foot.

#### **1.05 SUBMITTALS**

- A. Shop Drawings: Submit detailed drawings showing the following:
  - 1. Profile
  - 2. Gauge of panel
  - 3. Location, layout and dimensions of panels
  - 4. Location and type of fasteners
  - 5. Shape and method of attachment of all trim
  - 6. Locations and type of sealants
  - 7. Installation sequence.
  - 8. Other details as may be required for a weathertight installation
- B. Samples: Submit two samples of each panel type, 6 inch by 6 inch in size, illustrating finish color, sheen, and texture.
- C. Manufacturer's Qualification Statement.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years of experience.

#### **1.07 MOCK-UP**

- A. Construct mock-up, 6 feet long by 6 feet wide; include panel and soffit system, glazing, attachments to building frame, associated vapor retarder and air seal materials, weep drainage system, sealants and seals, related insulation in mock-up.
- B. Locate where directed by Architect.
- C. Pre-installation meeting: Conduct a pre-installation meeting at the job site attended by Owner, Architect, Manufacturer's Technical Representative, Panel Installer, and Contractors of related trades. Coordinate structural support requirements in relation to wall panel system, installation of any separate air/water barriers, treatment of fenestration, and other requirements specific to the project

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

#### **1.09 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

- C. Correct defective work within a five year period after Date of Substantial Completion, including defects in water tightness and integrity of seals.
- D. Finish Warranty: Standard form in which manufacturer agrees to repair or replace metal panels that evidence deterioration of fluoropolymer finish, including flaking or peeling from approved primed metal substrate, chalk in excess of 8 when tested in accordance with ASTM D4214, Method A, and /or color fading in excess of 5 deltaE Hunter units on panels when tested in accordance with ASTM D2244.
  - 1. Warranty Period: Twenty (20) years from date Substantial Completion, or 20 years.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Metal Wall Panels - Concealed Fasteners:
  - 1. Centria: [www.centria.com/#sle](http://www.centria.com/#sle).
  - 2. MBCI; Designer Flat Series: [www.mbc.com](http://www.mbc.com).
  - 3. Metal Roofing Systems, Inc; Flush Seam Wall Panels: [www.metalroofingsystems.biz/#sle](http://www.metalroofingsystems.biz/#sle).
  - 4. **Basis of Design:** Petersen Aluminum Corporation; Flush Wall Panels: [www.pac-clad.com/#sle](http://www.pac-clad.com/#sle).
  - 5. Or prior approved equal.
- B. Metal Soffit Panels:
  - 1. Flush Soffit panel - by same manufacturer as metal wall panels.

### **2.02 WALL PANEL MATERIALS**

- A. Steel:
  - 1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792, Class AZ50 coating designation, Grade 40.
  - 2. Gauge: 24 or .040 Aluminum.

### **2.03 CONCEALED FASTENER WALL PANELS**

- A. **MP-1** - Flush Metal Wall Panel
  - 1. Panel Width: 12 inches.
  - 2. Profile: Flush - installed horizontally
  - 3. Panel thickness: 1-1/2 inch thick.
  - 4. Panel joint: Tongue and groove interlock joint.
  - 5. Texture: Smooth.
  - 6. Colors: As selected by Architect from manufacturer's full range.

### **2.04 CONCEALED FASTENER SOFFIT PANELS**

- A. Soffit Panel Description:
  - 1. Profile: 12 inch flush soffit panel, unless otherwise indicated in Drawings.
  - 2. Material: Precoated steel sheet, 22 gage, 0.0299 inch (0.76mm) minimum thickness.
  - 3. Color: As selected by Architect from manufacturer's full line for Soffit Panels.
  - 4. Trim: Same material, thickness and finish as exterior sheets, brake formed to required profiles.
  - 5. Anchors: Galvanized steel, Stainless Steel, or type as recommended by panel manufacturer.
  - 6. Panel System:
    - a. Provide soffit panels and subgirt framing assembly.
    - b. Design components to support assembly dead loads and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall. Design pressure shall be in accordance with applicable codes.
    - c. Maximum allowable Deflection of Panel: L/18- for length (L) of span.
    - d. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components

when subject to seasonal temperature cycling; dynamic loading and release of loads, and deflection of structural support framing.

- e. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
- f. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
- g. Corners: Factory-fabricated in one continuous piece with minimum 2 inch (51 mm) returns.
- h. Exterior Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over manufacturer's recommended primer.

## **2.05 INSULATION**

- A. Refer to Section 07 2100 - Thermal Insulation.

## **2.06 ACCESSORIES**

- A. Wall panel accessories: Provide accessories as required for a complete installation. Accessories shall be as indicated on approved shop drawings and per manufacturer's approved standard details. Match material and finish of metal wall panels.
  - 1. Closure Strips:
    - a. Closed Cell Closure Strips: Provide minimum 1 inch thick matching metal wall panel profile.
    - b. Metal Profile Closure Strips: Shall be fabricated from same gauge, material and finish as metal panel.
  - 2. Concealed Clips: 18 gauge; Zinc-Coated (Galvanized) Steel Sheet: ASTM A653, G90 coating designation
  - 3. Panel Reveal Trim: Extruded aluminum; 0.078 inch thick, 6063-T5 alloy.
    - a. Profile: Manufacturer's Standard in Profile as indicated on Drawings.
- B. Trim:
  - 1. Fabricate trim from same material and material thickness as wall panels. Finish to match metal wall panels.
  - 2. Locations include, but are not limited to the following: Drips, sills, jambs, corners, framed openings, parapet caps, reveals and fillers.
- C. Metal Framing:
  - 1. General: ASTM C645, cold-formed metallic-coated steel sheet, ASTM A653, G40 hot-dip galvanized.
  - 2. Hat-Shaped, Rigid Furring Channels:
    - a. Gauge: 16 gauge.
    - b. Depth: As indicated on Drawings.
  - 3. Cold-Rolled Furring Channels: Minimum 1/2-inch wide flange.
    - a. Gauge: 16 gauge.
    - b. Depth: As indicated on Drawings.
- D. Strapping and Extra Stud Bracing: Provide additional support provisions, as required, for attachment over exterior gypsum sheathing and/or rigid insulation board.
- E. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

## **2.07 FABRICATION**

- A. Metal wall panels and liner panels shall be formed to lap and interconnect with edges of adjacent panels which are then mechanically attached through panel to supports using concealed fasteners.
- B. Panels shall be factory formed. Field formed panels are not acceptable.
- C. Trim Accessories: Fabricate steel trim accessories to comply with recommendations outlined in SMACNA's "Architectural Sheet Metal Manual".

- D. Trim Accessories: Provide manufacturer's standard extruded aluminum trim.

## **2.08 FINISHES**

- A. Steel:
  - 1. Finish and Color:
    - a. Color:
      - 1) Wall Panels: Selected from Manufacturer's Full Range.
      - 2) Soffit Panels: Selected from Manufacturer's Full Range.
    - b. Finish System:
    - c. 1.0 mil. Fluoropolymer (PVDF) Two Coat system: 0.2 mil primer with 0.8 mil Kynar 500 (70 percent) SOLID color coat.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that building framing members are ready to receive panels.
- B. Verify that water-resistive barrier has been installed over substrate completely and correctly.
- C. Provide field measurements to manufacturer as required to achieve proper fit of the metal wall panels to building envelope. Measurements shall be provided in a timely manner so that there is no impact to construction or manufacturing schedule.
- D. Supporting Steel: All structural supports required for installation of panels shall be by others. Support members shall be installed within the following tolerances:
  - 1. Plus or minus 1/8 inch in 5 feet in any direction along plane of framing.
  - 2. Plus or minus 1/4 inch cumulative in 20 feet in any direction along plane of framing.
  - 3. Plus or minus 1/2 inch from framing plane on any elevation.
  - 4. Plumb or level within 1/8 inch at all changes of transverse for performed corner panel applications.
  - 5. Verify that bearing support has been provided behind vertical joints of horizontal panel systems and vertical joints of horizontal panel systems. Width of support shall be as recommended by manufacturer.
- E. Examine individual panels upon removing from the bundle; notify manufacturer of panel defects. Do not install defective panels.

### **3.02 INSTALLATION**

- A. Install panels on walls and soffits in accordance with manufacturer's instructions.
- B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
- C. Fasten panels to structural supports; aligned, level, and plumb and per layout indicated on approved shop drawings.
- D. Cutting and fitting of panels shall be neat, square, and true. Torch cutting is prohibited.
- E. Locate Joints as indicated on plan and to align with other building elements.
- F. Use concealed fasteners unless otherwise approved by Architect.
- G. Place trim and trim fasteners only as indicated per details on the approved shop drawings.
- H. Apply sealant tape at trim, per manufacturer's details and approved shop drawings, for weathertight installation.
- I. Clean and prime surfaces to receive exterior exposed sealants in accordance with sealant manufacturer's recommendations.
- J. Follow sealant manufacturer's recommendations for joint width-to-depth ratio, application temperature range, size and type of backer rod, and compatibility of materials for adhesion.

### **3.03 TOLERANCES**

- A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch.
- B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

### **3.04 CLEANING**

- A. Remove protective film immediately after installation.
- B. Remove site cuttings from finish surfaces.
- C. Remove protective material from wall panel surfaces.
- D. Touch-up, repair or replace metal panels and trim that have been damaged.
- E. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.
- F. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

**END OF SECTION**

## SECTION 07 4646 - FIBER-CEMENT SIDING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Fiber-cement panel siding, fiber-cement soffit panels and any associated accessories.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 4000 - Cold-Formed Metal Framing: Siding substrate & wall framing..
- B. Section 06 1000 - Rough Carpentry: Siding substrate.
- C. Section 07 2100 - Thermal Insulation: Rigid insulation.
- D. Section 07 2726 - Fluid Applied Non Permeable Air Barrier: Weather-resistive barrier under siding.
- E. Section 07 9200 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2012).

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Manufacturer's requirements for related materials to be installed by others.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods, including nail patterns.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- D. Installer's Qualification Statement.
- E. Samples: For each type, texture and pattern required.
  - 1. 12-inch long- by actual-width Sample of siding, soffit and trim pieces.
- F. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.
- G. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

#### 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum three years of experience.
- B. Engineering Requirements: Engage a licensed engineer in the state in which the project is located to design the attachment of fiber cement siding and panels and furring channels to wall structure.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockups for siding and soffit including accessories.
    - a. Size: 6'-0" x 8'-0" minimum.
    - b. Include all conditions and transitions. Mockup full system including window jamb/sill, weather barrier and coping conditions.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials in manufacturer's unopened packaging, with labels intact, until ready for installation.
- B. Store products under waterproof cover and elevated above grade, on a flat surface.

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- C. Protect materials from harmful environmental elements, construction dust, and other potentially detrimental conditions.

## 1.07 FIELD CONDITIONS

- A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

## 1.08 WARRANTY

- A. Special Warranty: Standard form in which manufacturer agrees to repair or replace siding and soffit that fail(s) in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures, including cracking, deforming, and fading.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: 15 years from date of Substantial Completion.

## PART 2 PRODUCTS

### 2.01 FIBER-CEMENT SIDING

- A. Panel Siding: Horizontally oriented panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying to ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
  - 1. Texture: Smooth.
  - 2. Length: 71 inches, nominal, unless otherwise indicated in Drawings.
  - 3. Width: 17 inches.
  - 4. Thickness: 5/8 inch, nominal.
  - 5. Finish: Factory applied topcoat.
  - 6. Color: As selected by Architect from manufacturers full range of available colors.
  - 7. Warranty: 15 year limited; transferable.
  - 8. Manufacturers:
    - a. Allura, a division of Plycem USA, Inc: [www.allurausa.com/#sle](http://www.allurausa.com/#sle).
    - b. James Hardie Building Products, Inc: [www.jameshardie.com](http://www.jameshardie.com).
    - c. **Basis of Design:** Nichiha USA, Inc; Natura Wood Series - Panel AWP-1818 : [www.nichiha.com/#sle](http://www.nichiha.com/#sle).
- B. Soffit Panels: Smooth panels of same material and finish as wall panels.

### 2.02 ACCESSORIES

- A. Aluminum Accessories: Where aluminum accessories are indicated, provide accessories complying with AAMA 1402.
  - 1. Basis of Design: Tamlyn, Xtreme Trim
  - 2. Profiles: As detailed.
  - 3. Nominal Thickness: 0.024 inch.
  - 4. Finish: Manufacturer's standard primer and baked-on polyester.
- B. Flashing: Provide stainless-steel flashing complying with Division 07 Section "Sheet Metal Flashing and Trim" at window and door heads and where indicated. Install flat trim tabs per manufacturer's recommendations.
- C. Butt Joint Flashing: Xtreme Trim aluminum plank flashing.
- D. Strapping and Extra Stud Backing: Provide additional support provisions, as required, for attachment over exterior gypsum sheathing.
- E. Furring Strips: Galvanized metal channels.
  - 1. 7/8" furring channels, unless otherwise indicated.
  - 2. Delegated Design Engineer to determine gauge and confirm size of furring channels and attachments.
- F. Accessory/Component Options:

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1. Manufactured Corners with 3-1/2" returns for each profile, size and color:
- G. Trim: Same material and texture as siding, soffit, and panels.
  1. Trim as sized in Drawings.
- H. Fasteners:
  1. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch, or three screw-threads, into substrate. Use screws or nails as required by Manufacturer.
  2. For fastening fiber cement, use hot-dip galvanized fasteners.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Protect surrounding areas and adjacent surfaces during execution of this work.
- B. Install Sheet Metal Flashing:
  1. Above door and window trim and casings.
  2. Above horizontal trim in field of siding.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and recommendations.
  1. Read warranty and comply with terms necessary to maintain warranty coverage.
  2. Use trim details indicated on drawings.
  3. Touch up field cut edges before installing.
  4. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Steel Studs: Use hot-dipped galvanized self-tapping screws, with the points of at least three screws penetrating each stud the panel crosses and at panel ends.
- C. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.
- D. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.
- E. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
- F. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

### **3.04 PROTECTION**

- A. Protect installed products until Date of Substantial Completion.
- B. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- C. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

**END OF SECTION**

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## SECTION 07 5400 - THERMOPLASTIC MEMBRANE ROOFING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Single-ply membrane roofing system and supplementary items necessary for installation.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 3100 - Steel Decking: Placement of acoustical insulation for deck flutes.
- B. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashings, reglets.
- D. Section 07 7200 - Roof Accessories: Roof-mounted units; prefabricated curbs.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2025.
- B. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.
- C. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing; 2021.
- D. NRCA (RM) - The NRCA Roofing Manual; 2025.
- E. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

#### 1.04 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Roof Edge Regions: The following definitions from ANSI/SPRI ES-1 shall be applicable to this project.
  - 1. Roof Corner Region: Based on the following:
    - a. For buildings with mean roof height of 60 ft or less, the corner region is a distance from the building corner that is 10 percent of the minimum building width or 40 percent of the building height at the eaves, whichever is smaller, but not less than 4 percent of minimum building width and not less than 3 ft.
  - 2. Roof Perimeter: The section of the roof edge between corner regions as defined above. The edge condition includes the roof edge device (edge flashing or coping) and the nailers or other substrate to edge device is attached.
- C. TPO: Thermoplastic polyolefin.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Manufacturer's technical literature for each product and system indicated.
  - 1. Include manufacturer's specifications for materials, finishes, construction details, installation instructions, and recommendations for maintenance.
- C. Shop Drawings: Show details of fabrication and installation, including plans, elevations, sections, details of components and attachments to other work. Distinguish between shop and field-assembled work.
  - 1. Show base flashings and membrane terminations.
  - 2. Show flat and sloped tapered insulation, including slopes.
  - 3. Show crickets and saddles, including slopes.
  - 4. Show roof plan showing orientation of membrane roofing and fastener spacing.
  - 5. Show insulation fastening patterns for corner, perimeter, and field-of-roof locations.
  - 6. Show cold-applied adhesive patten for insulation installation, typical patten of a 100 square foot area.

- D. Samples for Verification Purposes: For the following products:
  - 1. Roofing membrane, 12 in by 12 in square, of color specified, including side and end lap seam.
  - 2. Flashing sheets.
  - 3. Roof insulation.
  - 4. Walkway pads.
  - 5. Termination bars.
  - 6. Fasteners of each type, length, and finish.
- E. Product Test Reports: Written reports based on evaluation of comprehensive tests performed by qualified testing agency indicating that each product complies with requirements.
- F. Field Quality Control Reports: Written report of testing and inspection required by "Field Quality Control".
- G. Manufacturer's Project Acceptance Document: Certification by the manufacturer that its product(s) are approved, acceptable, suitable for use in specific locations, for specific details, and for applications indicated, or required, and that a warranty will be issued.
- H. Substrate Surface Temperature Readings at Cold Fluid-Applied Insulation Adhesive: If requested by Owner or Architect, submit recorded readings.
- I. Qualification Data:
  - 1. For firms and persons specified in "Quality Assurance" to demonstrate their capabilities and experience. Include list of completed projects.
- J. Warranty: Sample of warranty.
  - 1. Provide manufacturer's written warranty covering materials and installation (labor) stating obligations, remedies, limitations and exclusions.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience. Manufacturer shall physically produce their own product. Products produced by other manufacturers and sold under separate manufacturer name are not acceptable. Manufacturer shall be capable of providing field service representation during construction, approving an acceptable installer, and recommending appropriate installation methods.
- B. Installer Qualifications:
  - 1. Experience: Installer's personnel with not less than 5 years of experience in the successful performance of Work similar to scope of this Project.
  - 2. Supervision: Installer shall maintain a competent supervisor at Project while the Work is in progress, and who has not less than 5 years of experience installing products and systems similar to scope of this Project.
  - 3. Manufacturer Acceptance: Installer shall be certified, approved, licensed or acceptable to manufacturer to install products.
- C. Factory-Authorized Representative: Require site attendance of qualified technical representative of roofing manufacturer daily during installation of the work and during inspections and testing specified in "Field Quality Control" of this Section. Representative shall prepare written reports and submit to Contractor, with copy to Owner and Architect.
- D. Single Responsibility: Work shall be performed by single installer having sole responsibility for complete work, including components, performance, quality and appearance of the work.
- E. Insurance Certification: Assist Owner in preparing and submitting roof installation acceptance certification as necessary in connection with fire and extended-coverage insurance on roofing and associated work.
- F. Quality Standards:

1. Unless otherwise recommended by roofing manufacturer, provide roofing system in accordance with recommendations of the NRCA "Roofing and Waterproofing Manual" for roofing type indicated.
  2. Comply with FMG System Loss Prevention Data Sheet 1-49 for attachment and anchorage of nailers, blocking, and other associated members for applicable wind zone for Project.
  3. Comply with FMG System Loss Prevention Data Standards 1-28 and 1-28S for attachment and anchorage of roof insulation to metal decking.
- G. Fire-Test Response Characteristics: Provide roofing system materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
1. Exterior Fire-Test Exposure: ASTM E 108, Class A, for application and roof slopes indicated.
  2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

#### **1.07 ROOFING CONFERENCES**

- A. Preliminary Roof Conference: Conference is to establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements. The meeting should be held shortly after award of the Contract and at least six (6) weeks prior to the anticipated start of roofing.
1. Participants:
    - a. Owner's representative
    - b. User Agency representative
    - c. Architect
    - d. Contractor, including superintendent.
    - e. Installer, including project manager and supervisor (superintendent)
    - f. Manufacturer's qualified technical representative.
    - g. Installers of other construction interfaced with Work.
  2. Minimum Agenda: Installer shall demonstrate understanding of the Work required by describing detailed procedures for preparing, installing, and cleaning the Work. Demonstration shall include, but not be limited to, following topics:
    - a. Tour representative areas of Work, inspect and discuss condition of substrate, and other preparatory work performed by other trades.
    - b. Review Contract Document requirements.
    - c. Review approved submittals.
    - d. Review inspection and testing requirements.
    - e. Review environmental conditions and procedures for coping with unfavorable conditions.
    - f. Resolve deviations or differences between Contract Documents, and the manufacturer's specifications.
    - g. Review deck substrate requirements for conditions and finishes, including flatness, presence of moisture, and fastening.
    - h. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
    - i. Review governing regulations and requirements for insurance and certificates if applicable.
    - j. Review temporary protection requirements for roofing during and after installation.
    - k. Review roof observation and repair procedures after roofing installation.
  3. Record discussions, including decisions and agreements, and prepare report.
- B. Pre-Application Conference: Conference to be held within one (1) week of roofing application. Conference to verify readiness of project structure, review items of Preliminary

Roof Conference, review last minute details, changes or corrections and review anticipated schedule of progress.

1. All parties responsible for work of this section are required to attend including the Architect, Owner, Contractor, Manufacturer, Installer, Project Superintendent and Project Roofing Inspector.
- C. Roofing Final Inspection & Wrap-Up Conference: To be held at completion of roofing installation.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

#### **1.09 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

#### **1.10 COORDINATION**

- A. Coordinate installation of products and systems with interfacing and adjoining construction to provide a successful installation without failure.

#### **1.11 WARRANTY**

- A. Refer to Section: Contracting Requirements Roofing Guarantee R1
- B. Upon completion of the work, furnish to the Owner the manufacturer's written and signed 20 Year "No Dollar Limit" Material and Labor Warranty, including pre-manufactured metal components certifying the performance of the products and the consistency of the properties of such products affecting their performance for a period of 20 years from date of acceptance, in addition to Section Contracting Requirements Roofing Guarantee R1
- C. The Contractor is to cover damages to the building resulting from failure to prevent penetration of water during construction.
- D. The Contractor is to guarantee all work against defects in materials and workmanship for a period of 2 years following final acceptance of the Work, as per Roofing Guarantee R1 provided as part of this Project Manual.
- E. Manufacturer's Warranty: Furnish manufacturer's written "Total Roofing System" warranty signed by an authorized representative using manufacturer's standard form, without monetary limitation (NDL), agreeing to repair or replace components of roofing system which exhibit defects in materials or workmanship within specified warranty period. "Defects" is defined to include, but not limited to, deterioration or failure to perform as required.

1. Warranty includes roofing, flashings, adhesives, sealants, insulation, fastener systems, cover board, substrate board, and other components of roofing system.
  2. Warranty includes roof edge flashings integral with roofing system as specified in Division 07 Section "Flashing and Sheet Metal".
  3. Warranty Period: Manufacturer shall warrant the products to be free from material and labor defects for a period of 20 years from date of Substantial Completion.
- F. Installer's Warranty: Furnish installer's written warranty signed by an authorized representative using installer's standard form agreeing to repair or replace components of roofing system which exhibit defects in materials or workmanship within specified warranty period. "Defects" is defined to include, but not limited to, deterioration or failure to perform as required.
1. Warranty includes roofing, flashings, counterflashings, adhesives, sealants, insulation, fastener systems, cover boards, substrate board, roofing accessories, and other components of roofing system.
  2. Warranty includes roof edge flashings integral with roofing system as specified in Division 07 Section "Flashing and Sheet Metal".
  3. Warranty Period: Installer shall warrant the installation to be free from workmanship defects for a period of 2 years from date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS, GENERAL**

- A. Single Source Responsibility: Furnish each type of product from single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.

### **2.02 SINGLE-PLY MEMBRANE ROOFING SYSTEM MATERIALS**

- A. Thermoplastic Polyolefin (TPO) Membrane Roofing System: ASTM D 6878, internally fabric or scrim reinforced, uniform, flexible TPO sheet.
1. Thickness: 60 mils, nominal.
  2. Exposed Face Color: White.
  3. Manufacturers and Products:
    - a. Carlisle SynTec Systems; Sure-Weld TPO: [www.carlisle-syntec.com/#sle](http://www.carlisle-syntec.com/#sle).
    - b. Firestone Building Products, LLC; UltraPly TPO: [www.firestonebpc.com](http://www.firestonebpc.com).
    - c. GAF; EverGuard TPO: [www.gaf.com/sle](http://www.gaf.com/sle).
    - d. Johns Manville; JM TPO: [www.jm.com/sle](http://www.jm.com/sle).
    - e. Or prior approved equal.
- B. Insulation: As recommended by roof system manufacturer.
1. JohnsManville; ENRGY 3
  2. Atlas Roofing Corporation: [www.atlasroofing.com](http://www.atlasroofing.com).
  3. Carlisle SynTec Systems; SecurShield Insulation: [www.carlisle-syntec.com/#sle](http://www.carlisle-syntec.com/#sle).
  4. GAF: [www.gaf.com/sle](http://www.gaf.com/sle).
  5. Hunter Panels: [www.hunterpanels.com/#sle](http://www.hunterpanels.com/#sle).
  6. Or approved equal..
- C. Source Limitations: Obtain primary components including roof insulation, and fasteners for roofing system from same manufacturer as membrane roofing. Secondary materials for roofing system shall be as approved or recommended by roofing membrane manufacturer, and when required, furnished by roofing manufacturer.

### **2.03 PERFORMANCE REQUIREMENTS**

- A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing system and base flashings shall remain watertight.
- B. Design Loads: Installed roofing system and base flashings shall withstand design loads including, but not limited to, requirements established by authorities having jurisdiction,

applicable local building codes, and as indicated. Contractor shall obtain required design data and identify requirements accommodated on submittal drawings.

- C. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing system manufacturer based on testing and field experience.
- D. Edge Systems Design: Provide edge systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to SPRI's "Wind Design Standard for Edge Systems Used with Low Slope Roofing System" ES-1.
- E. Roofing System Design: Provide roofing systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure and external fire exposure.
- F. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
  - 1. Fire/Windstorm Classification at Roof Corner and Perimeter Region: Class 1A-150
  - 2. Fire/Windstorm Classification at Field of Roof: Class 1A-90.
  - 3. Hail Resistance Rating: SH
- G. Hurricane Resistance: Provide roofing system as complete and tested system, to meet the wind loads and design pressures, as detailed in the current code sections applicable to the Project, with Product Approval acceptable to authorities having jurisdiction as proof of compliance.
- H. Energy Star Listing: Roofing system shall be listed on the DOE's Energy Star "Roof Products Qualified Product List" for low-slope roof products. Provide roof with initial solar reflectance not less than 0.73 and a thermal resistance not less than 0.83 after 3 years.
- I. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A, for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- J. Fire-Resistance Ratings: Comply with fire-resistance rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.
- K. Slopes: Provide slopes as required to provide positive drainage of roof areas to roof drains. See roof plan.
  - 1. Provide saddles and crickets as required to provide unrestricted drainage around obstructions.

#### **2.04 SINGLE-PLY MEMBRANE ROOFING SYSTEM AUXILIARY MATERIALS**

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard sheet flashing membrane, of recommended thickness and compatible with roofing membrane, of same color as roofing membrane, and appropriate for Project roofing application.
- C. Coated Metal Flashing: Manufacturer's standard coated galvanized sheet metal (G90) flashing, minimum 24 gage, of same color as roofing membrane.
- D. Pipe/Stack Flashing: Pre-molded flexible membrane pipe collar with aluminum ring bonded to base as recommended by roofing system manufacturer.
- E. Bonding Adhesive: Manufacturer's standard bonding adhesive.
- F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- G. Termination Bars: ASTM A 666, Type 304 formed stainless steel or extruded alloy 6063 aluminum bars, 2 types, one flat and one flat with upper flange shaped to receive sealant,

locations as indicated; 1 in by 1/8 in thick; predrilled at 8 in centers; with corrosive resistant fasteners. No plastic bars allowed.

- H. Miscellaneous Accessories: Provide pourable sealers, preformed inside and outside corner sheet flashings, in-seam sealants, termination reglets, cover strips, and other accessories.
- I. Lap Sealant: Manufacturer's standard single-component sealant, color to match roofing membrane.

## **2.05 MEMBRANE ROOFING AND ASSOCIATED MATERIALS**

- A. Membrane Roofing Materials:
  - 1. TPO: Thermoplastic polyolefin (TPO) complying with ASTM D6878/D6878M, sheet contains reinforcing fabrics or scrim.
    - a. Thickness: 60 mil, 0.060 inch, minimum.
  - 2. Reinforcing: Internal fabric.
  - 3. Thickness: 0.060 inch, minimum.
  - 4. Sheet Width:
  - 5. Solar Reflectance: 0.75, minimum, initial, and 0.65, minimum, 3-year, certified by Cool Roof Rating Council.
  - 6. Thermal Emissivity: 0.80, minimum, initial, and 0.79, minimum, 3-year, certified by Cool Roof Rating Council.
  - 7. Color: White.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Membrane Fasteners: As recommended and approved by membrane manufacturer.
- D. Flexible Flashing Material: Same material as membrane.

## **2.06 ROOF COVER BOARDS**

- A. Horizontal Roof Cover Boards: Glass-Mat Faced Exterior Gypsum Sheathing Board.
  - 1. Material Quality Standard: ASTM C 1177 / C 1177M.
  - 2. Description: Glass-mat faced exterior gypsum sheathing board specifically manufactured for use beneath roofing systems. Non-combustible moisture-resistant gypsum core with glass-mat facings. Provide in maximum lengths and widths available that will minimize short-edge-to-short-edge butt joints and to correspond to support system indicated.
  - 3. Manufacturers and Products:
    - a. Georgia Pacific Corporation: DensDeck Prime or DuraGuard; as recommended by roofing system manufacturer.
    - b. USG Corporation: Securerock Glass Mat Roof Board.
    - c. Temple-Inland, Inc.; GreenGlass Primed Roof Board.
    - d. Or approved equal.
  - 4. Thickness: Minimum 1/2 inch; or as required to meet performance requirements.
- B. Horizontal Roof Cover Boards: Exterior Gypsum Sheathing Board:
  - 1. Material Quality Standard: ASTM C 1278 / C 1278M.
  - 2. Description: Exterior gypsum sheathing board specifically manufactured for use beneath roofing systems. Non-combustible, cellulosic-fiber-reinforced, moisture-resistant gypsum core. Provide in maximum lengths and widths available that will minimize short-edge-to-short-edge butt joints and to correspond to support system indicated.
  - 3. Manufacturers and Products:
    - a. USG; Securerock Gypsum-Fiber Roof Board.
  - 4. Thickness: Minimum 1/2 inch; or as required to meet performance requirements.

## **2.07 ROOF INSULATION AND ACCESSORIES**

- A. General: Provide preformed roof insulation boards that comply with requirements of referenced standards, selected from manufacturer's standard sizes and thicknesses. Provide accessories recommended by insulation manufacturer for intended use and compatible with roofing membrane.

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1. Provide insulation thickness required to maintain minimum aged R-value of 25, unless noted otherwise in the Drawings.
  2. Insulation board thickness of individual insulation layers to be 2 in maximum.
  3. Insulation board size to be 4 ft by 4 ft maximum.
  4. Provide factory, tapered insulation boards where indicated for sloping to drain. Fabricate with 1/4 in per 12 in taper, unless otherwise indicated.
  5. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Polyisocyanurate Board Insulation: Rigid cellular polyisocyanurate thermal insulation with core formed by using HCFC's as blowing agents to comply with ASTM C 1289, Type II, Class 1, Grade 2, (20 psi compressive strength, product shall have glass-fiber mat on both major surfaces.
- C. Cold Fluid-Applied Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
1. Bead-applied, low-rise, two-component urethane adhesive.
    - a. Basis of Design: OMG Inc.; Olybond 500.
- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- E. Treated Wood Nailers: As specified in Division 06, Section "Rough Carpentry".
- F. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

## **2.08 FLEXIBLE WALKWAYS**

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick, or as recommended by roofing system manufacturer.

## **2.09 FLASHING AND SHEET METAL**

- A. Flashing and Sheet Metal: Refer to Division 7, Section "Flashing and Sheet Metal".

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Acceptance of Surfaces and Conditions: Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.
1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
  2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thickness of insulation.
  3. Metal Decking Substrates:
    - a. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05, Section "Steel Roof Decking".

## **3.02 PREPARATION**

- A. General: Comply with manufacturer's instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.
- B. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.



- C. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- D. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

### **3.03 INSTALLATION, GENERAL**

- A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.
- B. Do not apply roofing membrane during cold or wet weather conditions.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

### **3.04 INSULATION INSTALLATION**

- A. General: Comply with FMG and roofing system manufacturer's written instructions for installing roof insulation. Secure insulation according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
- B. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 in. or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 in. in each direction.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 in. with insulation. Cut and fit insulation within 1/4 in. of nailers, projections, and penetrations.
- G. Steel Rook Deck Substrate: At Contractor's option, provide one of the following methods according to performance criteria requirements for specified Windstorm Resistance Classification.
  - 1. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using fasteners specifically designed and sized for fastening specified board-type roof insulation to deck.
  - 2. Mechanically Fastened and Adhered Insulation: Install base layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Install subsequent layers of insulation in a layer of cold fluid-applied adhesive.

### **3.05 ROOF COVER BOARDS INSTALLATION**

- A. General: Comply with FMG and roofing system manufacturer's written instructions for installing roof cover boards. Secure roof cover boards to insulation substrate according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
- B. Install roof cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 in. in each direction. Loosely butt roof cover boards together.

1. At Contractor's option, provide one of the following fastening methods according to performance criteria requirements for specified Windstorm Resistance Classification.
  - a. Fasten roof cover boards through insulation into roof deck.
  - b. Adhere roof cover boards to insulation substrate in a layer of cold fluid-applied adhesive.
    - 1) Score boards, if necessary, to conform to substrate irregularities. Comply with manufacturer's installation recommendations to ensure proper adhesion and adhesive set.
- C. Secure roof cover boards in insulation to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturer's written instructions.

### **3.06 SINGLE-PLY MEMBRANE ROOFING SYSTEM INSTALLATION, GENERAL REQUIREMENTS**

- A. Install roofing membrane according to roofing system manufacturer's written instructions. Unroll roofing membrane and allow it to relax before installing.
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Cooperate with testing and inspecting agencies engaged or required to perform services for installing roofing system.
- D. Coordinate installation of roofing system so insulation and other components of roofing system not intended for permanent exposure are not subjected to extreme heat, precipitation, or left uncovered at the end of the workday or when inclement weather is forecast.
  1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a temporary protection layer set in roofing adhesive with joints and edges sealed.
  2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
  3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by roofing system manufacturer. Stagger end laps. Apply roofing membrane with side laps shingled with slope of roof deck.
- F. Securely attach and tie-in roofing membrane at roof drains and piping/stack flashings in accordance with roofing system manufacturer's written instructions.

### **3.07 FULLY ADHERED SINGLE-PLY MEMBRANE ROOFING INSTALLATION**

- A. Adhere sheet membrane over area to receive roofing and install according to roofing system manufacturer's written instructions.
- B. Adhere roofing membrane at terminations, penetrations, corners, and perimeter of roofing.
- C. Seams:
  1. TPO Applications: Clean seam areas, overlap roofing membrane, and heat weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
    - a. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
    - b. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
    - c. Repair tears, voids, and lapped seams in roofing membranes that does not meet requirements.

### **3.08 BASE FLASHING INSTALLATION**

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area flashing.

- C. Seams:
  - 1. TPO Applications: Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Heat weld side and end laps to ensure a watertight seam installation.
- D. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

### **3.09 WALKWAY INSTALLATION**

- A. Walkways: Head weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions. Install walkway products in locations indicated, and the following:
  - 1. Four feet wide area around equipment roof curbs and supports, roof hatches and like items.
  - 2. Roof surfaces at sills of door, bottoms of steps of stairs, ladders and like conditions, 3 feet square minimum at each location.
- B. Roof Protection Sheet: Provide roof protection sheet at six foot wide area around exterior perimeter of kitchen exhausts, vents, pipes and like items.

### **3.10 DIALY SEAL**

- A. At end of each days work, provide temporary water cut-off edge seal at loose ends of roofing membrane providing 100 percent water tight seal
- B. Remove temporary seal upon resuming work. Remove contaminated membrane and insulation. Do not reuse contaminated materials in the work.

### **3.11 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Manufacturer's Field Service: Manufacturer's qualified technical representative shall periodically inspect Work to ensure installation is proceeding in accordance with manufacturer's designs, recommendations, instructions and warranty requirements. Representative shall submit written reports of each visit indicating observations, findings, and conclusions of inspection.
  - 1. Manufacturer's Technical Representative Qualifications: Direct employee of technical services department of manufacturer with experience in providing recommendations, observations, evaluations, and problem diagnostics.
- C. Testing Agency: The Owner may employ and pay for a qualified independent testing agency to perform field quality control, including infrared inspections on installed roof assemblies. Materials and installation failing to meet specified requirements shall be replaced at Contractor's expense. Retesting of materials and installations failing to meet specified requirements shall be done at Contractor's expense.
  - 1. Infrared Inspection: Where infrared survey indicates moisture intrusion, wet insulation and damaged or deficient materials or construction shall be replaced in a manner to provide watertight and specified wind uplift resistant construction, and maintain the roof system warranty.
- D. Roof Drain Testing: Roofing contractor shall install a test ball and flood the roof at each roof drain to test for leaks in the presence of the General Contractor, Owner, Architect and roofing manufacturer's qualified technical representative.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

### **3.12 REPAIR, CLEANING AND PROTECTION**

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION**

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## SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and sill pans at storefront system, flashing at storefront system, trim on fascia and vertical wall above roof, and other items indicated.
- B. Sealants for joints within sheet metal fabrications.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood nailers for sheet metal work.
- B. Section 07 7100 - Roof Specialties: Manufactured copings, flashings, and expansion joint covers.
- C. Section 07 7200 - Roof Accessories: Manufactured metal roof curbs.
- D. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

#### 1.03 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- C. ASTM B32 - Standard Specification for Solder Metal; 2020.
- D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- F. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement; 2025.
- G. CDA A4050 - Copper in Architecture - Handbook; Current Edition.
- H. ICC (IPC) - International Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Samples: Submit two samples 6 by 6 inch in size illustrating metal finish color.

#### 1.05 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
- B. Maintain one copy of each document on site.
- C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

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- B. Prevent contact with materials that could cause discoloration or staining.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Sheet Metal Flashing and Trim:
  - 1. Hickman Edge Systems: [www.hickmanedgesystems.com/#sle](http://www.hickmanedgesystems.com/#sle).
  - 2. Petersen Aluminum Corporation: [www.pac-clad.com/#sle](http://www.pac-clad.com/#sle).
  - 3. Or prior approved equal.

### **2.02 SHEET MATERIALS**

### **2.03 PREFINISHED ALUMINUM SHEETS**

- A. Aluminum Sheet Substrates: ASTM B209/B209M, alloy and temper as recommended by manufacturer for application.
- B. Superior Performance Organic Coating System: Comply with AAMA 2605 for aluminum preparation, pretreatment, primer and finish coat system; provide thermally cured 70-percent PVDF fluoropolymer systems; tested for weathering for 10 years with 5 delta units color change maximum.
- C. Color: As selected by Architect from manufacturer's full range.

### **2.04 FABRICATION**

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.
- F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- G. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

### **2.05 GUTTERS AND DOWNSPOUTS**

- A. Gutters and Downspouts: SMACNA Architectural Sheet Metal Manual, Rectangular profile, unless otherwise indicated in Drawings.
- B. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with ICC (IPC).
- C. Accessories: Profiled to suit gutters and downspouts.
  - 1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
  - 2. Gutter Supports: Brackets.
  - 3. Downspout Supports: Straps.
- D. Downspout Boots: Cast iron, as specified in Section 05 5000.
- E. Downspout Extenders: Same material and finish as downspouts.
- F. Seal metal joints.

### **2.06 ACCESSORIES**

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Underlayment: Polyethylene, 6 mil, 0.006 inch thick.
- C. Primer Type: Zinc chromate.
- D. Concealed Sealants: Non-curing butyl sealant.

- E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- F. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.
- G. Reglets: Surface-mounted type, galvanized steel; face and ends covered with plastic tape.
- H. Solder: ASTM B32, Alloy Grade - Sn50 (50/50).

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

#### **3.02 PREPARATION**

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

#### **3.03 INSTALLATION**

- A. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.
- B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Solder metal joints for full metal surface contact, and after soldering wash metal clean with neutralizing solution and rinse with water.
- F. Secure gutters and downspouts in place with concealed fasteners.
- G. Slope gutters 1/4 inch per 10 feet, minimum.
- H. Connect downspouts to downspout boots, and seal connection watertight.

#### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**END OF SECTION**

## SECTION 07 7100 - ROOF SPECIALTIES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Manufactured roof specialties, including copings, fascias, and gravel stops.
- B. Roof control and expansion joint covers.

#### 1.02 RELATED REQUIREMENTS

- A. Section 07 7200 - Roof Accessories: Manufactured curbs.

#### 1.03 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- C. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.
- D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- E. NRCA (RM) - The NRCA Roofing Manual; 2025.
- F. SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems; 2011.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.
- D. Samples: Submit two appropriately sized samples of coping and gravel stop.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Roof Edge Flashings and Copings:
  - 1. Architectural Products Co: [www.archprod.com](http://www.archprod.com).
  - 2. Metal-Era Inc: [www.metalera.com/#sle](http://www.metalera.com/#sle).
  - 3. OMG Roofing Products; Formed Coping Plus: [www.omgroofing.com/#sle](http://www.omgroofing.com/#sle).
  - 4. Or prior approved equal.
- B. Control and Expansion Joint Covers:
  - 1. Construction Specialties, Inc: [www.c-sgroup.com/#sle](http://www.c-sgroup.com/#sle).
  - 2. GAF: [www.gaf.com/#sle](http://www.gaf.com/#sle).
  - 3. Johns Manville: [www.jm.com/#sle](http://www.jm.com/#sle).
  - 4. MM Systems Corp: [www.mmsystemscorp.com/#sle](http://www.mmsystemscorp.com/#sle).
  - 5. Or prior approved equal.

#### 2.02 COMPONENTS

- A. Roof Edge Flashings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
  - 1. Configuration: Fascia, cant, and edge securement for roof membrane.

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2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
  3. Material: Formed aluminum sheet, 0.050 inch thick, minimum.
  4. Finish: 70 percent polyvinylidene fluoride.
  5. Color: As selected by Architect from manufacturer's full range.
  6. Products:
    - a. Hickman Edge Systems: [www.hickmanedgesystems.com/#sle](http://www.hickmanedgesystems.com/#sle).
    - b. Metal-Era Inc: [www.metalera.com/#sle](http://www.metalera.com/#sle).
    - c. Or prior approved equal.
- B. Copings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
  2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.  
Material: Formed aluminum sheet, 0.050 inch thick, minimum.
  3. Finish: 70 percent polyvinylidene fluoride.
  4. Color: To be selected by Architect from manufacturer's full range.
  5. Products:
    - a. Hickman Edge Systems; PermaSnap Cantilever Coping: [www.hickmanedgesystems.com/#sle](http://www.hickmanedgesystems.com/#sle).
    - b. Metal-Era Inc; One Edge Coping: [www.metalera.com/#sle](http://www.metalera.com/#sle).
    - c. Or prior approved equal.
- C. Control and Expansion Joint Covers: Composite construction of \_\_\_\_-inch wide flexible EPDM flashing of white color with closed cell urethane foam backing, each edge seamed to aluminum sheet metal flanges, designed for nominal joint width of 1 inch. Include special formed corners, tees, intersections, and wall flashings, each sealed watertight.
- D. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accommodating pipes sized between 3/8 inch and 12 inches.
1. Caps: EPDM.
  2. Color: As indicated on drawings.

## 2.03 FINISHES

- A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as indicated.
- B. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

### 3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.
- C. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

- D. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.

**END OF SECTION**

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## SECTION 07 7200 - ROOF ACCESSORIES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Manufactured curbs.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 3100 - Steel Decking.
- B. Section 07 5400 - Thermoplastic Membrane Roofing.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Roof accessory items fabricated from sheet metal.
- D. Section 07 7100 - Roof Specialties: Other manufactured roof specialty items.

#### 1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- B. FM (AG) - FM Approval Guide; Current Edition.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
  - 4. Maintenance requirements.
- C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
- D. Warranty Documentation:
  - 1. Submit manufacturer warranty.
  - 2. Ensure that forms have been completed in Owner's name and registered with manufacturer.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.

#### 1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

### PART 2 PRODUCTS

#### 2.01 ROOF CURBS

- A. Roof Curbs Manufacturers:
  - 1. AES Industries Inc.: [www.aescurb.com](http://www.aescurb.com).
  - 2. The Pate Company: [www.patecurbs.com](http://www.patecurbs.com).
  - 3. Roof Products & Systems (RPS): [www.rpscurbs.com](http://www.rpscurbs.com).
  - 4. Or prior approved equal.
- B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.

1. Roof Curb Mounting Substrate: Curb substrate consists of standing seam metal roof panel system.
2. Sheet Metal Material:
  - a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
3. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
  - a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch clearance between curb and metal roof panel flange allowing water to properly flow past curb.
  - b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
  - c. Maintain at least 12 inch clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
  - d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.
4. Provide layouts and configurations indicated on drawings.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

#### **3.03 INSTALLATION**

- A. General: Install roof accessories according to manufacturer's written instructions.
  1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
  2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
  3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
  4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
  1. Coat concealed side of uncoated aluminum and stainless-steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.
  3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.
- C. Roof Curb Installation: Install each roof curb so top surface is level.
- D. Roof Hatch Installation:
  1. Install roof hatch so top surface of hatch curb is level.
  2. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.

- 3. Attach ladder-assist post according to manufacturer's written instructions.
- E. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

**3.04 REPAIR AND CLEANING**

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780.
- B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 09 9000 "Painting and Coating."
- C. Clean exposed surfaces according to manufacturer's written instructions.
- D. Clean off excess sealants.
- E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

**3.05 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

## SECTION 07 8400 - FIRESTOPPING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

#### 1.02 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a.
- B. ITS (DIR) - Directory of Listed Products; Current Edition.
- C. FM (AG) - FM Approval Guide; Current Edition.
- D. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.
- E. UL (FRD) - Fire Resistance Directory; Current Edition.

#### 1.03 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures, for submittal process.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Installer's qualification statement.

#### 1.04 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
  - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
  - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at [www.icc-es.org](http://www.icc-es.org) will be considered as constituting an acceptable test report.
  - 3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

#### 1.05 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

#### 1.06 PROJECT COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Firestopping Manufacturers:
  - 1. 3M Fire Protection Products: [www.3m.com/firestop](http://www.3m.com/firestop).
  - 2. A/D Fire Protection Systems Inc: [www.adfire.com](http://www.adfire.com).
  - 3. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  - 4. Specified Technologies Inc: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
  - 5. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  - 6. Or prior approved equal.

### **2.02 MATERIALS**

- A. Firestopping Materials: Any materials meeting requirements.
- B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- C. Fire Ratings: Refer to drawings for required systems and ratings.

### **2.03 PENETRATION FIRESTOPPING**

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
  - 1. Fire-resistance-rated walls include fire-barrier walls smoke-barrier walls and fire partitions.
  - 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- D. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
  - 1. Permanent forming/damming/backing materials, including the following:
    - a. Slag-wool-fiber or rock-wool-fiber insulation.
    - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
    - c. Fire-rated form board.
    - d. Fillers for sealants.
  - 2. Temporary forming materials.
  - 3. Substrate primers.
  - 4. Collars.
  - 5. Steel sleeves.

### **2.04 FILL MATERIALS**

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.
- E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
  - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

## **2.05 MIXING**

- A. For those products requiring mixing before application, comply with penetration firestopping manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
  - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.
  - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be



permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

### **3.03 INSTALLATION**

- A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- C. Install fill materials for firestopping by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
  - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
  - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### **3.04 IDENTIFICATION**

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
  - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
  - 2. Contractor's name, address, and phone number.
  - 3. Designation of applicable testing and inspecting agency.
  - 4. Date of installation.
  - 5. Manufacturer's name.
  - 6. Installer's name.

### **3.05 FIELD QUALITY CONTROL**

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

### **3.06 CLEANING AND PROTECTION**

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

### **3.07 PROTECTION**

- A. Protect adjacent surfaces from damage by material installation.

### **END OF SECTION**

## SECTION 07 9200 - JOINT SEALANTS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Exterior joints in vertical surfaces and non-traffic horizontal surfaces as indicated below:
  - 1. Control and expansion joints in unit masonry.
  - 2. Joints in stonework set without mortar.
  - 3. Joints between different materials.
  - 4. Perimeter joints between materials listed above and frames of doors and windows.
  - 5. Control and expansion joints in ceiling and overhead surfaces.
- B. Exterior joints in horizontal traffic surfaces as indicated below:
  - 1. Control, expansion, and isolation joints in cast-in-place concrete slabs.
- C. Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:
  - 1. Control and expansion joints on exposed interior surfaces of exterior walls.
  - 2. Perimeter joints of exterior openings where indicated.
  - 3. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
  - 4. Perimeter joints of toilet fixtures.
- D. Owner-provided field quality control.

#### 1.02 RELATED REQUIREMENTS

- A. Section 08 8000 - Glazing: Glazing sealants and accessories.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- B. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.

#### 1.04 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
- C. Samples: For each type of color of joint sealant required, provide Samples with joint sealants in 1/2-inch wide joints formed between two 6-inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Preconstruction field test reports.
- E. Compatibility and adhesion test reports.
- F. Product certificates:
  - 1. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds.

- G. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- H. Field Quality Control Plan: Submit at least two weeks prior to start of installation.
- I. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.
- J. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

## 1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant application similar in material, design and extent to that indicated for Project that have resulted in construction with a record of five (5) years successful in-service performance.
- B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.
- C. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint-sealant manufacturers for testing according to ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- D. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates according to the method in ASTM C 1193 that is appropriate for the types of Project joints.
- E. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
  - 1. Identification of testing agency.
  - 2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
    - a. Test date.
    - b. Copy of test method documents.
    - c. Age of sealant upon date of testing.
    - d. Test results, modeled after the sample form in the test method document.
    - e. Indicate use of photographic record of test.
- F. Owner will employ an independent testing agency to perform the field quality control inspection and testing as referenced in PART 3 of this section and as follows, to prepare and submit the field quality control plan and log, and to provide recommendations of remedies in the case of failure.
- G. Field Quality Control Plan:
  - 1. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.
- H. Field Adhesion Test Procedures:
  - 1. Allow sealants to fully cure as recommended by manufacturer before testing.
  - 2. Have a copy of the test method document available during tests.
  - 3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
  - 4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
  - 5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.

6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- I. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
  1. Sample: At least 18 inch long.
  2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
  3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.
- J. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

## **1.07 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  1. Warranty Period: Five (5) years from date of Substantial Completion.
- C. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  1. Warranty Period: Ten (10) years from date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

### **2.02 MATERIALS - GENERAL**

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by manufacturer's full range.

### **2.03 ELASTOMERIC JOINT SEALANTS**

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied, chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
  1. Additional Movement Capability: Where additional movement capability is specified in Elastomeric Joint Sealant Data Sheet, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements of ASTM C 920 for uses indicated.

- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrated indicated for Project.
- C. Suitability for Immersion in Liquids: Where elastomeric sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247 and qualify for the length of exposure indicated by reference to ASTM C 920 for Class 1 or 2. Liquid used for testing sealants is deionized water, unless otherwise indicated.
- D. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- E. Type **ES-1**: Single-Component Neutral-Curing Silicone Sealant.
  - 1. Products:
    - a. Dow Corning Corporation; 795.
    - b. GE Silicones; UltraGlaze Silpruf.
    - c. Bostick Construction; Chem-Calk 1000
  - 2. Type and Grade: S (single component) and NS (nonsag).
  - 3. Class: 25
  - 4. Uses Related to Exposure: NT (non-traffic).
  - 5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
- F. Type **ES-2**: Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant.
  - 1. Products:
    - a. Pecora Corporation: 898.
    - b. Tremco: Tremsil 600 White.
  - 2. Type and Grade: S (single component) and NS (nonsag).
  - 3. Class: 25
  - 4. Uses Related to Exposure: NT (non-traffic).
  - 5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
- G. Type **ES-3**: Multi-Component Nonsag Urethane Sealant.
  - 1. Available Products:
    - a. Sonneborn, Division of BASF Construction Chemicals, LLC.; Sonolastic SL-2.
    - b. Pecora Corporation; Urexpan NR-200.
  - 2. Type and Grade: M (multi-component) and SL (self-leveling).
  - 3. Class: 25
  - 4. Uses Related to Exposure: T (traffic).
  - 5. Uses Related to Joint Substrates: M, G, A and, as applicable to joint substrates indicated, O.
- H. Type **ES-4**: Non-Pick Sealant **(to be used in all secure areas)**.
  - 1. Multi-Component Epoxy Sealant: NP1
    - a. Performance:
      - 1) Type and Grade: M (multi-component), NS (nonsag).
      - 2) Kevlar modified epoxy, Shore hardness 70-D.
      - 3) 30% tensile elongation.
    - b. Manufacturer's certificate of compliance.
      - 1) Product: Polytite Manufacturing Corporation.
      - 2) Product: Paste 217 Security Sealant by Chem Co systems
      - 3) Or prior approved equal.

## 2.04 LATEX JOINT SEALANTS

- A. Type **LS-1**: Latex Sealant: Comply with ASTM C 834, Type P, Grade NF.
  - 1. Available Products:

- a. Bostik Findley; Chem-Calk 600.
- b. Pecora Corporation; AC-20+.
- c. Schnee-Morehead, Inc.; SM 8200.
- d. Sonneborne, Division of BASF Construction Chemicals, LLC.; Sonolac.
- e. Tremco; Tremflex 834.

## **2.05 JOINT-SEALANT BACKING**

- A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Type: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

## **2.06 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

## **2.07 ACCESSORIES**

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

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- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
  - 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
  - 2. Notify Architect of date and time that tests will be performed, at least 7 days in advance.
  - 3. Record each test on Preinstallation Adhesion Test Log.
  - 4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
  - 5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

### 3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.
    - a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
  - 2. Remove laitance and form-release agents from concrete.
    - a. Clean non-porous surfaces with chemical cleaners or other means that do not stain, harm, substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.03 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant applications and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allows optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint configurations per Figure 5A in ASTM C 1193, unless otherwise indicated.
- G. Installation of Preformed Silicone-Sealant System: Comply with manufacturer's written instructions.
- H. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.
- I. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.
- J. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- K. Perform installation in accordance with ASTM C1193.
- L. Measure joint dimensions and size joint backers to achieve the following:
  1. Width/depth ratio of 2:1.
  2. Neck dimension no greater than 1/3 of the joint width.
  3. Surface bond area on each side not less than 75 percent of joint width.
- M. Install bond breaker backing tape where backer rod cannot be used.
- N. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- O. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- P. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- Q. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

### 3.04 JOINT SEALANT SCHEDULE

- A. Joint-Sealant Application **JS-1**: Exterior horizontal traffic isolation and contraction joints in cast-in-place concrete slabs.
  1. Joint Sealant: Multi-component pourable urethane sealant **ES-3**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application **JS-2**: Exterior vertical control and expansion joints in unit masonry.
  1. Joint Sealant: Single-component neutral-curing silicone sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- C. Joint Sealant Application **JS-3**: Exterior perimeter joints between metal wall panels and frames of doors, windows and louvers.
  1. Joint Sealant: Single-component neutral-curing silicone sealant **ES-1**.
- D. Joint Sealant Application **JS-4**: Exterior control and expansion joints in building.



1. Joint Sealant: Single-component neutral-curing silicone sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- E. Joint Sealant Application **JS-5**: Exterior joints in vertical and horizontal non-traffic surfaces at building.
1. Joint Sealant: Single-component neutral-curing silicone sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- F. Joint Sealant Application **JS-6**: Vertical control and expansion joints on exposed interior surfaces of exterior walls at Security Areas.
1. Joint Sealant: Multi-component non-sag Kevlar Epoxy Sealant **ES-4**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- G. Joint Sealant Application **JS-7**: Vertical control and expansion joints on exposed interior surfaces of exterior walls.
1. Joint Sealant: Single-component neutral-curing silicone sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- H. Joint Sealant Application **JS-8**: Interior perimeter joint of exterior openings.
1. Joint Sealant: Single-component neutral-curing silicone sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- I. Joint Sealant Application **JS-9**: Interior perimeter joints of exterior openings at Security Areas
1. Joint Sealant: Multi-component non-sag Kevlar Epoxy Sealant **ES-4**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- J. Joint Sealant Application **JS-10**: Interior porcelain tile expansion, control, contraction, and isolation joints in horizontal traffic surfaces.
1. Joint Sealant: Single-component mildew resistant neutral-curing silicone sealant **ES-2**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- K. Joint Sealant Application **JS-11**: Interior joints between plumbing fixtures and adjoining walls, floors and counters.
1. Joint Sealant: Single-component mildew resistant neutral-curing silicone sealant **ES-2**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- L. Joint Sealant Application **JS-12**: Vertical joints on exposed surfaces of interior unit masonry.
1. Joint Sealant: Single-component non-sag urethane sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- M. Joint Sealant Application **JS-13**: Vertical joints on exposed surfaces drywall partitions.
1. Joint Sealant: Single-component nonsag urethane sealant **ES-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- N. Joint Sealant Application **JS-14**: Vertical joints on exposed surfaces of unit masonry at Security Areas.
1. Joint Sealant: Multi-component non-sag Kevlar Epoxy Sealant **ES-4**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- O. Joint Sealant Application **JS-15**: Perimeter joints between interior wall surfaces and frames of interior doors and windows.
1. Joint Sealant: Latex Sealant **LS-1**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- P. Joint Sealant Application **JS-16**: Perimeter joints between interior wall surfaces and frames of interior doors and windows at Security Areas.
1. Joint Sealant: Multi-component non-sag Kevlar Epoxy Sealant **ES-4**.
  2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.
- Q. Joint Sealant Application **JS-17**: Interior control, expansion, and isolation joints in horizontal traffic surfaces of flooring at Security Areas.
1. Joint Sealant: Multi-component non-sag Kevlar Epoxy Sealant **ES-4**.

2. Joint Sealant Color: Selected by Architect from manufacturer's full range of colors.

### **3.05 FIELD QUALITY CONTROL**

- A. Owner may employ an independent testing agency to perform field quality control inspection and testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.
- C. Repair destructive test location damage immediately after evaluation and recording of results.

### **3.06 POST-OCCUPANCY**

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

**END OF SECTION**

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## SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Fire-rated hollow metal doors and frames.
- D. Thermally insulated hollow metal doors with frames.
- E. Hollow metal borrowed lites glazing frames.

#### 1.02 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware.
- B. Section 08 8000 - Glazing: Glass for doors and borrowed lites.
- C. Section 09 9000 - Painting and Coating: Field painting.
- D. Section 11 1900 - Detention Equipment: Detention hollow metal doors and frames.
- E. Section 11 1940 - Security Glazing: Security glazing for detention doors.

#### 1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2024.
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2025.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2025.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2025.
- I. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- J. ITS (DIR) - Directory of Listed Products; Current Edition.
- K. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.
- L. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.
- M. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.
- N. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- O. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.
- P. UL (DIR) - Online Certifications Directory; Current Edition.
- Q. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.
- C. Maintain at project site copies of reference standards relating to installation of products specified.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Hollow Metal Doors and Frames:
  - 1. Ceco Door, an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 2. Mesker, dormakaba Group; FDJ Series Drywall Frames: [www.meskeropeningsgroup.com/#sle](http://www.meskeropeningsgroup.com/#sle).
  - 3. Republic Doors, an Allegion brand: [www.republicdoor.com/#sle](http://www.republicdoor.com/#sle).
  - 4. Steelcraft: [www.steelcraft.com](http://www.steelcraft.com).
  - 5. Or prior approved equal.

#### 2.02 PERFORMANCE REQUIREMENTS

- A. Requirements for Hollow Metal Doors and Frames:
  - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
  - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
  - 3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
- B. Hollow Metal Panels: Same construction, performance, and finish as doors.
- C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

#### 2.03 HOLLOW METAL DOORS

- A. Exterior Doors: Thermally insulated.
  - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 3 - Extra Heavy-duty.
    - b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.

- c. Model 1 - Full Flush.
  - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
- 2. Core Material: Polyurethane.
- 3. Door Thermal Resistance: R-Value of 8.7 minimum for installed thickness of polyurethane.
- 4. Door Thickness: 1-3/4 inches, nominal.
- 5. Weatherstripping: Refer to Section 08 7100.
- 6. Door Finish: Factory primed and field finished.
- B. Interior Doors, Non-Fire Rated:
  - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 2 - Heavy-duty.
    - b. Physical Performance Level B 500 000 cycles; in accordance with ANSI/SDI A250.4.
    - c. Model 1 - Full Flush.
    - d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
  - 2. Core Material: Manufacturers standard core material/construction and in compliance with requirements.
  - 3. Door Thickness: 1-3/4 inches, nominal.
  - 4. Door Finish: Factory primed and field finished.
- C. Fire-Rated Doors:
  - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 3 - Extra Heavy-duty.
    - b. Physical Performance Level A 1 000 000 cycles; in accordance with ANSI/SDI A250.4.
    - c. Model 1 - Full Flush.
    - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
  - 2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
    - a. Provide units listed and labeled by UL (DIR) or ITS (DIR).
    - b. Attach fire rating label to each fire rated unit.
  - 3. Core Material: Mineral board.
  - 4. Door Thickness: 1-3/4 inches, nominal.
  - 5. Door Finish: Factory primed and field finished.

## 2.04 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Exterior Door Frames: Full profile/continuously welded type.
  - 1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
  - 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
  - 3. Frame Finish: Factory primed and field finished.
  - 4. Weatherstripping: Separate, see Section 08 7100.
- C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
  - 1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
  - 2. Frame Finish: Factory primed and field finished.
- D. Door Frames, Fire-Rated: Full profile/continuously welded type.
  - 1. Fire Rating: Same as door, labeled.
  - 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
  - 3. Frame Finish: Factory primed and field finished.
- E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

- F. Mullions for Pairs of Doors: Fixed, with profile similar to jambs.
- G. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.
- H. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- I. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.
- J. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

## **2.05 FINISHES**

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

## **2.06 ACCESSORIES**

- A. Louvers: Roll formed steel with overlapping frame; finish same as door components ; factory-installed.
  - 1. In Fire-Rated Doors: UL (DIR) or ITS (DIR) listed fusible link louver, same rating as door.
- B. Door Window Frames: Door window frames with glazing securely fastened within door opening.
  - 1. Size: As indicated on drawings.
  - 2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel.
- C. Glazing: As specified in Sections 08 8000 "Glazing" or 11 1940 "Security Glazing", as indicated on Drawings.
- D. Astragals for Double Doors: Specified in Section 08 7100.
- E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.
- D. Verify that existing hardware that is to be reused is compatible with new doors and frames.

### **3.02 PREPARATION**

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

### **3.03 INSTALLATION**

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- E. Reinstall existing door hardware as indicated in Drawings.
- F. Install door hardware as specified in Section 08 7100.
- G. Touch up damaged factory finishes.

#### **3.04 TOLERANCES**

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

#### **3.05 ADJUSTING**

- A. Adjust for smooth and balanced door movement.

#### **3.06 SCHEDULE**

- A. Refer to Door and Frame Schedule on the drawings.

**END OF SECTION**

|                                      |             |                               |
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| 571506 / New Jetson Center for Youth | 08 1113 - 5 | Hollow Metal Doors and Frames |
|--------------------------------------|-------------|-------------------------------|

## SECTION 08 1416 - FLUSH WOOD DOORS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Flush wood doors; flush and flush glazed configuration; fire rated and non-rated.

#### 1.02 RELATED REQUIREMENTS

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 08 7100 - Door Hardware.
- C. Section 08 8000 - Glazing .
- D. Section 09 2116 - Gypsum Board Assemblies:

#### 1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.
- C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- D. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.
- E. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- F. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- D. Samples: Submit two samples of door veneer, 8 by 11 inches in size illustrating wood grain, stain color, and sheen.
- E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- F. Manufacturer's Installation Instructions: Indicate special installation instructions.
- G. Warranty, executed in Owner's name.

#### 1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.
  - 1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- C. Woodwork Quality Assurance Program:
  - 1. Provide labels indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
  - 2. Provide designated labels on shop drawings as required by quality assurance program.
  - 3. Provide designated labels on installed products as required by quality assurance program.
  - 4. Submit documentation upon completion of installation that verifies this work is in compliance with specified requirements.



## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

## **1.07 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for 2 years.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Wood Veneer Faced Doors:
  - 1. Graham Wood Doors: [www.grahamdoors.com](http://www.grahamdoors.com).
  - 2. Eggers Industries: [www.eggersindustries.com](http://www.eggersindustries.com).
  - 3. Haley Brothers: [www.haleybros.com](http://www.haleybros.com).
  - 4. Oshkosh Door Company: [www.oshkoshdoor.com](http://www.oshkoshdoor.com).
  - 5. Marshfield Door Systems, Inc: [www.marshfielddoors.com](http://www.marshfielddoors.com).
  - 6. VT Industries, Inc: [www.vtindustries.com/#sle](http://www.vtindustries.com/#sle).
  - 7. Or prior approved equal.

### **2.02 DOORS**

- A. Doors: See drawings for locations and additional requirements.
  - 1. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
  - 1. Provide solid core doors at each location.
  - 2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
  - 3. Wood veneer facing with factory transparent finish Maple, Plain Sawn, Custom Stained to match Architects sample.

### **2.03 DOOR AND PANEL CORES**

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.
- B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

### **2.04 DOOR FACINGS**

- A. Veneer Facing for Transparent Finish: Maple, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
- B. Facing Adhesive: Type I - waterproof.

### **2.05 DOOR CONSTRUCTION**

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
  - 1. Provide solid blocks at lock edge for hardware reinforcement.
  - 2. Provide solid blocking for other through bolted hardware.

- C. Where supplementary protective edge trim is required, install trim after veneer facing has been applied full-width.
- D. Glazed Openings: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
- E. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- F. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- G. Provide edge clearances in accordance with the quality standard specified.

## **2.06 FINISHES - WOOD VENEER DOORS**

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
  - 1. Transparent:
    - a. System - 3, Lacquer, Post catalyzed. Two Coats
    - b. Stain: Match Architects Sample
    - c. Sheen: Match Architects sample.
- B. Factory finish doors in accordance with approved sample.
- C. Seal door top edge with color sealer to match door facing.

## **2.07 ACCESSORIES**

- A. Hollow Metal Door Frames: See Section 08 1113.
- B. Glazing: See Section 08 8000.
- C. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
- D. Door Hardware: See Section 08 7100.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

## **3.02 INSTALLATION**

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
  - 1. Install fire-rated doors in accordance with NFPA 80 requirements.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Coordinate installation of doors with installation of frames and hardware.
- D. Coordinate installation of glazing.

## **3.03 TOLERANCES**

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.

## **3.04 ADJUSTING**

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

## **3.05 SCHEDULE - SEE DRAWINGS**

### **END OF SECTION**

|                                      |             |                  |
|--------------------------------------|-------------|------------------|
| 571506 / New Jetson Center for Youth | 08 1416 - 3 | Flush Wood Doors |
|--------------------------------------|-------------|------------------|

## SECTION 08 3100 - ACCESS DOORS AND PANELS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Wall and ceiling access door and frame units.
- B. Floor-mounted access door and frame units, interior.

#### 1.02 REFERENCE STANDARDS

- A. FM (AG) - FM Approval Guide; Current Edition.
- B. ITS (DIR) - Directory of Listed Products; Current Edition.
- C. UL (FRD) - Fire Resistance Directory; Current Edition.

#### 1.03 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of each access door and/or panel unit.
- D. Manufacturer's Installation Instructions: Indicate installation requirements.
- E. Project Record Documents: Record actual locations of each access unit.

### PART 2 PRODUCTS

#### 2.01 ACCESS DOORS AND PANELS ASSEMBLIES

#### 2.02 WALL AND CEILING MOUNTED UNITS

- A. Manufacturers:
  - 1. Activar Construction Products Group, Inc. - JL Industries: [www.activarcpg.com/#sle](http://www.activarcpg.com/#sle).
    - a. Multipurpose Access Panel: Activar/JL Industries TM.
    - b. High-Security (7 ga) Access Panel: Activar/JL Industries HSP.
  - 2. ACUDOR Products Inc: [www.acudor.com/#sle](http://www.acudor.com/#sle).
    - a. Fire-Rated Ceiling-Mounted Units - 2 Hours or Less: ACUDOR FWC-5015.
    - b. Fire-Rated Wall-Mounted Units - 2 Hours or Less: ACUDOR FW-5015.
    - c. Wall and Ceiling Mounted Units: ACUDOR DW-5058.
  - 3. Cendrex, Inc: [www.cendrex.com/#sle](http://www.cendrex.com/#sle).
    - a. Fire-Rated Wall-Mounted Units - 2 Hours or Less: Cendrex PFI series, insulated.
    - b. Fire-Rated Ceiling-Mounted Units: Cendrex PFI series, downward opening.
    - c. Security Rated Units: Cendrex PHS, high security.
  - 4. Karp Associates, Inc: [www.karpinc.com](http://www.karpinc.com).
  - 5. Milcor, Inc: [www.milcorinc.com](http://www.milcorinc.com).
  - 6. Nystrom, Inc: [www.nystrom.com/#sle](http://www.nystrom.com/#sle).
  - 7. Or prior approved equal.
- B. Wall and Ceiling Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
  - 1. Material: Steel.
  - 2. Style: Exposed frame with door surface flush with frame surface.
    - a. Gypsum Board Mounting Criteria: Use drywall bead type frame.
  - 3. Door Style: Single thickness with rolled or turned in edges.
  - 4. Frames and flanges: 0.058 inch steel.
  - 5. Door panels: 0.070 inch single thickness steel sheet.
  - 6. Door panels: 0.070 inch double sheet with integral non-combustible insulation filler. Where indicated insulated.

7. Units in Fire-Rated Assemblies: Fire rating as required by applicable code for fire-rated assembly that access doors are being installed.
8. Steel Finish: Primed.
9. Primed and Factory Finish: Polyester powder coat; color to match adjacent wall or ceiling paint color, unless otherwise indicated..
10. Size: As indicated, or required.
11. Hardware:
  - a. Hardware for Fire-Rated Units: As required for listing.
  - b. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
  - c. Hinge: Non-Fire-Rated Units: 175 degree steel hinges with removable pin.
  - d. Latch/Lock: Screw driver slot for quarter turn cam latch.
12. Prime coat with alkyd primer.

### **2.03 FLOOR MOUNTED ACCESS UNITS**

- A. Manufacturers:
  1. Activar Construction Products Group, Inc. - JL Industries: [www.activarcpg.com/#sle](http://www.activarcpg.com/#sle).
    - a. Fire-Rated Floor Doors: Activar/JL Industries FFD.
  2. Cendrex, Inc; PPA, aluminum, flush diamond plate: [www.cendrex.com/#sle](http://www.cendrex.com/#sle).
  3. Nystrom, Inc; FDF - Fire-Rated Diamond Tread Plate, Floor Door: [www.nystrom.com/#sle](http://www.nystrom.com/#sle).
  4. Or prior approved equal.
- B. Floor-Mounted Access Units: Factory fabricated, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
  1. Size: As indicated on drawings.
  2. Units in Fire Rated Assemblies: Fire rating as required by applicable code for the fire rated assembly that access doors are being installed.
    - a. Provide products listed by ITS (DIR) or UL (FRD) as suitable for the purpose indicated.
  3. Hardware: Steel, hot-dipped galvanized.
    - a. Hardware for Fire-Rated Units: As required for listing.
    - b. Hinges: Removable pin.
    - c. Lock: Cylinder lock with latch, two keys for each unit.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that rough openings are correctly sized and located.
- B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to proceeding with this work.
- B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

### **3.03 INSTALLATION**

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

### **END OF SECTION**

## SECTION 08 3323 - OVERHEAD COILING DOORS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Exterior coiling doors.
- B. Interior non-fire-rated coiling doors.
- C. Fire-rated coiling doors.
- D. Overhead coiling doors, operating hardware, fire-rated, non-fire-rated, and exterior, manual operation.

#### 1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Section 08 7100 - Door Hardware: Keyed pad Locks.

#### 1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- D. ITS (DIR) - Directory of Listed Products; Current Edition.
- E. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
- F. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- G. NEMA MG 00001 - Motors and Generators; 2024.
- H. UL (DIR) - Online Certifications Directory; Current Edition.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide general construction and component connections and details.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.
- D. Samples: Two slats, \_\_\_ by \_\_\_ inches in size illustrating shape, color and finish texture.
- E. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Overhead Coiling Metal Doors:
  - 1. Alpine Overhead Doors, Inc: [www.alpinedoors.com/#sle](http://www.alpinedoors.com/#sle).
  - 2. Clopay: [www.clopaydoor.com/#sle](http://www.clopaydoor.com/#sle).
  - 3. The Cookson Company: [www.cooksondoor.com](http://www.cooksondoor.com).
  - 4. Overhead Door Corporation; [www.overheaddoor.com](http://www.overheaddoor.com).
  - 5. Wayne-Dalton, a Division of Overhead Door Corporation: [www.wayne-dalton.com/#sle](http://www.wayne-dalton.com/#sle).

6. Or prior approved equal.

## 2.02 COILING DOORS

- A. Exterior Coiling Doors: Steel slat curtain.
  1. Capable of withstanding positive and negative wind loads of 20 psf without undue deflection or damage to components.
  2. Sandwich Slats: Manufacturer's standard, with core of foamed-in-place polyurethane insulation; minimum R-value of 4.88.
  3. Nominal Slat Size: 2 inches wide by required length.
  4. Finish: Factory painted, powder coated color. Color to be selected by Architect from manufacturer's full range.
  5. Guide, Angles: Primed steel.
  6. Hood Enclosure: Manufacturer's standard; primed steel.
  7. Manual hand chain lift operation.
  8. Mounting: As indicated in drawings.
  9. Locking Devices: Chain lock keeper on inside.
  10. Color: To be selected by Architect from manufacturer's full range.
- B. Interior Non-Fire-Rated Coiling Doors: Steel slat curtain.
  1. Single Thickness Slats: Manufacturer's standard.
  2. Nominal Slat Size: 2 inches wide by required length.
  3. Finish: Primed.
  4. Finish: Factory painted, color as selected.
  5. Guides, Formed Sheet Metal: Primed steel.
  6. Hood Enclosure: Manufacturer's standard; primed steel.
  7. Manual hand chain lift operation.
  8. Locking Devices: Chain lock keeper on inside.
- C. Fire-Rated Coiling Doors: Steel slat curtain; comply with NFPA 80.
  1. Provide products listed and labeled by ITS (DIR) or UL (DIR) as suitable for purpose specified and indicated on drawings.
  2. Oversized Openings: Provide certificate of compliance from authorities having jurisdiction indicating approval of fire rated units and operating hardware assembly.
  3. Single Thickness Slats: Manufacturer's standard.
  4. Nominal Slat Size: 2 inches wide by required length.
  5. Finish: Factory painted, SpectraShield powder coated color. Color to be selected by Architect from manufacturer's full range.
  6. Manual hand chain lift operation.

## 2.03 MATERIALS

- A. Metal Curtain Construction: Interlocking slats.
  1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
  2. Curtain Bottom for Slat Curtains: Fitted with angles to provide reinforcement and positive contact in closed position.
  3. Weatherstripping for Exterior Doors: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, and where curtain enters hood enclosure of exterior doors.
  4. Steel Slats: Minimum thickness, \_\_\_\_ gauge, \_\_\_\_ inch; ASTM A653/A653M galvanized steel sheet.
- B. Steel Slats: Minimum thickness, 24 gage, 0.0239 inch; ASTM A653/A653M galvanized steel sheet.
- C. Guide Construction: Continuous, of profile to retain door in place with snap-on trim, mounting brackets of same metal.
- D. Guides - Angle: ASTM A36/A36M metal angles, size as indicated.
  1. Prime painted.

- E. Guides - Sheet Metal: Formed from sheet metal, \_\_\_\_ gauge, \_\_\_\_ inch thick; \_\_\_\_ inch wide.
  - 1. Prime painted.
- F. Hood Enclosure and Trim: Internally reinforced to maintain rigidity and shape.
  - 1. Powder coat finish. Color to be as selected by Architect from manufacturer's full range.
- G. Lock Hardware:
  - 1. Cylindrical Locking Mechanism: Latchset lock cylinder; see Section 08 7100.
  - 2. Latch Handle: Manufacturer's standard.
  - 3. Manual Chain Lift: Provide padlock able chain keeper on guide.
- H. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that adjacent construction is suitable for door installation.
- B. Verify that electrical services have been installed and are accessible.
- C. Verify that door opening is plumb, header is level, and dimensions are correct.
- D. Notify Architect of any unacceptable conditions or varying dimensions.
- E. Commencement of installation indicates acceptance of substrate and door opening conditions.
- F. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- G. Verify that opening sizes, tolerances and conditions are acceptable.
- H. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION**

- A. Install units in accordance with manufacturer's instructions.
- B. Install fire-rated doors in accordance with NFPA 80.
- C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- D. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- E. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- F. Install enclosure and perimeter trim.

### **3.03 TOLERANCES**

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch.
- C. Maximum Variation From Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 feet straight edge.

### **3.04 ADJUSTING**

- A. Adjust operating assemblies for smooth and noiseless operation.

### **3.05 CLEANING**

- A. Clean installed components.
- B. Remove labels and visible markings.

**END OF SECTION**

## SECTION 08 3326 - OVERHEAD COILING GRILLES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Overhead coiling metal grilles and operating hardware, electric operation.
- B. Wiring from electric circuit disconnect to operator to control station.

#### 1.02 RELATED REQUIREMENTS

- A. Section 08 3323 - Overhead Coiling Doors.
- B. Section 26 0533.13 - Conduit for Electrical Systems: Conduit from electric circuit to operator and from operator to control station.
- C. Section 26 0583 - Wiring Connections: Power to disconnect.

#### 1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- D. ITS (DIR) - Directory of Listed Products; Current Edition.
- E. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
- F. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- G. NEMA MG 00001 - Motors and Generators; 2024.
- H. UL (DIR) - Online Certifications Directory; Current Edition.
- I. UL (EAUED) - Electrical Appliance and Utilization Equipment Directory; Underwriters Laboratories Inc.; current edition.
- J. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

#### 1.04 SUBMITTALS

- A. See Section 01 3300 - Submittal Procedures.
- B. Product Data: Provide general construction, component connections and details, and electrical equipment.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details and wiring diagrams.
- D. Samples: Submit two grille members, 12 by 12 inch in size illustrating shape, color and finish texture.
- E. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.
- F. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

#### 1.05 QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.

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## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Overhead Coiling Grilles:
  - 1. Alpine Overhead Doors, Inc; Industrial Grille - Security Grille: [www.alpinedoors.com/#sle](http://www.alpinedoors.com/#sle).
  - 2. Clopay Corporation: Model 5015 Grille: [www.clopaydoor.com](http://www.clopaydoor.com)
  - 3. Cornell Iron Works, Inc; Model 5015 Grille: [www.cornelliron.com/#sle](http://www.cornelliron.com/#sle).
  - 4. The Cookson Company: [www.cooksondoor.com/#sle](http://www.cooksondoor.com/#sle).
  - 5. Wayne-Dalton, a Division of Overhead Door Corporation; Model 600 : [www.waynedalton.com/#sle](http://www.waynedalton.com/#sle).
  - 6. Or prior approved equal.

### **2.02 GRILLE AND COMPONENTS**

- A. Grille: Galvanized steel; horizontal bar curtain, coiling on overhead counterbalanced shaft.
  - 1. Finish: Anodized, color as selected by Architect.
  - 2. Electric operation.
  - 3. Mounting: As indicated on drawings.
- B. Curtain: Round horizontal bars connected with vertical links.
  - 1. Horizontal bars: 5/16 inch diameter.
  - 2. Bar spacing: 1-1/2 inch on center.
  - 3. Tube spacers: 1/2 inch diameter.
  - 4. Spacer spacing: 3-1/4 inch on center.
  - 5. Link spacing: 6 inch on center.
  - 6. Bar Ends: Provide with nylon runners for quiet operation.
  - 7. Bottom Bar: Back-to-back angles with tubular resilient cushion.
- C. Guides: Extruded aluminum angles, of profile to retain grille in place with snap-on trim, mounting brackets of same metal.
- D. Hood Enclosure: Sheet metal; completely covering operating mechanisms; internally reinforced to maintain rigidity and shape.
  - 1. Material: Same metal as grille.
- E. Lock Hardware:
  - 1. For motor operated units, additional lock or latching mechanisms are not required.
- F. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

### **2.03 MATERIALS**

- A. Aluminum: ASTM B221 (ASTM B221M).
- B. Galvanized Steel Bars: Galvanized to minimum coating thickness grade in accordance with ASTM A123/A123M.

### **2.04 ELECTRIC OPERATION**

- A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
  - 1. Provide interlock switches on motor operated units.
- B. Electric Operators:
  - 1. Mounting: Side mounted.
  - 2. Motor Enclosure:
    - a. Exterior grilles: NEMA MG 00001, Type 4; open drip proof.
  - 3. Motor Rating: 3/4 hp; continuous duty.
  - 4. Motor Voltage: 208/230 volt, three phase, 60 Hz.
  - 5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
  - 6. Controller Enclosure: NEMA EN 10250 Type 1.

7. Opening Speed: 12 inches per second.
  8. Brake: Adjustable friction clutch type, activated by motor controller.
  9. Manual override in case of power failure.
  10. Refer to Section 26 0583 for electrical connections.
- C. Control: Tie into central control system, re: 11 1900 Detention Equipment
  - D. Safety Edge: Located at bottom of curtain, full width, electro-mechanical sensitized type, wired to stop operator upon striking object, hollow neoprene covered.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that adjacent construction is suitable for door installation.
- B. Verify that electrical services have been installed and are accessible.
- C. Verify that door opening is plumb, header is level, and dimensions are correct.
- D. Notify Architect of any unacceptable conditions or varying dimensions.
- E. Commencement of installation indicates acceptance of substrate and door opening conditions.
- F. Verify that opening sizes, tolerances and conditions are acceptable.

#### **3.02 INSTALLATION**

- A. Install grille unit assembly in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service with Section 26 0583.
- F. Complete wiring from disconnect to unit components.

#### **3.03 TOLERANCES**

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch.
- C. Maximum Variation From Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

#### **3.04 ADJUSTING**

- A. Adjust grille, hardware and operating assemblies for smooth and noiseless operation.

#### **3.05 CLEANING**

- A. Clean grille and components.
- B. Remove labels and visible markings.

**END OF SECTION**

## SECTION 08 4313 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing: Steel attachment members.
- B. Section 07 2726 - Fluid-Applied Non-Permeable Air-Barrier.
- C. Section 07 8400 - Firestopping: Firestop at system junction with structure.
- D. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- E. Section 08 4413 - Glazed Aluminum Curtain Walls.
- F. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.
- G. Section 08 8000 - Glazing: Glass and glazing accessories.
- H. Section 12 2400 - Window Shades: Attachments to framing members.

#### 1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2014.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- D. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.
- E. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- F. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- I. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- J. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- K. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- L. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).
- M. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.

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#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Submittal Procedures, for submittal of items required.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details .
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
- E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- F. Samples: Submit two samples 6 X 6 inches in size illustrating finished aluminum surface, glass, infill panels, glazing materials.
- G. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### **1.06 QUALITY ASSURANCE**

- A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

#### **1.08 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

#### **1.09 WARRANTY**

- A. Correct defective Work within a five year period after Date of Substantial Completion.
- B. Provide two year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- C. Provide two year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Basis of Design: Kawneer North America; Product Exterior Storefront Product: Trifab VG 451T, Interior Storefront Product: Trifab 400. Doors - Exterior Product: Insulclad 360 Thermal Entrances; Interior Product: 350 Standard Entrance.
- B. Aluminum-Framed Storefront and Doors:
  - 1. YKK AP America Inc: [www.ykkap.com](http://www.ykkap.com).

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2. Oldcastle Building Envelope: [www.oldcastlebe.com](http://www.oldcastlebe.com).
3. Or prior approved equal.

## 2.02 ALUMINUM-FRAMED STOREFRONT

- A. Exterior Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
  1. Glazing Position: Front-set.
  2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
  3. Water Leakage Test Pressure Differential: min. 6.24 lbf/sq ft.
  4. Air Infiltration Test Pressure Differential: \_\_\_\_ psf.
  5. Finish: Class I natural anodized.
    - a. Factory finish all surfaces that will be exposed in completed assemblies.
  6. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
  7. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
  8. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
  9. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
  10. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
  11. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
- B. Interior Aluminum Framed Storefront: Factory fabricated, factory finished Aluminum framing members with infill, anchorage, and attachment devices.
  1. Glazing Position: Center
  2. Vertical mullion Dimensions: 1-3/4" x 4"
  3. Finish: Class 1 Natural Anodized
  4. Color: Class 1 Natural Anodized
- C. Performance Requirements
  1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
    - a. Design Wind Loads: Comply with requirements of applicable code.
    - b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
  2. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.
  3. Movement: Accommodate movement between storefront and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
  4. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of wall area, measured at specified differential pressure across assembly in accordance with ASTM E283.
  5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
  6. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without

causing detrimental effect to system components, anchorages, and other building elements.

### 2.03 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
  - 1. Framing members for interior applications need not be thermally broken.
- B. Glazing: See Section 08 8000.
- C. Doors: Glazed aluminum. Medium Stile Doors with 1" insulated glass (exterior), 1/4" tempered glass (interior).
  - 1. Thickness: 1-3/4 inches.
  - 2. Top Rail: 3.5 inches wide.
  - 3. Vertical Stiles: 3.5 inches wide.
  - 4. Bottom Rail: 10 inches wide.
  - 5. Glazing Stops: Square.
  - 6. Finish: Same as storefront.

### 2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Perimeter Sealant: Type as specified in Section 07 9200.
- D. Glass: As specified in Section 08 8000.
- E. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- F. Glazing Accessories: See Section 08 8000.

### 2.05 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.
- B. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils thick.

### 2.06 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Other Door Hardware: See Section 08 7100.
- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- E. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

### 2.07 FABRICATION

- A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices. Fabricate anchors.
- D. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
- E. Arrange fasteners and attachments to conceal from view.
- F. Reinforce components internally for door hardware .
- G. Reinforce framing members for imposed loads.

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- H. Finishing: Apply factory finish to all surfaces that will be exposed in completed assemblies.
  - 1. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

#### **3.02 INSTALLATION**

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Install glass and infill panels using glazing method required to achieve performance criteria; see Section 08 8000.
- K. Install perimeter sealant in accordance with Section 07 9200.
- L. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

#### **3.03 TOLERANCES**

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

#### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.
- B. Provide field testing of installed storefront system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
  - 1. Perform a minimum of two tests in each designated area as indicated on drawings.
  - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
  - 3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf.
    - a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
- C. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

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### **3.05 ADJUSTING**

- A. Adjust operating hardware and sash for smooth operation.

### **3.06 CLEANING**

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

### **3.07 PROTECTION**

- A. Protect installed products from damage until Date of Substantial Completion.

**END OF SECTION**

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## **SECTION 087100 – DOOR HARDWARE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. This Section includes commercial door hardware for the following:
  - 1. Swinging doors.
  - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
  - 1. Mechanical door hardware.
  - 2. Electromechanical door hardware.
  - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
  - 1. Division 08 Section "Hollow Metal Doors and Frames".
  - 2. Division 08 Section "Flush Wood Doors".
  - 3. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
  - 2. ANSI/SDI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies.
  - 3. ICC/IBC - International Building Code.
  - 4. NFPA 70 - National Electrical Code.
  - 5. NFPA 80 - Fire Doors and Windows.
  - 6. NFPA 101 - Life Safety Code.
  - 7. NFPA 105 - Installation of Smoke Door Assemblies.
  - 8. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
  - 1. ANSI/BHMA Certified Product Standards - A156 Series.
  - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies.

#### **1.3 SUBMITTALS**

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:
    - a. Type, style, function, size, label, hand, and finish of each door hardware item.
    - b. Manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    - e. Explanation of abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for door hardware.
    - g. Door and frame sizes and materials.
    - h. Warranty information for each product.
    - i. Operational narratives for electrified hardware.
  4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
1. Wiring Diagrams: As part of the hardware submittals, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
  2. Point to Point Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    - a. Complete (risers, point-to-point) access control system block wiring diagrams.
    - b. Wiring instructions for each electronic component scheduled herein.
  3. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
  4. Provide engineered diagrams specific to each opening. Individual wiring instructions shipped with devices are not considered a complete diagram.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
1. Hurricane Resistant Openings: Exterior hurricane opening assemblies to be tested according to ASTM E330, ASTM E1886, ASTM E1996 standards, and certified by a qualified independent third party testing agency acceptable to authority having jurisdiction, with labeling indicating compliance with the wind load and design pressure level requirements specified for the Project.
  2. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
  - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
  - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Hurricane Resistant Exterior Openings: Provide exterior door hardware as complete and tested assemblies, or component assemblies, including approved doors and frames specified under Section 081113 "Hollow Metal Doors and Frames", to meet the wind loads, design pressures, debris impact resistance, and glass and glazing requirements applicable to the Project.
  - 1. Test units according to ASTM E330, ASTM E1886, ASTM E1996 standards, certified by a qualified independent third party testing agency acceptable to authority having jurisdiction, and bearing a third party certification agency permanent label indicating windstorm approved product.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
  - 1. Function of building, purpose of each area and degree of security required.
  - 2. Plans for existing and future key system expansion.
  - 3. Requirements for key control storage and software.
  - 4. Installation of permanent keys, cylinder cores and software.
  - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
  - 1. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
  - 2. Review sequence of operation narratives for each unique access controlled opening.
  - 3. Review and finalize construction schedule and verify availability of materials.
  - 4. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. Pre-Installation Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s),

Installer(s), and Contractor(s) to review proper methods and the procedures for installing door hardware.

1. Prior to installation of door hardware, door hardware supplier shall conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Hardware supplier shall engage factory personnel for installation training on locks, exit devices and door closers.

- J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

#### **1.6 COORDINATION**

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

#### **1.7 WARRANTY**

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
1. Structural failures including excessive deflection, cracking, or breakage.
  2. Faulty operation of the hardware.
  3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Ten years for manual overhead door closer bodies.
4. Twenty five years for manual overhead door closer bodies.
5. Five years for motorized electric latch retraction exit devices.
6. Two years for electromechanical door hardware.

## **1.8 MAINTENANCE SERVICE**

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

## **PART 2 - PRODUCTS**

### **2.1 SCHEDULED DOOR HARDWARE**

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
  1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

### **2.2 HANGING DEVICES**

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
  1. Quantity: Provide the following hinge quantity:
    - a. Two Hinges: For doors with heights up to 60 inches.
    - b. Three Hinges: For doors with heights 61 to 90 inches.
    - c. Four Hinges: For doors with heights 91 to 120 inches.
    - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
  2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
    - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
    - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
  3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
    - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
  4. Hinge Options: Comply with the following:
    - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
  5. Manufacturers:
    - a. Ives (IV).
    - b. McKinney Products (MK).
    - c. Stanley Hardware (ST).

- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
  - 1. Manufacturers:
    - a. Ives (IV).
    - b. Pemko Products (PE).
    - c. Stanley Hardware (ST).
- C. Pivots: ANSI/BHMA A156.4, Grade 1, certified. Space intermediate pivots equally not less than 25 inches on center apart or not more than 35 inches on center for doors over 121 inches high. Pivots to be UL listed for windstorm where applicable.
  - 1. Manufacturers:
    - a. Ives (IV).
    - b. Rixson Door Controls (RF).

## **2.3 POWER TRANSFER DEVICES**

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
  - 1. Manufacturers:
    - a. McKinney Products (MK) - QC Option.
    - b. Ives (IV) – CON Option.
    - c. Stanley Hardware (ST) – C Option.
- B. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
  - 1. Manufacturers:
    - a. Securitron (SU) - EL-CEPT Series.
    - b. Stanley Hardware (ST) EPT-12C Series.
    - c. Von Duprin (VD) - EPT-10 CON Series.
- C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
  - 1. Manufacturers:
    - a. McKinney Products (MK) – QC-C Series.
    - b. Von Duprin (VD) – CON Series.
    - c. Stanley Hardware (ST) – WH Series.
- D. Hurricane and Tornado Resistance Compliance: Power transfer devices to be U.L. listed for windstorm components where applicable.

## **2.4 DOOR OPERATING TRIM**

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
  2. Furnish dust proof strikes for bottom bolts.
  3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
  4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
  5. Manufacturers:
    - a. Ives (IV).
    - b. Rockwood Products (RO).
    - c. Trimco (TC).
- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
1. Manufacturers:
    - a. Ives (IV).
    - b. Rockwood Products (RO).
    - c. Trimco (TC).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
  2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
  3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
  4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
  5. Manufacturers:
    - a. Ives (IV).
    - b. Rockwood Products (RO).
    - c. Trimco (TC).

## **2.5 CYLINDERS AND KEYING**

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
  2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
  4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
  5. Keyway: Manufacturer's Standard.
- D. Interchangeable Cores: Provide small format interchangeable cores as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- E. Patented Cylinders: ANSI/BHMA A156.5, Grade 1, certified patented cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States

patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.

1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
2. Manufacturers:
  - a. Medeco (MC) – X4.

F. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

G. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

H. Construction Keying: Provide temporary keyed construction cores.

I. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

## **2.6 KEY CONTROL**

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:
  - a. Lund Equipment (LU).
  - b. MMF Industries (MM).
  - c. Telkee (TK).

## **2.7 MECHANICAL LOCKS AND LATCHING DEVICES**

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Where specified, provide status indicators with highly reflective color and wording for "locked/unlocked" or "vacant/occupied" with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1" x 0.6" with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
2. Manufacturers:
  - a. dormakaba Best (BE) – 45H Series.
  - b. Sargent Manufacturing (SA) – 8200 Series.
  - c. Schlage (SC) – L9000 Series.



## **2.8 ELECTROMECHANICAL LOCKING DEVICES**

- A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
  - 1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.
  - 2. Manufacturers:
    - a. Sargent Manufacturing (SA) - 8200 Series.
    - b. Schlage (SC) - L9000 EL/EU/RX Series.
    - c. dormakaba Best (BE) - 40HW EL/EU Series.
- B. Hurricane and Tornado Resistance Compliance: Electromechanical locking devices to be U.L. listed for windstorm assemblies where applicable. Provide the appropriate hurricane or tornado resistant products that have been independent third party tested, certified, and labeled to meet state and local windstorm building codes applicable to project.

## **2.9 AUXILIARY LOCKS**

- A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.
  - 1. Manufacturers:
    - a. Sargent Manufacturing (SA) - 4870 Series.
    - b. Schlage (SC) - L460 Series.
    - c. dormakaba Best (BE) - 48H Series.
- B. Behavioral Health, Mortise: ANSI/BHMA A156.13, Series 1000, Operational and Security Grade 1 mortise type manufactured to accepted Office of Mental Health (OMH) requirements with behavioral health lever and escutcheon trim. Locksets to be manufactured with a corrosion resistant, formed steel case. Levers and escutcheons are manufactured from stainless steel material. Provide optional lead-lining (lock body), Torx® fasteners, and Antimicrobial coating as specified in Hardware Sets.
  - 1. Manufacturers:
    - a. Sargent Manufacturing (SA) - 8200 BHW Series.
    - b. Schlage (SC) – HSLR Series.
    - c. Accurate Lock (AT) – CP Crescent Pull Series.

## **2.10 LOCK AND LATCH STRIKES**

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
  - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  - 2. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
- B. Standards: Comply with the following:
  - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
  - 2. Strikes for Bored Locks and Latches: BHMA A156.2.
  - 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
  - 4. Dustproof Strikes: BHMA A156.16.

## 2.11 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
  2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
  3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
  4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
  5. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
  6. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
  7. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.
  8. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
    - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
  9. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
  10. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
  11. Rail Sizing: Provide exit device rails factory sized for proper door width application.
  12. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
    - a. Sargent Manufacturing (SA) - 80 Series.
    - b. dormakaba Precision (PR) - Apex 2000 Series.
    - c. Von Duprin (VD) - 98 Series.
- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
1. At openings designed for severe wind load conditions due to hurricanes or tornadoes, provide manufacturer's certified mullion and accessories to meet applicable state and local windstorm codes.
  2. Provide keyed removable feature where specified in the Hardware Sets.

3. Provide stabilizers and mounting brackets as required.
4. Provide electrical quick connection wiring options as specified in the hardware sets.
5. Manufacturers:
  - a. Same as exit device manufacturer.

## **2.12 DOOR CLOSERS**

- A. All door closers specified herein shall meet or exceed the following criteria:
  1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
  2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
  3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
  4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
  5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
  6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
  1. Manufacturers:
    - a. LCN Closers (LC) – 4040XP Series.
    - b. Norton Door Controls (NO) – 7500 Series.
    - c. Sargent Manufacturing (SA) – 351 Series.
- C. Door Closers, Overhead Concealed (Heavy Duty): ANSI/BHMA 156.4 Grade 1 Certified Products Directory (CPD) listed heavy duty door closers with closers with spring power adjustment. Closers to have fully concealed body in the frame head and track assembly in the door, rack and pinion type construction, either offset or center hung applications, with separate and independent valves for closing speed, latch speed, and backcheck adjustments. Overhead concealed closers require a minimum 4-inch frame head for mounting.
  1. Manufacturers:
    - a. LCN Closers (LC) – 2010 Series.
    - b. Norton Door Controls (NO) – 7900 Series.
    - c. Sargent Manufacturing (SA) – 268/269/278 Series.
- D. Door Closers, Overhead Concealed (Narrow Profile): ANSI/BHMA 156.4 certified Grade 1 door closers designed for narrow profile frames and doors. Closers to have fully concealed body in the frame head for offset hung applications, with separate and independent valves for closing speed and backcheck adjustments.
  1. Manufacturers:
    - a. LCN Closers (LC) - 2030 Series.
    - b. Rixson Door Controls (RF) - 91 Series.

## **2.13 ARCHITECTURAL TRIM**

- A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
  - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
  - a. Ives (IV).
  - b. Rockwood Products (RO).
  - c. Trimco (TC).

## **2.14 DOOR STOPS AND HOLDERS**

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
  1. Manufacturers:
    - a. Ives (IV).
    - b. Rockwood Products (RO).
    - c. Trimco (TC).
    - d. Kingsway Group (KG).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
  1. Manufacturers:
    - a. dormakaba (DO).
    - b. Rixson Door Controls (RF).
    - c. Glynn Johnson (GJ).
    - d. Architectural Builders Hardware (ABH).

## **2.15 ARCHITECTURAL SEALS**

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
  1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
  - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Hurricane and Tornado Resistance Compliance: Architectural seals to be U.L. listed for windstorm assemblies where applicable. Provide the appropriate hurricane or tornado resistant products that have been independent third party tested, certified, and labeled to meet state and local windstorm building codes applicable to project.
- G. Manufacturers:
  - 1. National Guard Products (NG).
  - 2. Pemko Products (PE).
  - 3. Zero (ZE).

## **2.16 ELECTRONIC ACCESSORIES**

- A. Door Position Switches: Door position switches specifically designed for use in high security door applications. On recessed models the contact and magnetic housing shall be mortised into the door and frame and secured with security screw fasteners. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
  - 1. Manufacturers:
    - a. Detex (DE) – MS-2049F Series.
    - b. Security Door Controls (SD) – MC4M Series.
    - c. Schlage Electronics (SH) – 7764 Series.

## **2.17 FABRICATION**

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## **2.18 FINISHES**

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

### **3.2 PREPARATION**

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

### **3.3 INSTALLATION**

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
  - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
  - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
  - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

### **3.4 ADJUSTING**

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

### **3.5 CLEANING AND PROTECTION**

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

### **3.6 DEMONSTRATION**

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

### 3.7 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
1. Quantities listed are for each pair of doors, or for each single door.
  2. The supplier is responsible for handing and sizing all products.
  3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
- B. Manufacturer's Abbreviations:

1. SS - Southern Steel
2. MK - McKinney
3. PE - Pemko
4. MR - Markar
5. SU - Securitron
6. RO - Rockwood
7. SA - SARGENT
8. AD - Adams Rite
9. MC - Medeco
10. TC - Trimco
11. AH - Architectural Builders Hardware
12. NO - Norton
13. RF - Rixson
14. SH - Schlage Electronic Security
15. RU - Corbin Russwin
16. OT - Other

#### Hardware Sets

##### Set: 1.0

Doors: B100

Description: Pair Exterior ALD (CR)

|   |                                    |                               |          |    |
|---|------------------------------------|-------------------------------|----------|----|
| 2 | Continuous Hinge                   | CFM SLF-HD1 PT Torx           |          | PE |
| 2 | Electric Power Transfer            | EL-CEPT TORX                  | 630      | SU |
| 1 | Concealed Vert Rod Exit, Dummy     | LC 36 55 56 ADPE8410 P106     | US32D    | SA |
| 1 | Concealed Vert Rod Exit, Exit Only | 36 55 56 ADPE8410 EO          | US32D    | SA |
| 1 | Rim Cylinder                       | 33602032N MK x Collar as Req. | 26       | MC |
| 1 | Small Format Inter Core            | 33600006BICCK                 | 26       | MC |
| 2 | Door Pull                          | BF168 Mtg-Type 12XHD          | US32D316 | RO |
| 2 | Conc Overhead Stop                 | 102_A SEC                     | US32D    | AH |
| 2 | Surface Closer                     | PR7500 TORX                   | 689      | NO |
| 2 | Drop Plate                         | 7788                          | 689      | NO |
| 2 | Blade Stop                         | 6891                          | 689      | NO |
| 2 | Sweep                              | 315CN Torx                    |          | PE |
| 1 | Threshold                          | 2705AT Torx                   |          | PE |
| 2 | Position Switch                    | 7764                          |          | SU |
| 2 | ElectroLynx Harness                | QC-C as Required (Door)       |          | MK |
| 2 | ElectroLynx Harness                | QC-C1500                      |          | MK |
| 1 | Power Supply                       | By Access Control Provider    |          | OT |

Notes: Perimeter seal and astragal by door supplier.

Operation:

1. Doors electrically unlocked or locked during established time zones as programmed by the access control system. When devices are locked then the card reader grants access upon presentation of a valid credential. Exit devices mechanically lock during power failure with a mechanical key override entry.
2. Egress always free from inside by depressing inside push pad.
3. Request to exit switch in the push pad to signal authorized egress to the access control system.
4. Door position switch to signal door open/closed to the access control system.

**Set: 2.0 – Not Used**

**Set: 3.0**

Doors: B164B, C111B, C115B

Description: Single Exterior Equipment, Break, Corridor (CR)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 2 | Hinge, Full Mortise, Hvy Wt | T4A3386 NRP 4-1/2" x 4-1/2" TXS   | US32D | MK |
| 1 | Hinge, Full Mortise, Hvy Wt | T4A3386 QC8 4-1/2" x 4-1/2" TXS   | US32D | MK |
| 1 | Fail Secure Lock            | LC RX 37 8271-24V LNJ             | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Gasketing                   | 290APK Torx (Jambs)               |       | PE |
| 1 | Gasketing                   | 2891APK Torx (Head)               |       | PE |
| 1 | Rain Guard                  | 346C Torx                         |       | PE |
| 1 | Sweep                       | 315CN Torx                        |       | PE |
| 1 | Threshold                   | 2705AT Torx                       |       | PE |
| 1 | Position Switch             | 7764                              |       | SU |
| 1 | ElectroLynx Harness         | QC-C as Required (Door)           |       | MK |
| 1 | ElectroLynx Harness         | QC-C1500                          |       | MK |
| 1 | Power Supply                | By Access Control Provider        |       | OT |
| 1 | Latch Protector             | 320-RKW                           | US2C  | RO |

Notes: Install perimeter seal prior to closer. Special templating required.

Operation:

1. Doors electrically unlocked or locked during established time zones as programmed by the access control system. When outside lever is locked the card reader grants access upon presentation of a valid credential. Locksets mechanically lock during power failure with a mechanical key override entry.
2. Egress always free from inside by depressing inside lever.
3. Request to exit switch in lever to signal authorized egress to the access control system.
4. Door position switch to signal door open/closed to the access control system.

**Set: 4.0**

Doors: M101, M102, M105, M106, M110, M114, M117, M118, M121

Description: Single Exterior Mechanical, Chase (DPS)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | T4A3386 NRP 5" x 4-1/2" TXS       | US32D | MK |
| 1 | Storeroom/Closet Lock       | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |



|   |                 |                     |      |    |
|---|-----------------|---------------------|------|----|
| 1 | Gasketing       | 290APK Torx (Jambs) |      | PE |
| 1 | Gasketing       | 2891APK Torx (Head) |      | PE |
| 1 | Rain Guard      | 346C Torx           |      | PE |
| 1 | Sweep           | 315CN Torx          |      | PE |
| 1 | Threshold       | 2705AT Torx         |      | PE |
| 1 | Position Switch | 7764                |      | SU |
| 1 | Latch Protector | 320-RKW             | US2C | RO |

Notes: Install perimeter seal prior to closer. Special templating required.

Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: 5.0**

Doors: A100A

Description: Single Exterior Chase (DPS)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | T4A3386 NRP 4-1/2" x 4-1/2" TXS   | US32D | MK |
| 1 | Storeroom/Closet Lock       | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Gasketing                   | 290APK Torx (Jambs)               |       | PE |
| 1 | Gasketing                   | 2891APK Torx (Head)               |       | PE |
| 1 | Rain Guard                  | 346C Torx                         |       | PE |
| 1 | Sweep                       | 315CN Torx                        |       | PE |
| 1 | Threshold                   | 2705AT Torx                       |       | PE |
| 1 | Position Switch             | 7764                              |       | SU |
| 1 | Latch Protector             | 320-RKW                           | US2C  | RO |

Notes: Install perimeter seal prior to closer. Special templating required.

Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: 6.0**

Doors: U100A

Description: Single Exterior Maintenance (DPS)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | H T4A3386xNRP 4-1/2" x 4-1/2" TXS | US32D | MK |
| 1 | Storeroom/Closet Lock       | LC 8204 BHL                       | US32D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Concealed Closer            | 7970                              | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Gasketing                   | 290APK Torx (Jambs)               |       | PE |
| 1 | Gasketing                   | 2891APK Torx (Head)               |       | PE |
| 1 | Rain Guard                  | 346C Torx                         |       | PE |
| 1 | Sweep                       | 315CN Torx                        |       | PE |
| 1 | Threshold                   | 2705AT Torx                       |       | PE |
| 1 | Position Switch             | 7764                              |       | SU |
| 1 | Latch Protector             | 320-RKW                           | US2C  | RO |

Notes:

Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: 7.0**

Doors: E102A, E102B, E105

Description: Single Exterior Electrical (DPS)

|   |                             |                                 |       |    |
|---|-----------------------------|---------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | T4A3386 NRP 5" x 4-1/2" TXS     | US32D | MK |
| 1 | Rim Exit Device, Storeroom  | LC 36 PE8804 WEJ                | US32D | SA |
| 1 | Rim Cylinder                | 33602032N MK x Collar as Req.   | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                   | 26    | MC |
| 1 | Surface Closer              | CLP7500 TORX                    | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Gasketing                   | 2891APK Torx (Head & Jambs)     |       | PE |
| 1 | Rain Guard                  | 346C Torx                       |       | PE |
| 1 | Sweep                       | 315CN Torx                      |       | PE |
| 1 | Threshold                   | 2705AT Torx                     |       | PE |
| 1 | Position Switch             | 7764                            |       | SU |

Notes: Install perimeter seal prior to closer, exit device, and strike. Special templating required.

Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: 8.0**

Doors: C111A

Description: Single Corridor (CR)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 2 | Hinge, Full Mortise, Hvy Wt | T4A3786 NRP 4-1/2" x 4-1/2" TXS   | US26D | MK |
| 1 | Hinge, Full Mortise, Hvy Wt | T4A3786 QC8 4-1/2" x 4-1/2" TXS   | US26D | MK |
| 1 | Fail Secure Lock            | LC RX 37 8271-24V LNJ             | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | CPS7500 TORX                      | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 3 | Silencer                    | 608-RKW                           |       | RO |
| 1 | Position Switch             | 7764                              |       | SU |
| 1 | ElectroLynx Harness         | QC-C as Required (Door)           |       | MK |
| 1 | ElectroLynx Harness         | QC-C1500                          |       | MK |
| 1 | Power Supply                | By Access Control Provider        |       | OT |

Notes: Operation:

1. Doors electrically unlocked or locked during established time zones as programmed by the access control system. When outside lever is locked the card reader grants access upon presentation of a valid credential. Locksets mechanically lock during power failure with a mechanical key override entry.
2. Egress always free from inside by depressing inside lever.
3. Request to exit switch in lever to signal authorized egress to the access control system.
4. Door position switch to signal door open/closed to the access control system.

**Set: 9.0**

Doors: B104B, B133, B137, B147, B148, E153

Description: Single IT, File, Records (CR)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 2 | Hinge, Full Mortise, Hvy Wt | T4A3786 4-1/2" x 4-1/2" TXS       | US26D | MK |
| 1 | Hinge, Full Mortise, Hvy Wt | T4A3786 QC8 4-1/2" x 4-1/2" TXS   | US26D | MK |
| 1 | Fail Secure Lock            | LC RX 37 8271-24V LNJ             | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | S7500 TORX                        | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Wall Stop                   | 400 TORX                          | US26D | RO |
| 3 | Silencer                    | 608-RKW                           |       | RO |
| 1 | Position Switch             | 7764                              |       | SU |
| 1 | ElectroLynx Harness         | QC-C as Required (Door)           |       | MK |
| 1 | ElectroLynx Harness         | QC-C1500                          |       | MK |
| 1 | Power Supply                | By Access Control Provider        |       | OT |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the access control system. When outside lever is locked the card reader grants access upon presentation of a valid credential. Locksets mechanically lock during power failure with a mechanical key override entry.
2. Egress always free from inside by depressing inside lever.
3. Request to exit switch in lever to signal authorized egress to the access control system.
4. Door position switch to signal door open/closed to the access control system.

**Set: 10.0**

Doors: B137B

Description: Single Server (CR)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 2 | Hinge, Full Mortise, Hvy Wt | T4A3786 4-1/2" x 4-1/2" TXS       | US26D | MK |
| 1 | Hinge, Full Mortise, Hvy Wt | T4A3786 QC8 4-1/2" x 4-1/2" TXS   | US26D | MK |
| 1 | Fail Secure Lock            | LC RX 37 8271-24V LNJ             | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surf Overhead Stop          | 902_A SEC                         | US32D | AH |
| 1 | Surface Closer              | S7500 TORX                        | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 3 | Silencer                    | 608-RKW                           |       | RO |
| 1 | Position Switch             | 7764                              |       | SU |
| 1 | ElectroLynx Harness         | QC-C as Required (Door)           |       | MK |
| 1 | ElectroLynx Harness         | QC-C1500                          |       | MK |
| 1 | Power Supply                | By Access Control Provider        |       | OT |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the access control system. When outside lever is locked the card reader grants access upon presentation of a valid credential. Locksets mechanically lock during power failure with a mechanical key override entry.
2. Egress always free from inside by depressing inside lever.
3. Request to exit switch in lever to signal authorized egress to the access control system.
4. Door position switch to signal door open/closed to the access control system.

**Set: 11.0**

Doors: A121A, A121B, A169

Description: Single Med Supply, Cart, Records Rated (CR)

|   |                             |                                 |       |    |
|---|-----------------------------|---------------------------------|-------|----|
| 2 | Hinge, Full Mortise, Hvy Wt | T4A3786 4-1/2" x 4-1/2" TXS     | US26D | MK |
| 1 | Hinge, Full Mortise, Hvy Wt | T4A3786 QC8 4-1/2" x 4-1/2" TXS | US26D | MK |

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 1 | Fail Secure Lock        | LC RX 37 8271-24V LNJ             | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | S7500 TORX                        | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Stop                    | 400 or 481H TORX as Req'd         | US26D | RO |
| 1 | Gasketing               | P88D                              |       | PE |
| 1 | Position Switch         | 7764                              |       | SU |
| 1 | ElectroLynx Harness     | QC-C as Required (Door)           |       | MK |
| 1 | ElectroLynx Harness     | QC-C1500                          |       | MK |
| 1 | Power Supply            | By Access Control Provider        |       | OT |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the access control system. When outside lever is locked the card reader grants access upon presentation of a valid credential. Locksets mechanically lock during power failure with a mechanical key override entry.
2. Egress always free from inside by depressing inside lever.
3. Request to exit switch in lever to signal authorized egress to the access control system.
4. Door position switch to signal door open/closed to the access control system.

**Set: 12.0**

Doors: U101, U103A

Description: Single Storage

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | H T4A3386 4-1/2" x 4-1/2" TXS     | US32D | MK |
| 1 | Storeroom/Closet Lock       | LC 8204 BHL                       | US32D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Concealed Closer            | 7970                              | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Wall Stop                   | KG182GR Torx                      | 630   | KG |
| 1 | Gasketing                   | P88D                              |       | PE |

Notes: Template closer for maximum degree of opening.

**Set: 13.0**

Doors: U104

Description: Single Storage

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | H T4A3386 4-1/2" x 4-1/2" TXS     | US32D | MK |
| 1 | Storeroom/Closet Lock       | LC 8204 BHL                       | US32D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Concealed Closer            | 7970                              | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Door Stop                   | 466-RKW TORX                      | Black | RO |
| 1 | Gasketing                   | P88D                              |       | PE |

Notes: Template closer for maximum degree of opening.

**Set: 14.0**

Doors: S125A

Description: Single Storage Rated (DPS)

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise     | TA2714 NRP 4-1/2" x 4-1/2" TXS    | US26D | MK |
| 1 | Storeroom/Closet Lock   | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Gasketing               | P88D                              |       | PE |
| 1 | Position Switch         | 7764                              |       | SU |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: 15.0**

Doors: B131

Description: Single Storage

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise     | TA2714 4-1/2" x 4-1/2" TXS        | US26D | MK |
| 1 | Storeroom/Closet Lock   | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | S7500 TORX                        | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Wall Stop               | 400 TORX                          | US26D | RO |
| 3 | Silencer                | 608-RKW                           |       | RO |

**Set: 16.0**

Doors: B122

Description: Single Janitor

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise     | TA2714 NRP 4-1/2" x 4-1/2" TXS    | US26D | MK |
| 1 | Storeroom/Closet Lock   | LC 8204 BHL                       | US32D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 3 | Silencer                | 608-RKW                           |       | RO |

**Set: 17.0**

Doors: A149, A157, A178, B166

Description: Single Janitor, Storage, Housekeeping Rated

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise     | TA2714 NRP 4-1/2" x 4-1/2" TXS    | US26D | MK |
| 1 | Storeroom/Closet Lock   | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Gasketing               | P88D                              |       | PE |

**Set: 18.0**

Doors: E101, E102

Description: Single IT, Elec (DPS)

|   |                     |                                |       |    |
|---|---------------------|--------------------------------|-------|----|
| 3 | Hinge, Full Mortise | TA2714 NRP 4-1/2" x 4-1/2" TXS | US26D | MK |
|---|---------------------|--------------------------------|-------|----|

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 1 | Storeroom/Closet Lock   | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 3 | Silencer                | 608-RKW                           |       | RO |
| 1 | Position Switch         | 7764                              |       | SU |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: 19.0**

Doors: R102

Description: Single Laundry Equipment Rated (DPS)

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | T4A3786 NRP 5" x 4-1/2" TXS       | US26D | MK |
| 1 | Storeroom/Closet Lock       | LC 37 8204 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | PR7500 TORX                       | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Wall Stop                   | 400 TORX                          | US26D | RO |
| 1 | Gasketing                   | P88D                              |       | PE |
| 1 | Position Switch             | 7764                              |       | SU |

**Set: 20.0 – Not Used**

**Set: 21.0**

Doors: B106B, B106C

Description: Single Training Room

|   |                             |                                   |       |    |
|---|-----------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise, Hvy Wt | T4A3786 NRP 4-1/2" x 4-1/2" TXS   | US26D | MK |
| 1 | Classroom Lock              | LC 37 8237 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer              | CLP7500 TORX                      | 689   | NO |
| 1 | Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 3 | Silencer                    | 608-RKW                           |       | RO |

**Set: 22.0**

Doors: B137A

Description: Single Work Room

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise     | TA2714 NRP 4-1/2" x 4-1/2" TXS    | US26D | MK |
| 1 | Classroom Lock          | LC 37 8237 LNJ                    | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | PR7500 TORX                       | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Wall Stop               | 400 TORX                          | US26D | RO |
| 3 | Silencer                | 608-RKW                           |       | RO |

**Set: 23.0**

Doors: B145

Description: Single Conference

|                           |                                   |       |    |
|---------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise     | TA2714 4-1/2" x 4-1/2" TXS        | US26D | MK |
| 1 Classroom Lock          | LC 37 8237 LNJ                    | US26D | SA |
| 1 Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 Wall Stop               | 400 TORX                          | US26D | RO |
| 3 Silencer                | 608-RKW                           |       | RO |

**Set: 24.0**

Doors: B141A, J112A

Description: Single Storage

|                           |                                   |       |    |
|---------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise     | TA2714 NRP 4-1/2" x 4-1/2" TXS    | US26D | MK |
| 1 Storeroom/Closet Lock   | LC 37 8204 LNJ                    | US26D | SA |
| 1 Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer          | PR7500 TORX                       | 689   | NO |
| 1 Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Wall Stop               | 400 TORX                          | US26D | RO |
| 3 Silencer                | 608-RKW                           |       | RO |

**Set: 25.0**

Doors: S123

Description: Single Office

|                           |                                   |       |    |
|---------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise     | TA2714 4-1/2" x 4-1/2" TXS        | US26D | MK |
| 1 Office/Entry Lock       | LC LB 37 8205 LNJ                 | US26D | SA |
| 1 Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer          | PR7500 TORX                       | 689   | NO |
| 1 Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Wall Stop               | 400 TORX                          | US26D | RO |
| 3 Silencer                | 608-RKW                           |       | RO |

**Set: 26.0**

Doors: B126, B128, B130, B132, B134, B135, B139, B144, B146, B150, B155, B157, B159, B161, B163A, B163B

Description: Single Office

|                           |                                   |       |    |
|---------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise     | TA2714 4-1/2" x 4-1/2" TXS        | US26D | MK |
| 1 Office/Entry Lock       | LC LB 37 8205 LNJ                 | US26D | SA |
| 1 Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 Wall Stop               | 400 TORX                          | US26D | RO |
| 3 Silencer                | 608-RKW                           |       | RO |

**Set: 27.0**

Doors: B165

Description: Single Office

|                       |                                   |       |    |
|-----------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS        | US26D | MK |
| 1 Office/Entry Lock   | LC LB 37 8205 LNJ                 | US26D | SA |
| 1 Mortise Cylinder    | 33602012N MK x Cam/Collar as Req. | 26    | MC |

|   |                         |               |       |    |
|---|-------------------------|---------------|-------|----|
| 1 | Small Format Inter Core | 33600006BICCK | 26    | MC |
| 1 | Surf Overhead Stop      | 902_A SEC     | US32D | AH |
| 3 | Silencer                | 608-RKW       |       | RO |

**Set: 28.0**

Doors: A155, A160, A161, A163, A165, A166, A167, A168, A170, A171, A172, A173, A175, A176, A180, A182, A184

Description: Single Office Rated

|   |                         |                                   |       |    |
|---|-------------------------|-----------------------------------|-------|----|
| 3 | Hinge, Full Mortise     | TA2714 4-1/2" x 4-1/2" TXS        | US26D | MK |
| 1 | Office/Entry Lock       | LC LB 37 8205 LNJ                 | US26D | SA |
| 1 | Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 | Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 | Surface Closer          | S7500 TORX                        | 689   | NO |
| 1 | Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 | Wall Stop               | 400 TORX                          | US26D | RO |
| 1 | Gasketing               | P88D                              |       | PE |

**Set: 29.0**

Doors: S115A

Description: Single Work/Copy

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 3 | Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS      | US26D | MK |
| 1 | Pull Plate          | BF 111x70C TORX                 | US32D | RO |
| 1 | Push Plate          | 70C-RKW TORX                    | US32D | RO |
| 1 | Surface Closer      | PR7500 TORX                     | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Wall Stop           | 400 TORX                        | US26D | RO |
| 3 | Silencer            | 608-RKW                         |       | RO |

**Set: 30.0**

Doors: S113

Description: Single Break

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 3 | Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS      | US26D | MK |
| 1 | Pull Plate          | BF 111x70C TORX                 | US32D | RO |
| 1 | Push Plate          | 70C-RKW TORX                    | US32D | RO |
| 1 | Surf Overhead Stop  | 902_A SEC                       | US32D | AH |
| 1 | Surface Closer      | S7500 TORX                      | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 3 | Silencer            | 608-RKW                         |       | RO |

**Set: 31.0**

Doors: B164A

Description: Single Break

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 3 | Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS      | US26D | MK |
| 1 | Pull Plate          | BF 111x70C TORX                 | US32D | RO |
| 1 | Push Plate          | 70C-RKW TORX                    | US32D | RO |
| 1 | Surface Closer      | S7500 TORX                      | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Wall Stop           | 400 TORX                        | US26D | RO |
| 3 | Silencer            | 608-RKW                         |       | RO |



**Set: 32.0**

Doors: B104A, B124, S119

Description: Single Staff Restroom

|                       |                                 |       |    |
|-----------------------|---------------------------------|-------|----|
| 3 Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS      | US26D | MK |
| 1 Privacy Lock        | LB V20 37 8266 LNJ              | US26D | SA |
| 1 Surface Closer      | S7500 TORX                      | 689   | NO |
| 1 Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 Wall Stop           | 400 TORX                        | US26D | RO |
| 3 Silencer            | 608-RKW                         |       | RO |

**Set: 33.0**

Doors: B149, B151, S117

Description: Single Staff Restroom

|                       |                                 |       |    |
|-----------------------|---------------------------------|-------|----|
| 3 Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS      | US26D | MK |
| 1 Privacy Lock        | LB V20 37 8266 LNJ              | US26D | SA |
| 1 Surf Overhead Stop  | 902_A SEC                       | US32D | AH |
| 1 Surface Closer      | S7500 TORX                      | 689   | NO |
| 1 Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 Wall Stop           | 400 TORX                        | US26D | RO |
| 3 Silencer            | 608-RKW                         |       | RO |

**Set: 34.0**

Doors: B120A

Description: Single Staff Restroom

|                       |                                 |       |    |
|-----------------------|---------------------------------|-------|----|
| 3 Hinge, Full Mortise | TA2714 4-1/2" x 4-1/2" TXS      | US26D | MK |
| 1 Privacy Lock        | LB V20 37 8266 LNJ              | US26D | SA |
| 1 Surface Closer      | CPS7500 TORX                    | 689   | NO |
| 1 Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 Wall Stop           | 400 TORX                        | US26D | RO |
| 3 Silencer            | 608-RKW                         |       | RO |

**Set: 35.0**

Doors: A151

Description: Single Staff Restroom Rated

|                               |                                   |       |    |
|-------------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise, Hvy Wt | T4A3786 4-1/2" x 4-1/2" TXS       | US26D | MK |
| 1 Privacy Lock                | LB V20 37 8266 LNJ                | US26D | SA |
| 1 Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer              | S7500 TORX                        | 689   | NO |
| 1 Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Wall Stop                   | 400 TORX                          | US26D | RO |
| 1 Gasketing                   | P88D                              |       | PE |

**Set: 36.0 – Not Used****Set: 37.0**

Doors: U102

Description: Single Staff Restroom

|                               |                             |       |    |
|-------------------------------|-----------------------------|-------|----|
| 3 Hinge, Full Mortise, Hvy Wt | T4A3786 4-1/2" x 4-1/2" TXS | US26D | MK |
|-------------------------------|-----------------------------|-------|----|

|                           |                                   |       |    |
|---------------------------|-----------------------------------|-------|----|
| 1 Storeroom Deadbolt      | LC 8251 BHL x 186PALP             | US32D | SA |
| 1 Mortise Cylinder        | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer          | S7500 TORX                        | 689   | NO |
| 1 Kick Plate              | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Wall Stop               | 400 TORX                          | US26D | RO |
| 3 Silencer                | 608-RKW                           |       | RO |

**Set: 38.0**

Doors: R100B, R117

Description: Single Staff Restroom

|                               |                                   |       |    |
|-------------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise, Hvy Wt | H T4A3386 4-1/2" x 4-1/2" TXS     | US32D | MK |
| 1 Storeroom Deadbolt          | LC 8251 BHL x 186PALP             | US32D | SA |
| 1 Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer              | PR7500 TORX                       | 689   | NO |
| 1 Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Wall Stop                   | 400 TORX                          | US26D | RO |
| 3 Silencer                    | 608-RKW                           |       | RO |

**Set: 39.0**

Doors: S109

Description: Single Staff Restroom Rated

|                               |                                   |       |    |
|-------------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise, Hvy Wt | H T4A3386 4-1/2" x 4-1/2" TXS     | US32D | MK |
| 1 Storeroom Deadbolt          | LC 8251 BHL x 186PALP             | US32D | SA |
| 1 Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer              | PR7500 TORX                       | 689   | NO |
| 1 Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Wall Stop                   | 400 TORX                          | US26D | RO |
| 1 Gasketing                   | P88D                              |       | PE |

**Set: 40.0**

Doors: A101, J118, T106

Description: Single Staff Restroom Rated

|                               |                                   |       |    |
|-------------------------------|-----------------------------------|-------|----|
| 3 Hinge, Full Mortise, Hvy Wt | H T4A3386xNRP 4-1/2" x 4-1/2" TXS | US32D | MK |
| 1 Storeroom Deadbolt          | LC 8251 BHL x 186PALP             | US32D | SA |
| 1 Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 1 Surface Closer              | CPS7500 TORX                      | 689   | NO |
| 1 Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Gasketing                   | P88D                              |       | PE |

**Set: 41.0**

Doors: B108, B110

Description: Single Corridor Restroom

|                               |                             |       |    |
|-------------------------------|-----------------------------|-------|----|
| 3 Hinge, Full Mortise, Hvy Wt | T4A3786 4-1/2" x 4-1/2" TXS | US26D | MK |
| 1 Pull Plate                  | BF 111x70C TORX             | US32D | RO |
| 1 Push Plate                  | 70E TORX                    | US32D | RO |
| 1 Surface Closer              | S7500 TORX                  | 689   | NO |

|              |                                 |       |    |
|--------------|---------------------------------|-------|----|
| 1 Kick Plate | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 Wall Stop  | 400 TORX                        | US26D | RO |
| 3 Silencer   | 608-RKW                         |       | RO |

**Set: 42.0**

Doors: B106A

Description: Pair Storage Rated

|                               |                                   |       |    |
|-------------------------------|-----------------------------------|-------|----|
| 6 Hinge, Full Mortise, Hvy Wt | T4A3786 NRP 4-1/2" x 4-1/2" TXS   | US26D | MK |
| 2 Flush Bolt                  | 555 TORX                          | US26D | RO |
| 1 Dust Proof Strike           | 570 TORX                          | US26D | RO |
| 1 Storeroom/Closet Lock       | LC 8204 7/8" Lip Length LNJ       | US26D | SA |
| 1 Mortise Cylinder            | 33602012N MK x Cam/Collar as Req. | 26    | MC |
| 1 Small Format Inter Core     | 33600006BICCK                     | 26    | MC |
| 2 Surface Closer              | CPS7500T                          | 689   | NO |
| 2 Kick Plate                  | K1050 10" x 2" LDW BEV CSK TORX   | US32D | RO |
| 1 Astragal                    | 357SP (Paint to match door)       |       | PE |
| 2 Silencer                    | 608-RKW                           |       | RO |

Notes: Mount astragal on pull side of active leaf and size doors for 1/8" clearance between leaves. Paint astragal to match doors.

**Set: 43.0**

Doors: 100C, 100D, J110B, J110C, R104A, R108A, R108B, T105B, T107C, U100B, U103B

Description: Overhead Door (DPS)

|                   |                          |    |
|-------------------|--------------------------|----|
| 1 Position Switch | Type as Required for OHD | SU |
|-------------------|--------------------------|----|

Notes: All hardware furnished by door manufacturer.

Operation:

1. Door position switch to signal door open/closed to the access control system.

**END OF SECTION**

## SECTION 08 8000 - GLAZING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Insulating and non-insulating glass units.
- B. Glazing compounds.

#### 1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.
- B. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Mirrors.
- C. Section 11 1940 - Security Glazing: Exterior security glazing & interior security glazing.

#### 1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.
- C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).
- D. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.
- F. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021.
- G. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- H. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- I. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2017.
- K. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014, with Errata (2017).
- L. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2026.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

#### 1.05 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Structural Performance and Delegated Design: Engage a qualified engineer to design glazing, including comprehensive engineering analysis, to withstand the following design loads within the limits and under conditions indicated determined according to the IBC and ASTM E 1300:
  - 1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
    - a. Wind Design Data: As indicated on the Structural Drawings.

2. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.
  3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
  4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces
- D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
1. Provide safety glazing at all locations noted below:
    - a. Within 48 inches of finished floor.
    - b. Immediately adjacent to any swinging door opening.
    - c. At a lite within a door.
    - d. Any location specifically indicated in this Section or on the Drawings to be tempered.
- E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
  2. For laminated-glass lites, properties are based on products of construction indicated.
  3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
  4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
  5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
  6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

#### 1.06 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data on Insulating Glass Unit, Glazing Unit, Plastic Sheet Glazing Unit, and Plastic Film Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Samples: Submit two samples 12 by 12 inch in size of glass units.
- F. Samples: Submit 2 inch long bead of glazing sealant, color as selected from manufacturer's full range.
- G. Qualification Data: For installers and manufacturers of insulating glass units with sputter coated, low-e coatings
- H. Product Certificates: For glass and glazing products, from manufacturer.
- I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

### 1.07 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- B. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
- D. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
  - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- E. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
  - 1. Provide tempered safety glass where required for compliance with CPSC 16CFR 1201 and where otherwise indicated on the Drawings.
- F. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- G. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 2. Review temporary protection requirements for glazing during and after installation.

### 1.08 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
  - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F.

### 1.09 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

### 1.10 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: Ten (10) years from date of Substantial Completion.

- C. **Manufacturer's Special Warranty on Insulating Glass:** Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
1. **Warranty Period:** Ten (10) years from date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 GLASS PRODUCTS, GENERAL**

- A. **Thickness:** Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
1. **Minimum Glass Thickness for Exterior Lites:** Not less than 6.0 mm.
- B. **Strength:** Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. **Thermal and Optical Performance Properties:** Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic glass lites, properties are based on units with lites 6.0 mm thick.
  2. For laminated glass lites, properties are based on products of construction indicated.
  3. For insulating glass units, properties are based on units of thickness indicated for overall unit and for each lite.
  4. **U-Factors:** Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
  5. **Solar Heat-Gain Coefficient and Visible Transmittance:** Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
  6. **Visible Reflectance:** Center-of-glazing values, according to NFRC 300.

### **2.02 GLASS MATERIALS**

- A. **Glass (Type GL-1):** Provide fully tempered glass based glazing unless noted otherwise.
1. **Fully Tempered Float Glass (Type GL-1):** ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
    - a. Temper glass by manufacturer's standard process to increase strength to not less than four times strength prior to tempering.
    - b. Tolerances for flatness in any direction, any location except 2 inches wide border, for 1/4 inch thick glass (with inversely proportionate tolerances for thicker glass) shall not exceed the following:
      - 1) For 1' 0" run: 1/16" bow
      - 2) For 3' 0" run: 1/8" bow
      - 3) For 7' 0" run: 1/4" bow
      - 4) For 10' 0" run: 3/8" bow
    - c. Thickness 1/4 inch minimum
    - d. Cut, fabricate or drill all tempered glass before tempering.
    - e. **Tong Marks:** Support each piece of glass during strengthening so that tong marks will be concealed by glazing system.
  2. **Safety Wired Glass Type -** To be used in fire rated assemblies: ASTM C1036, Type II - Wired Flat Glass, Quality - Q5, complying with ANSI Z97.1 - Class A, or 16 CFR 1201 - Category I impact test requirements, and with color and performance characteristics as indicated.

3. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.
  - a. Minimum Thickness: 1/4"

## 2.03 INSULATING GLASS UNITS

- A. Insulating Glass Units: Types as indicated.
  1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
  2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
  3. Metal Edge Spacers: Manufacturer's standard spacer material and construction.
  4. Spacer Color: Black.
  5. Edge Seal:
    - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
  6. Color: Black.
  7. Purge interpane space with dry air, hermetically sealed.
  8. Desiccant: Molecular sieve or silica gel, or blend of both.
- B. **Type IG-1 - Insulating Glass Units: Low-e coated, clear insulating glass (exterior)**
  1. Products: Subject to compliance with requirements, provide one of the following products:
    - a. Guardian Industries; Basis of Design: "SunGuard Advanced Architectural Glass 6mm SuperNeutral 68 (2) on Gray + 1/2" Air + 6mm Clear."
    - b. Vitro Architectural Glass.; Basis of Design: "Solarban 60 (2) on SolarGray + 1/2" Air + 6mm Clear."
    - c. Viracon, Inc.; Basis of Design: "VE-3-2M (2) + 1/2" Air + 6mm Clear
  2. Overall Unit Thickness: 25 mm.
  3. Thickness of Each Glass Lite: 6.0 mm.
  4. Outdoor Lite: Class 1 (clear) fully tempered glass.
  5. Low-E Coating: Second surface.
  6. Interspace Content: Air.
  7. Indoor Lite: Class 1 (clear) fully tempered glass.
  8. Visible Light Transmittance: 35 percent minimum.
  9. Winter Nighttime U-Factor: 0.29 maximum.
  10. Summer Daytime U-Factor: 0.28 maximum.
  11. Solar Heat Gain Coefficient: 0.25 maximum.
  12. Exterior Visible Light Reflectance: 6 percent.
  13. Provide tempered safety glazing where required for compliance with CPSC 16CFR 1201 and where otherwise indicated on the Drawings as Glass Type IGT.

## 2.04 GLAZING SEALANTS

- A. General:
  1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  3. Sealants used inside the weatherproofing system, shall have a VOC content of not more than 250 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.



- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT, G, and A.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 790.
    - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
    - c. May National Associates, Inc.; Bondaflex Sil 290.
    - d. Sika Corporation U.S.; Sikasil WS-290.
    - e. Tremco Incorporated; Spectrem 1.
  - 2. Applications: Wet glazing for other than structural-sealant-glazed curtainwall systems.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT, G, and A.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 795.
    - b. GE Advanced Materials - Silicones; SilPruf SCS2000.
    - c. May National Associates, Inc.; Bondaflex Sil 295.
    - d. Sika Corporation U.S.; Sikasil WS-295.
    - e. Tremco Incorporated; Spectrem 2.
  - 2. Applications: Structural-sealant-glazed curtainwall systems.
- D. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT, G, and A.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 799.
  - 2. Applications: Two-sided butt-glazed glazing in interior conditions.
  - 3. Joint Sealant Color: Clear.

## 2.05 ACCESSORIES

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II . Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- D. Spacer Shims: Elastomeric, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.

## PART 3 EXECUTION

### 3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that the minimum required face and edge clearances are being provided.
- C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- D. Verify that sealing between joints of glass framing members has been completed effectively.

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- E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry immediately before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.
- D. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

### 3.03 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
  - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
  - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

### **3.04 GASKET GLAZING (DRY)**

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Install gaskets so they protrude past face of glazing stops.

### **3.05 CLEANING AND PROTECTION**

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

**END OF SECTION**

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## SECTION 08 8733 - DECORATIVE FILMS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Decorative Glazing films applied to new glazing assemblies.
- B. Glazing assemblies to receive film are indicated on drawings.

#### 1.02 RELATED REQUIREMENTS

- A. Section 08 8000 - Glazing: New glazing to receive film.
- B. Section 11 1940 - Security Glazing: New security glazing to receive film.

#### 1.03 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Record of product certification for safety requirements.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
- C. Shop Drawings: Detailing installation of film, anchoring accessories, and sealant.
- D. Samples: For each film product to be used, minimum size 4 inches by 6 inches, representing actual product, color, and patterns.
- E. Test Reports: Detailed reports of full-scale chamber tests to specified criteria, using assemblies identical to those required for this project.
- F. Specimen Warranty.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Glazing film manufacturer specializing in manufacture of safety glazing films with minimum 10 years successful experience.
- B. Installer Qualifications: Certified by glazing film manufacturer.
- C. Mockup: Provide full window panel mockup of DF-3 in lobby to ensure Owner/Landlord approval of aesthetic. Multiple products may be selected to be mocked up in order to make final selection.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of authorities having jurisdiction.

#### 1.06 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### 1.07 WARRANTY

- A. Provide 5 year manufacturer's replacement warranty to cover film against peeling, cracking, discoloration, and deterioration.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. **Basis of Design (DF-1):** Solyx: [www.solyxfilms.com](http://www.solyxfilms.com)
  - 1. Product: As noted in Drawing Finish Key
- B. Decorative Films, LLC; [www.decorativefilm.com](http://www.decorativefilm.com).

- C. 3M Window Film: [www.solutions.3m.com](http://www.solutions.3m.com).
- D. Or prior approved equal.

## **2.02 MATERIALS**

- A. Decorative Glazing Films (**DF-1**): Transparent, translucent or patterned polyester film for permanent bonding to glass.
  - 1. Basis of Design: Solyx SX-1409 White Sand Matte
  - 2. Thickness: 5 mil
  - 3. Color and Patterns: As indicated on Drawings, or as selected by Architect from manufacturer's full range.
  - 4. Opacity: Translucent
  - 5. Adhesive Type: Clear, pressure sensitive acrylic, permanent adhesive.
  - 6. Film Type: Vinyl
  - 7. Width: As indicated in Drawings.
  - 8. Privacy Rating: Level 3 - More Private
- B. Accessory Materials: As recommended or required by film manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine glass and frames. Verify that existing conditions are adequate for proper application and performance of film.
- B. Verify glass is not cracked, chipped, broken, or damaged.
- C. Verify that frames are securely anchored and free of defects.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Clean glass of dust, dirt, paint, oil, grease, mildew, mold, and other contaminants that would inhibit adhesion.
- B. Immediately prior to applying film, thoroughly wash glass with neutral cleaning solution.
- C. Protect adjacent surfaces.
- D. Do not begin installation until substrates have been properly prepared.

### **3.03 INSTALLATION**

- A. Do not apply glazing film when surface temperature is less than 40 degrees F or if precipitation is imminent.
- B. Install in accordance with manufacturer's instructions, without air bubbles, wrinkles, streaks, bands, thin spots, pinholes, or gaps, as required to achieve specified performance.
- C. Accurately cut film with straight edges to required sizes allowing 1/16 inch to 1/8 inch gap at perimeter of glazed panel unless otherwise required by anchorage method.
- D. Seams: Seam film only as required to accommodate material sizes; form seams vertically without overlaps and gaps; do not install with horizontal seams.
- E. Clean glass and anchoring accessories following installation. Remove excess sealants and other glazing materials from adjacent finished surfaces.
- F. Remove labels and protective covers.

### **3.04 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

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## SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Metal stud wall framing.
- B. Cementitious backing board.
- C. Gypsum wallboard.
- D. Joint treatment and accessories.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 4000 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing, and interior framing as indicated.
- B. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.
- D. Section 07 9200 - Joint Sealants: Sealing gaps in construction between gypsum board and door framing .

#### 1.03 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).
- B. AISI S201 - North American Standard for Cold-Formed Steel Framing - Product Data; 2017.
- C. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.
- D. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.
- E. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.
- F. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.
- G. ANSI A118.9>ANSI A108/A118/A136.1 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2010).
- H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- I. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2024.
- J. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- K. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2025.
- L. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
- M. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2025.
- N. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.
- O. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- P. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.

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- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data:
  - 1. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of documented experience.
- B. Single Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board or from a manufacturer acceptable to gypsum board manufacturer.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface combination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.
- C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

#### **1.07 PROJECT CONDITIONS**

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Room Temperatures: Maintain not less than 40 deg F (4 deg C). For finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
- C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

### **PART 2 PRODUCTS**

#### **2.01 METAL FRAMING MATERIALS**

- A. Material and Product Requirements: AISI S201 and AISI S220.
- B. Manufacturers - Metal Framing, Connectors, and Accessories:
  - 1. Clarkwestern Dietrich Building Systems LLC: [www.clarkdietrich.com](http://www.clarkdietrich.com).
  - 2. Marino: [www.marinoware.com](http://www.marinoware.com).
  - 3. Substitutions: See Section 01 6000 - Product Requirements.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
  - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
  - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50, with G60 hot-dip galvanized coating.
  - 3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
  - 4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-resistance rating of the wall assembly.
    - a. Products:

- 1) FireTrak Corporation; Posi Klip: [www.fire-trak.com/#sle](http://www.fire-trak.com/#sle).
  - 2) Metal-Lite, Inc; The System: [www.metal-lite.net/#sle](http://www.metal-lite.net/#sle).
5. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.

## 2.02 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS

- A. General: Provide components of sizes indicated but not less than that required to comply with ASTM C 754 for conditions indicated.
- B. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
- C. Carrying Channels: Cold-rolled steel, 0.05980-inch-minimum thickness of base (uncoated) metal and 7/16-inch-wide flanges, 1-1/2 inch deep, 475 lb. per 1000 feet, rust-inhibitive paint finish. Use for primary suspension members where indicated.
- D. Steel Studs for Furring: ASTM C 645, with flange edges bent back 90 deg and doubled over to form 3/16-inch minimum lip (return), minimum thickness of base (uncoated) metal 0.0179 inch (nominal 25 ga.) unless otherwise indicated. Use for primary suspension members where indicated.
  1. Depth as indicated.
  2. Manufacturer's standard corrosion-resistant coating.
- E. Steel Rigid Furring Channels: ASTM C 645, hat shaped, and minimum thickness of base (uncoated) metal 0.0179 inch (nominal 25 ga.) unless otherwise indicated. Use for secondary suspension members where indicated.
  1. Depth - 7/8 inch and 1 1/2 inch.
  2. Protective Coating: Manufacturer's standard corrosion-resistant coating.
- F. Suspension System: Manufacturer's standard direct-hung grid suspension system complying with ASTM C 645 and composed of main beams and cross furring members that interlock to form a modular supporting network. Provide one of the following or Architect-approved substitute system:
  1. Chicago Metallic Corp. 630.
  2. National Rolling Mills, Inc. DFS Series.
  3. USG Interiors, Inc. Donn Rigid X Drywall Suspension System.
  4. Substitutions: Under provisions of Section 016000

## 2.03 BOARD MATERIALS

- A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints. Provide 5/8 inch thickness unless otherwise indicated.
- B. Manufacturers - Gypsum-Based Board:
  1. American Gypsum Company: [www.americangypsum.com](http://www.americangypsum.com).
  2. Georgia-Pacific Gypsum: [www.gpgypsum.com](http://www.gpgypsum.com).
  3. National Gypsum Company: [www.nationalgypsum.com](http://www.nationalgypsum.com).
  4. USG Corporation: [www.usg.com](http://www.usg.com).
  5. Or prior approved equal.
- C. Impact Resistant Wallboard and Ceiling Board:
  1. Application: At all areas.
  2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
  3. Type: Fire-resistance-rated Type X, UL or WH listed.
  4. Thickness: 5/8 inch at walls, 5/8 inch at ceilings.
  5. Edges: Tapered.
  6. Paper-Faced Type: Noncombustible gypsum core with paper face; comply with ASTM C1396/C1396M.
    - a. Products:
      - 1) American Gypsum Company; M-Bloc IR Type X: [www.americangypsum.com/#sle](http://www.americangypsum.com/#sle).



- 2) CertainTeed Corporation; Extreme Impact Resistant Drywall with M2Tech: [www.certainteed.com/#sle](http://www.certainteed.com/#sle).
  - 3) Gold Bond Building Products, LLC, provided by National Gypsum Company; Gold Bond XP Hi-Impact Gypsum Board: [www.goldbondbuilding.com/#sle](http://www.goldbondbuilding.com/#sle).
  - 4) USG Corporation; Sheetrock Brand Mold Tough VHI Firecode X Panels, 5/8 inch (15.9 mm): [www.usg.com/#sle](http://www.usg.com/#sle).
  - 5) Or prior approved equal.
- D. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas, including manufactured housing, tub and shower surrounds, and shower ceilings.
  2. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
    - a. Thickness: 1/2 inch.
    - b. Products:
      - 1) PermaBASE Building Products, LLC provided by National Gypsum Company; PermaBase Cement Board: [www.goldbondbuilding.com/#sle](http://www.goldbondbuilding.com/#sle).
      - 2) USG Corporation: [www.usg.com](http://www.usg.com).
      - 3) Or approved equal.

## 2.04 GYPSUM BOARD ACCESSORIES

- A. Finishing Accessories:
1. Types: As detailed or required for finished appearance.
  2. Materials: 6063-T5 extruded aluminum alloy and G40 galvanized steel sheet in accordance with ASTM A653/A653M.
  3. Typical Accessories: Provide corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
    - a. Material: Formed sheet steel or zinc, or metal combined with paper, with sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum.
    - b. Shapes as indicated by reference to designations in ASTM C 1047:
      - 1) Corner bead on outside corners, unless otherwise indicated.
      - 2) LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-bead for edge trim unless otherwise indicated.
- B. High Build Drywall Surfer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
1. Basis of Design: Builders Solution, Interior Latex Primer/Surfer A63W00100, manufactured by Sherwin Williams.
  2. Product: SpeedSkim manufactured by Freeman Products, Inc.
- C. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.
- D. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- E. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.
- B. Project Conditions: Verify that installation conditions specified in PART 1 - GENERAL have been achieved and can be maintained.
1. Related Work: Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing for installation

tolerances and other conditions affecting installation and performance of gypsum board assemblies.

2. Acceptance: Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.02 FRAMING INSTALLATION

- A. Supplemental Framing: Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies and to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with recommendations of gypsum board manufacturer or, if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.
- B. Structural Isolation: Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement.
  1. Where building structure abuts ceiling perimeter or penetrates ceiling.
  2. Where partition framing and wall furring abut structure except at floor.
  3. Provide slip- or cushioned type joints as necessary to attain lateral support and avoid axial loading.
- C. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
  1. Laterally brace entire suspension system.
- D. Studs: Space studs at 16 inches on center, unless indicated otherwise.
  1. Extend partition framing to structure where indicated and to ceiling in other locations.
  2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
  3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- E. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- F. Blocking: Install mechanically fastened steel channel blocking for support of:
  1. Framed openings.
  2. Wall-mounted cabinets.
  3. Plumbing fixtures.
  4. Toilet partitions.
  5. Toilet accessories.
  6. Wall-mounted door hardware.
  7. Fire extinguisher cabinets
  8. Other items as required

### 3.03 WALL FRAMING

- A. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
  1. Space studs and furring members 16" o.c. unless otherwise indicated.
  2. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.
  3. Install steel studs and furring in sizes and at spacing indicated but not less than that required to comply with maximum deflection and minimum loading requirements specified in PART 2 - PRODUCTS.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from the plane formed by the faces of adjacent framing.

- C. Full Height Partitions: Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Cut studs 1/2 inch short of full height.
  - 1. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
  - 2. Extend partitions to the underside of floor/roof slabs and decks or other continuous solid structural surfaces. Install framing around structural and other members extending below floor/roof slabs and decks, as needed, to support gypsum board closures needed to make partitions continuous from floor to underside of solid structure.
- D. Stud Framing:
  - 1. Install steel studs vertically, engaged in floor and ceiling runners, and with open sides facing in the same direction and so that leading edges or ends of each gypsum board can be attached to open (unsupported) edges of stud flanges first. Position framing to provide support for all gypsum board edges (for vertical board application) or ends (for horizontal board application).
  - 2. Frame door openings with two 20 ga. studs at each jamb to comply with details indicated and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws to runner tracks and to jamb anchor clips on door frames. Install runner track section (for cripple studs) at head and secure to jamb studs.
- E. Wall Furring:
  - 1. Space furring members 16 inches on centers unless otherwise indicated. Attach with 2-inch cut nails driven into masonry joints or with power-driven fasteners. Space fasteners 24 inches apart, staggered from flange to flange.
  - 2. Install furring members around openings, ducts, structural members, and other penetrations as needed to support gypsum board.
  - 3. Position furring members to provide support for all gypsum board edges (for vertical board application) or ends (for horizontal board application)
- F. Blocking: Install mechanically fastened steel channel blocking for support of:
  - 1. Framed openings.
  - 2. Wall mounted cabinets.
  - 3. Plumbing fixtures.
  - 4. Toilet partitions.
  - 5. Toilet accessories.
  - 6. Wall mounted door hardware.
  - 7. Fire Extinguisher Cabinets.
  - 8. Other items as required.

### 3.04 INSTALLING STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS

- A. General: At the option of the Installer, any of the following framing methods may be used.
  - 1. Main runners (carrying channels or metal studs) suspended from overhead structure and cross furring (rigid furring channels).
  - 2. Steel studs, suspended or attached to adjoining wall/partition structure. Unless otherwise indicated or required, use 3-5/8" studs, maximum 24" o.c., for spans up to 8'-0".
  - 3. Proprietary suspension system.
- B. Coordination: Coordinate layout and installation of ceiling suspension system with other work above, supported by and penetrating ceilings.
- C. Hangers: Suspend ceiling hangers from building structural members and as follows:
  - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
  - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with the location of hangers required to support standard suspension

- system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  4. Do not connect or suspend steel framing from ducts, pipes or conduit.
- D. Installation Tolerances: Install steel framing components for suspended ceilings so that cross furring members or grid suspension members are level to within 1/8 inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.
- E. Suspended Framing:
1. Provide hangers not closer than 6" to ends of primary members.
  2. Locate both primary and secondary members not more than 6" from walls and partitions which interrupt ceilings.
  3. Provide 1" clearance between ends of framing members and abutting walls and partitions.
  4. Sway-brace suspended steel framing with hangers used for support.
- F. Suspended Steel Framing: Install components in sizes and at spacing indicated but not less than that required by referenced steel framing installation standard.
1. Wire Hangers: 0.1620 inch diameter (8 gage), 4 ft. on center maximum.
  2. Primary Members (main runners): Carrying channels or steel studs, 4 feet on center, maximum.
  3. Secondary members (cross furring): Hat-shaped channels, 24 inches on center, maximum.
  4. Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- G. Proprietary Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross furring members to each other and butt cut to fit into wall track. Comply with system manufacturer's instructions.

### **3.05 BOARD INSTALLATION**

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- E. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

### **3.06 APPLYING AND FINISHING GYPSUM BOARD**

- A. General Standards: Install and finish gypsum panels to comply with ASTM C 840 and gypsum board manufacturer's recommendations.
  1. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
  2. Locate either edge or end joints over supports. Position boards so that tapered edges abut tapered edges and mill-cut or field-cut ends abut mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends.

3. Locate exposed end-butt joints as far from centers of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
  4. Fit gypsum board neatly around ducts, pipes, conduits, and other penetrating items, and around openings for electrical devices, fixtures, accessories and similar recessed items.
  5. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
  6. Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.
  7. Where gypsum board intersects beams, joists, columns and other structural components, cut gypsum board to fit profile of component and allow 1/4 to 1/2 inch wide joint for sealant.
- B. Ceilings: Install ceiling boards across supports in the manner which minimizes the number of end-butt joints, and which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.
- C. Walls and Partitions: Install wall/partition boards with 1/4-inch gap at floor and in manner which avoids end-butt joints entirely where possible.
1. At walls more than 12 feet high, install boards horizontally with end joints staggered over studs.
  2. Stagger gypsum board joints over different studs on opposite faces of partitions.
  3. Cover both faces of partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls.
  4. Attach gypsum board to steel studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
  5. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panel into frames.
  6. Isolate perimeter of non-load-bearing partitions at structural abutments. Provide 1/4 inch to 1/2 inch space, and where exposed in the completed construction, trim edge with edge trim. Seal joints with acoustical sealant, except at fire-rated partitions joints shall be fire-stopped as specified in Section 078400.

### **3.07 GYPSUM BOARD APPLICATION METHODS**

- A. General: Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
- B. Single Layer Application: Install gypsum board as follows:
1. On ceilings, apply gypsum board prior to wall/partition board application to the greatest extent possible and at right angles to supports, unless otherwise indicated. Provide lengths that will avoid or minimize end joints.
  2. On partitions/walls, apply gypsum board horizontally (perpendicular to supports), unless parallel application is required for fire-resistive-rated assemblies. Use maximum length panels to avoid or minimize end joints. Stagger joints on opposite sides of partitions.
  3. On furring members, apply gypsum board vertically (parallel to supports) with no end joints. Locate edge joints over furring members.
- C. Single Layer Fastening Methods: Apply gypsum panels to supports as follows:
1. Fasten to steel framing with screws.
  2. Fasten to wood supports with screws or double nailing.

### **3.08 INSTALLATION OF TRIM AND ACCESSORIES**

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners. Provide trim as follows.
1. Install corner beads at all external corners.

2. Install edge trim where edge of gypsum panels would otherwise be exposed and where gypsum panels are tightly abutted to other construction. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
  3. Install aluminum edge trim and other accessories where indicated.
- B. Control Joints: Install control joints at locations indicated, and where not indicated in locations approved by Architect for visual effect according to the following requirements:
1. In ceilings: Not more than 30 feet apart in any direction (50 feet if perimeter relief exists), and wherever support framing or furring changes direction.
  2. In walls/partitions: Not more than 30 feet apart, and wherever a control joint occurs in an exterior wall which services as a base for gypsum board finish. Wall or partition height door frames may be considered control joints.

### 3.09 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads and surface defects; and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.
1. Pre-fill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
  2. Apply joint tape over gypsum board joints and to face flanges of aluminum and other trim accessories as recommended by trim accessory manufacturer to prevent cracks from developing in joint compound at flange edges.
- B. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214, or as specified in the drawings. All painted exposed gypsum board surfaces to be Level 5 finish, unless otherwise indicated below.
1. Level 0 for temporary construction or where indicated in drawings.
    - a. No taping, finishing or accessories required.
  2. Level 1 for ceiling plenum areas, concealed areas, or where indicated in drawings, unless a higher level of finish is required for fire-resistive-rated assemblies and sound-rated assemblies, apply joint compound specified for embedding coat.
    - a. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
      - 1) Tool marks and ridges acceptable. Surface free of excess joint compound.
  3. Level 2 for mechanical & electrical areas, behind cabinetry, backing board to receive a tile finish and where indicated in drawings.
    - a. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound. Whip compound with joint knife leaving a thin coat of compound over tape.
      - 1) Surface shall be free of excess joint compound. Tool marks and ridges acceptable. Joint compound applied over body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the condition of this level.
  4. Level 3 walls to receive textured wall finish in locations indicated in drawings.
    - a. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
      - 1) Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
      - 2) Accessories and fasteners shall be covered by two separate coats of joint compound.
      - 3) Joint compound shall be smooth and free of tool marks and ridges.
      - 4) Prepare surface to be coated with drywall primer prior to the application of final finishes.
  5. Level 4 gypsum board finish, embed tape in finishing compound plus two separate coats applied over joints, angles, fastener heads, and trim accessories using the following joint compounds (not including pre-fill), and sand between coats and after last coat:

- a. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
  - 1) Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
    - (a) Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
    - (b) Accessories and fasteners shall be covered by two separate coats of joint compound.
    - (c) Joint compound shall be smooth and free of tool marks and ridges.
    - (d) Prepare surface to be coated with drywall primer prior to the application of final finishes.
    - (e) Prepare and submit a 24"x24" review sample for Architect's approval as per following specification prior to commencement of finishing of this level type.
    - (f) In lieu of finish listed above, contractor has the option where Level 4 finish is indicated, spray apply high build drywall surfacer (listed in 2.5 E) over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- 6. Level 5 for all painted gypsum board wall surfaces that will be exposed unless otherwise indicated.
- 7. Level 5 for gypsum board surfaces indicated to receive gloss and semi-gloss paints, enamel paints, non-textured walls to receive flat paints, and where indicated in drawings.
  - a. Where Level 5 finish with light texture gypsum board finish is indicated, provide finish specified for level 4 plus a thin, uniform skim coat of joint compound over entire surface. Use a joint compound specified for the finish (third coat) or a product specially formulated for this purpose and acceptable to gypsum board manufacturer.
  - b. Produce surfaces free of tool marks and ridges ready for decoration of type indicated. Refer to ASTM C 840.
  - c. In lieu of finish listed above, contractor has the option where Level 5 finish is indicated, spray apply high build drywall surfacer (listed in 2.5 E) over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

### **3.10 CLEANING AND PROTECTION**

- A. Cleaning: Promptly remove any residual joint compound from adjacent surfaces.
- B. Protection: Provide final protection and maintain conditions that ensure gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

### **3.11 TOLERANCES**

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

### **END OF SECTION**

## SECTION 09 2400 - PORTLAND CEMENT PLASTERING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Portland cement plaster (stucco) for installation over metal lath.

#### 1.02 RELATED REQUIREMENTS

- A. Section 05 4000 Cold-Formed Metal Framing: Structural metal framing for plaster.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C847 - Standard Specification for Metal Lath; 2018 (Reapproved 2024).
- B. ASTM C841 - Standard Specification for Installation of Interior Lathing and Furring; 2023.
- C. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster; 2025a.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.
- E. ASTM C206 - Standard Specification for Finishing Hydrated Lime; 2014 (Reapproved 2022).
- F. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster; 2024.

#### 1.04 SUBMITTALS

- A. Product Data: Provide data on plaster materials, characteristics and limitations of products specified.
- B. Samples: Submit two samples, 6 by 6 inch minimum in size illustrating finish color and texture.

#### 1.05 DESIGN REQUIREMENTS

- A. Structural (wind and axial loads)
  - 1. Design for maximum allowable deflection, normal to the plane of the wall of L/360.
  - 2. Design for wind load in conformance with building code requirements.
  - 3. Refer to applicable ICC ESR for wind load limitations that may apply
- B. Moisture Control
  - 1. Prevent the accumulation of water into or behind the stucco, either by condensation or leakage into the wall construction, in the design and detailing of the wall assembly:
    - a. Provide corrosion resistant flashing to protect exposed elements and to direct water to the exterior, including, above window and door heads, beneath window and door sills, at floor lines, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.
    - b. Air Leakage Prevention – prevent excess air leakage in the design and detailing of the wall assembly. Provide continuity between air barrier components in the wall assembly.
    - c. Vapor Diffusion and Condensation – perform a dew point analysis and/or dynamic hygrothermal modeling of the wall assembly to determine the potential for accumulation of moisture in the wall assembly as a result of water vapor diffusion and condensation. Adjust wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.
    - d. Seal stucco terminations and accessory butt joints with appropriate sealant. Seal all penetrations through the stucco wall assembly with appropriate sealant, or backer rod and sealant, as dictated by joint type
- C. Stucco Thickness (does not include primer or textured finish coat)
  - 1. Application to Metal Plaster Bases: stucco thickness shall be uniform ¾ inch or 7/8 inch (19 or 22 mm). Stucco thickness shall not exceed 7/8 inch (22 mm).
  - 2. Stucco shall be applied in 2 coats, scratch and brown coat, to achieve the prescribed thickness.
  - 3. Thickness shall be uniform throughout the wall area



- D. Performance Requirements:
  - 1. Drainage Mat
    - a. Surface Burning, ASTM E 84: Flame Spread less than 25, Smoke Developed less than 450, Class A Building Material
    - b. Flame Propagation, NFPA 285: meets requirements for use on noncombustible (Types I,II,III, and IV) construction.
  - 2. Stucco Base
    - a. Stucco scratch and brown coat material in compliance with ASTM C 926 and manufactured or listed by manufacturer.
  - 3. Flexible Acrylic Finish
    - a. Accelerated Weathering, ASTM G 154: 2000 hours, no blistering, checking cracking, crazing, or other deleterious effects
    - b. Water Vapor Permeability, ASTM E 96, Method B: > 15 perms [(861 ng/(Pa·s·m<sup>2</sup>))]
    - c. Surface Burning, ASTM E 84: Flame Spread less than 25, Smoke Developed less than 450, Class A building material
    - d. VOC: less than 50 g/L, compliant with South Coast AQMD Rule 1113 for architectural coatings

#### **1.06 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

#### **1.07 MOCK-UP**

- A. Construct mock-up of exterior wall, 4 feet long by 4 feet wide, illustrating surface finish.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

#### **1.08 DELIVERY, STORAGE AND HANDLING**

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
- B. Protect coatings (pail products) from freezing and temperatures in excess of 90°F (32° C). Store away from direct sunlight.
- C. Protect Portland cement based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.
- D. Handle all products as directed on labeling

#### **1.09 FIELD CONDITIONS**

- A. Do not apply plaster when substrate or ambient air temperature is under 50 degrees F or over 80 degrees F.
- B. Maintain minimum ambient temperature of 50 degrees F during installation of plaster and until cured.
- C. Prevent uneven or excessive evaporation of moisture from stucco during hot, dry or windy weather. For installation under any of these conditions provide special measures to properly moist cure the stucco. Do not install stucco if ambient temperatures are expected to rise above 100°F (38°C) within a 24 hour period.
- D. Provide protection of surrounding areas and adjacent surfaces from application of materials.

#### **1.10 WARRANTY**

- A. Provide manufacturer's standard warranty.

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## **PART 2 PRODUCTS**

### **2.01 PORTLAND CEMENT PLASTER ASSEMBLIES**

- A. Exterior Stucco: Portland cement plaster system, made of finish, brown, and scratch coat and reinforcing mesh and drainage mat.
  - 1. Manufacturers:
    - a. Master Wall, Inc.; Cemplaster Fiberstucco: [www.masterwall.com/#sle](http://www.masterwall.com/#sle).
    - b. Parex USA, Inc.; Armourwall 300 WaterMaster Krak-Shield: [www.parexusa.com/#sle](http://www.parexusa.com/#sle).
    - c. **Basis of Design:** Sto Corp; Sto Powerwall: [www.stocorp.com/#sle](http://www.stocorp.com/#sle).
    - d. Or prior approved equal.

### **2.02 PLASTER MATERIALS**

- A. Portland Cement, Aggregates, and Other Materials: In accordance with ASTM C926.
- B. Portland Cement: ASTM C150/C150M, Type I.
  - 1. For finish coat: White color.
- C. Lime: ASTM C206, Type S.
- D. Sand Aggregate: ASTM C 89.
  - 1. Color for Job-Mixed Finish Coats: White.
- E. Water: Clean, fresh, potable and free of mineral or organic matter that could adversely affect plaster.

### **2.03 METAL LATH**

- A. Manufacturers:
  - 1. Basis of Design: Alabama Metal Industries Corporation; Tilath: [www.amico-lath.com](http://www.amico-lath.com).
  - 2. Cemco: [www.cemcosteel.com](http://www.cemcosteel.com).
  - 3. Clarkwestern Dietrich Building Systems LLC: [www.clarkdietrich.com](http://www.clarkdietrich.com).
  - 4. Or prior approved equal.
- B. Diamond Mesh Metal Lath: ASTM C847, galvanized; self-furring.
  - 1. Weight: 3.4 lb/sq yd.
  - 2. Backed with treated paper.
- C. Beads, Screeds, Joint Accessories, and Other Trim: Depth governed by plaster thickness, and maximum possible lengths.
  - 1. Material: Vinyl, open grid flanges or perforated with nailing holes.
  - 2. Casing Beads: Square edges, wide flange casing bead.
    - a. Product: AM66-WFWC-780 Custom manufactured by AMICO.
  - 3. Expansion Joints: Two-piece sliding type, varying inch wide flanges.
    - a. Product: AMEJ780-500 manufactured by AMICO.
  - 4. Inside Corner Expansion Joint: Three-piece sliding type.
    - a. Product: AMXJI-780 manufactured by AMICO.
  - 5. External Corner Expansion Joint: Three-piece sliding type.
    - a. Product: AMXJO-780 manufactured by AMICO.
  - 6. Foundation Weep Screed:
    - a. Product: AMFWS-425-780, manufactured by AMICO.
- D. Accessories:
  - 1. Anchorage: Tie wire, nails, and other metal supports, of type and size to suit application; to rigidly secure materials in place, stainless steel.
  - 2. Tie Wire: Stainless steel.

### **2.04 DRAINAGE MAT**

- A. Sto DrainScreen 10mm – nominal 3/8" (10 mm) tangled filament nylon core drainage mat with fabric facing.

## 2.05 MECHANICAL FASTENERS

- A. Non-corroding fasteners in compliance with AISI S200 – 2007 and ASTM C 1513:
  - 1. Steel Framing – minimum #8 Type S or S-12 wafer head fully threaded corrosion resistant screws with minimum 3/8 inch (10 mm) and three thread penetration into studs.
- B. Tie Wire – 18 gauge galvanized and annealed low-carbon steel in compliance with ASTM A 641 with Class I coating.

## 2.06 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
  - 1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. of cementitious materials.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:
  - 1. Basis of Design: StoPowerwall Stucco Scratch & Brown 80108
  - 2. Portland Cement Mixes:
    - a. Mix Ratio (Water / Bag / Sand): Limit amount of clean and potable water to stiff but workable consistency / 94 lbs bag / 3.25 - 3.5 cu. ft.
    - b. Mix Time (minutes): 6 minutes
    - c. Compliance with ASTM C926 Required.
- C. Finish Coat: Acrylic based , ready-mixed, water-based, low VOC, flexible to bridge hairline cracks
  - 1. Basis of Design: StoPowerwall Finish in Medium 80297
  - 2. Portland Cement Mixes:
    - a. Color: To match Architect's sample.
    - b. Water Vapor Permeability (ASTM E96 B): 12 perms
    - c. Water Absorption (ASTM D570): 11%
    - d. Adhesion (ASTM D4541): 200 psi minimum
- D. Mix only as much plaster as can be used prior to initial set.
- E. Protect mixtures from freezing, frost, contamination, and excessive evaporation.
- F. Do not retemper mixes after initial set has occurred.

## 2.07 ACCESSORIES

- A. Weep screed, casing bead, corner bead, corner lath, expansion and control joint accessories. All accessories shall meet the requirements of ASTM C 1063 and its referenced documents
  - 1. Zinc in compliance with ASTM B 69.
- B. All accessories shall have perforated or expanded flanges and shall be designed with grounds for the specified thickness of stucco.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify the suitability of existing conditions before starting work.
- B. Masonry: Verify joints are cut flush and surface is ready to receive work of this section. Verify no bituminous or water repellent coatings exist on masonry surface.
- C. Metal Lath and Accessories: Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are in place.

### 3.02 DRAINAGE MAT INSTALLATION

- A. Place drainage mat against the wall surface over the insulation and unroll horizontally with the fabric facing out. Hammer-tack or staple into sheathing with corrosion-resistant fasteners. Use as few fasteners as needed to hold the mat in place, starting from the bottom of the wall at base flashing or weep screed and working up. Do not fasten through flashing. Shingle lap fabric

at horizontal courses. Shingle lap drainage mat over flashing at floor lines, decks, roof lines, window heads, and other areas where flashing is required, to direct water to the exterior. Butt ends of rolls and vertical seams. Trim around windows, doors, vents, or other penetrations through the wall. Do not install behind window nail flanges. Immediately follow installation of drainage mat with stucco lath installation. Where stucco lath installation will not immediately follow installation of drainage mat, use corrosion-resistant cap nails, cap staples, or cap screws every 16 inches (406 mm) on center along framing for more secure attachment. Cover drainage mat with stucco within 30 days of installation

### 3.03 LATH INSTALLATION

- A. Install interior lath and furring for gypsum plaster in accordance with ASTM C841.
- B. Install lath and furring for Portland cement plaster in accordance with ASTM C1063.
- C. Install lath and furring for fire-rated assemblies in accordance with requirements of assembly as indicated.
- D. Locate control and expansion joints as indicated on drawings.
- E. Install control and expansion joints.
- F. Apply metal lath taut, with long dimension perpendicular to supports.
- G. Lap ends minimum 1 inch. Secure end laps with tie wire where they occur between supports.
- H. Lap sides of diamond mesh lath minimum 1-1/2 inches.
- I. Attach metal lath to wood supports using nails at maximum 6 inches on center.
- J. Continuously reinforce internal angles with corner mesh, except where the metal lath returns 3 inches from corner to form the angle reinforcement; fasten at perimeter edges only.
- K. Place corner bead at external wall corners; fasten at outer edges of lath only.
- L. Place base screeds at termination of plaster areas; secure rigidly in place.
- M. Place 4 inch wide strips of metal lath centered over junctions of dissimilar backing materials, and secure rigidly in place.
- N. Place lath vertically above each top corner and each side of door frames to 6 inches above ceiling line.
- O. Place casing beads at terminations of plaster finish. Butt and align ends. Secure rigidly in place.
- P. Place additional strip mesh diagonally at corners of lathed openings. Secure rigidly in place.

### 3.04 PLASTERING

- A. Apply plaster in accordance with ASTM C926.
- B. Three-Coat Application Over Metal Lath:
  - 1. Apply first coat to a nominal thickness of 3/8 inch.
  - 2. Apply second coat to a nominal thickness of 3/8 inch.
  - 3. Apply finish coat to a nominal thickness of 1/8 inch.
- C. Scratch Coat: apply stucco with sufficient pressure to key into and embed the metal lath. Apply sufficient material, 3/8 or 1/2 inch (9 or 12 mm), to cover the metal lath and to permit scoring the surface. Score the stucco upon completion of each panel in preparation for a second coat. Score horizontally
- D. Brown Coat: as soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat and as needed to bring the stucco to a uniform thickness that matches the grounds of the accessories. Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane

with stucco. Final thickness of stucco shall be uniform throughout the wall area and shall be either 3/4 inch or 7/8 inch (19 or 22 mm), and shall not exceed 7/8 inch (22 mm).

- E. After the stucco has become slightly firm float the surface lightly with a darby or wood float to densify the surface and to provide a smooth, even surface. The proper time to float is when the wood float no longer sticks to the surface of the stucco.
- F. Moist cure after the stucco has set by lightly fogging for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75% the frequency of moist curing can be diminished.
- G. After curing, dampen previous coat prior to applying finish coat.
- H. Finish Installation
  - 1. Apply finish to minimum 28 day old stucco, or apply when pH of stucco surface is less than 10. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:
    - a. Avoid application in direct sunlight.
    - b. Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
    - c. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
    - d. Do not install separate batches of finish side-by-side.
    - e. Do not apply finish into or over sealant joints. Apply finish to outside face of wall only.
    - f. Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.
    - g. Do not install finish over high pH (> 10) stucco surfaces or surfaces that have not been fully cured.
- I. Finish Texture: Float to a consistent medium texture finish.
- J. Avoid excessive working of surface. Delay troweling as long as possible to avoid drawing excess fines to surface.
- K. Moist cure finish coat for minimum period of 48 hours.

### **3.05 TOLERANCES**

- A. Maximum Variation from True Flatness: 1/8 inch in 10 feet.

### **3.06 PROTECTION**

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing.
- C. Provide protection of installed primer and finish from dust, dirt, precipitation, freezing and continuous high humidity until fully dry.
- D. Provide sealant and backer material at stucco terminations and at fixture penetrations through the stucco to protect against air, water and insect infiltration. Provide weeps at floor lines, window and door heads, and other areas to conduct water to the exterior

### **3.07 CLEANING, REPAIR, AND MAINTENANCE**

- A. Clean and maintain the stucco finish for a fresh appearance and to prevent water entry into and behind the stucco. Repair cracks, impact damage, spalls or delamination promptly.
- B. Maintain adjacent components of construction such as sealants, windows, doors, and flashing, to prevent water entry into the wall assembly.

- C. Refer to manufacturer's Repair and Maintenance Guide for detailed information on stucco restoration – cleaning, repairs, recoating, resurfacing and refinishing, or re-cladding.

**END OF SECTION**

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## SECTION 09 3000 - TILING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Stone thresholds.
- D. Ceramic accessories.
- E. Integral tile floor drains and waterproofing membrane
- F. Non-ceramic trim.

#### 1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- B. Section 09 2116 - Gypsum Board Assemblies: Tile backer board.

#### 1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2024.
- B. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.
- C. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2023.
- D. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
- E. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, water proof membrane, and accessories. Include instructions for using grouts, water proof membrane, and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Tile: 1 percent of each size, color, and surface finish combination, but not less than 10 s.f. of each type.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- B. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

#### 1.06 MOCK-UPS

- A. See Section 01 4000 - Quality Requirements for general requirements for mock-up.

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- B. Construct tile mock-up where required by Architect, incorporating all components specified for the location.
  - 1. Minimum size of mock-ups is 10' X 10", required for walls & floors.
  - 2. Approved mock-up may remain as part of work.
  - 3. Demolish mock-up when directed by Architect, and remove debris from the site.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

#### **1.08 FIELD CONDITIONS**

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

### **PART 2 PRODUCTS**

#### **2.01 TILE**

- A. Basis of Design Products: Subject to compliance with requirements, provide the products listed in the Drawing Finish Key. Specific tile products are identified in the drawings to establish the color, design intent, and required standard of quality. It is not the intent to preclude the use of other prior approved, acceptable manufacturers.
- B. Substitutions: Subject to compliance with requirements, products of the following manufacturers may be substituted for prior approval upon matching Architect's control sample in color, texture, construction and performance characteristics. Final approval to be determined by Architect.
- C. Ceramic Wall and Mosaic Tile: ANSI A 137.1, non-vitreous body (absorption less than 0.5 percent), thickness varies by product, cushion edges, factory mounted (mosaic).
  - 1. Trim Shapes: As required of same type, size, thickness and material as tile.
- D. Porcelain Tile: A ceramic tile or paver tile that is generally made by the dust-pressed method of a composition resulting in a tile that is dense, impervious, fine grained, and smooth with sharply formed face.
- E. Wall Tile: A glazed tile with a body that is suitable for interior use and which is usually non-vitreous and is not required nor expected to withstand excessive impact or be subject to freezing and thawing conditions.
- F. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and with a minimum abrasive-hardness value of 10 per ASTM C 241.
  - 1. Fabricate thresholds to heights indicated, but not more than 1/2 inch above adjoining finished floor surfaces, with transition edges beveled on a slope of no greater than 1:2.

#### **2.02 WATERPROOFING MEMBRANE:**

- A. General: Manufacturer's standard product that complies with ANSI A118.10 and is acceptable to authorities having jurisdiction for use as shower pan waterproofing, as selected from one of the following available options. Include primer, pre-fabricated corners, seaming cement, detail tape sealant, integrated drain and other standard accessory products required for application provided by membrane manufacturer. At Showers use complete shower system as manufactured by Schluter. In restrooms install Schluter KERDI waterproofing membrane on entire floor of restroom and up wall minimum 1", install waterproofing membrane into integral floor drain bonding flange & floor drain.
- B. Material Description: 0.008" (8 mil) thick, polyethylene membrane, with polypropylene fleece laminated on both sides, which meet or exceed the requirements of the "American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation A118.10", and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).
- C. Manufacturer:

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1. **Basis of Design:** Schluter-KERDI DS, as manufactured by Schluter Systems.
  2. Durock membrane, as manufactured by USG.
  3. RedGard Shower Kit, as manufactured by Custom Building Products.
- D. Accessories:
1. Waterproofing seaming membrane - Schluter KERDI-BAND Seams and Corners, 0.004" (4 mil) thick.
  2. Mixing Valve seals and pipe seals.
  3. Floor drain: Schluter linear KERDI-LINE drain with integral bonding flange and no hub fitting, coordinate bonding flange with plumbing PVC or Stainless steel as required.(size and shape as indicated in Drawings).
    - a. Drain grate pattern and finish to be selected by Architect from manufacturer's full range.
  4. Prefabricated, sloped shower tray for accommodating linear trench drain.

### 2.03 CRACK ISOLATION MEMBRANE UNDERLAYMENTS

- A. General: Manufacturer's standard product that complies with ANSI A118.12 as selected from one of the following options. Include primer, pre-fabricated corners, seaming cement, detail tape, sealant, and other standard accessory products required for application provided by membrane manufacturer.
- B. Fluid-Applied Crack Isolation Membrane Underlayment:
1. Description: Manufacturer's proprietary system consisting of liquid applied component and synthetic fabric sheet reinforcement.
  2. Manufacturers and Products:
    - a. Custom Building Products: RedGard Waterproofing and Crack Prevention Membrane.
    - b. Laticrete International Inc.; Laticrete 9235 Waterproof Membrane.
    - c. Laticrete International Inc.; Blue 92 Anti-Fracture Membrane.
    - d. Mapei Corp; Mapelastic HPG.
- C. Fluid-Applied Waterproofing and Crack Isolation Membrane to be installed on ALL walls with tile in restrooms. Membrane to be installed full height in showers, as part of shower system indicated elsewhere in this Section
- D. Faced Chlorinated Polyethylene (CPE) Crack Isolation Membrane Underlayment:
1. Description: Non-plasticized, chlorinated polyethylene faced on both sides with high-strength, nonwoven polyester fabric; minimum 0.030 in nominal thickness.
  2. Manufacturer and Product: The Noble Company; NobleSeal CIS.

### 2.04 SETTING MATERIALS

- A. Manufacturers:
1. Custom Building Products.
  2. MAPEI Corporation.
  3. Summitville Tiles, Inc.
- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:
1. Prepackaged dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive.
    - a. For wall applications, provide non-sagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
- C. Medium Thin-set Latex-Portland Cement Mortar: Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for thin-set application.
1. Basis of Design Product: Subject to compliance with requirements, provide Custom Building Products MegaLite Non-Sag Rapid Set Mortar or a comparable product from one of the following:
    - a. MAPEI Corporation; Ultraflex LFT.
    - b. Summitville Tiles, Inc.; S-1200 MP Premium Medium Bed Mortar.

2. Application: Large format tile installations. Refer to the Drawing Finish Legend for tile sizes.
- D. For wall applications, provide mortar that complies with requirements for non-sagging mortar in addition to the other requirements in ANSI A118.4.

## **2.05 GROUT MATERIALS**

- A. Manufacturers:
  1. Custom Building Products
  2. MAPEI Corporation
  3. Summitville Tiles, Inc.
- B. Water-Cleanable Epoxy Grout: ANSI A118.3.
  1. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

## **2.06 ELASTOMERIC SEALANTS**

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants".
  1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
    - a. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.

## **2.07 CEMENTITIOUS BACKER UNITS**

- A. Refer to Section 09 2116 "Gypsum Board Assemblies" for cementitious tile backer board to be provided by that Section.

## **2.08 MISCELLANEOUS MATERIALS**

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
  1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
  2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Edge Strips (Where Indicated): Angle, radius or L-shape, height to match tile and setting-bed thickness, metallic or PVC or neoprene base, designed specifically for flooring applications.
  1. Basis of Design Product: Schluter Systems, LP transitions and reducers or a comparable approved product of one of the following:
    - a. Blanke Corporation
    - b. Ceramic Tool Company, Inc.
  2. Tile to Carpet: Schluter - Model as indicated on drawings.
  3. Tile to Tile, Edge Termination or Transitions As Indicated: Schluter - Model as indicated on drawings.
  4. Tile to Wood Flooring: Schluter - Model as indicated on drawings.
  5. Tile Floor to Wall Transition: Schluter - Model as indicated on drawings.

6. Tile Expansion Joints: Schluter - Model as indicated on drawings.
- E. Waterproofing membrane, crack isolation membrane underlayment, shower systems, and floor drain assembly, install as per manufacturer's written requirements.

## **2.09 MIXING MORTARS AND GROUT**

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. Installation Methods: Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA designations indicated.
- B. Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" applicable to installation methods and setting and grouting materials indicated.

### **3.02 EXAMINATION**

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
  1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
    - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
    - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
  3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
  4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.03 PREPARATION**

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

### 3.04 WATERPROOF MEMBRANE UNDERLAYMENT INSTALLATION

- A. Installation Quality Standard: ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. General Requirements:
  - 1. If required by manufacturer, prime concrete substrate.
  - 2. Install to produce a continuous waterproof membrane of uniform thickness bonded securely to substrate, without wrinkles, bubbles, buckles or kinks.
  - 3. For sheets, overlap and seal seams.
  - 4. Turn membrane up wall at locations where tile is scheduled for wall or base.
  - 5. Roll installed sheet if required by manufacturer.
  - 6. Install tile after waterproofing has cured and been testing determined it is watertight.

### 3.05 CRACK ISOLATION MEMBRANE UNDERLAYMENT INSTALLATION

- A. General Requirements:
  - 1. If required by manufacturer, prime concrete substrate.
  - 2. Install to produce a continuous crack isolation membrane of uniform thickness bonded securely to substrate, without wrinkles, bubbles, buckles, or kinks.
  - 3. For sheets, overlap and seal seams.
  - 4. For liquid applied products, brush or roll liquid uniformly over area in number of coats required and install reinforcing fabric.
  - 5. Roll installed sheet if required by manufacturer.
  - 6. After installation of tile, install floor joint sealant in tile joints recommended by manufacturer to coordinate with membrane strips.

### 3.06 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
  - 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
    - a. Tile floors in wet areas.
    - b. Tile floors composed of tiles 8 by 8 inches or larger.
- B. Extend tile work into recesses and under or behind millwork, casework, equipment and fixtures to form complete floor and/or wall covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
  - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
  - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
  - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Porcelain Paver Tile: 1/8 inch or according to manufacturer's recommendation.
  2. Porcelain Mosaic Tile: 1/16 inch or according to manufacturer's recommendation.
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
  2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealers".
- I. Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- J. Grout tile to comply with requirements of the following tile installation standards:
1. For epoxy tile grouts, comply with ANSI A108.6.

### **3.07 INSTALLATION - FLOORS - THIN-SET METHODS**

- A. Over interior concrete substrates, install in accordance with The Tile Council of North America Handbook Method F113, dry-set or latex-Portland cement bond coat, with epoxy grout, unless otherwise indicated.
1. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F115.
- B. Field-Applied Temporary Protective Tile Coating: Apply a continuous film to protect tile surfaces from adhesion of grout.
- C. Back Buttering: Produce 100 percent mortar coverage on tile backs to comply with applicable special requirements for back buttering in ANSI A108 Series tile installation standards in the following locations:
1. Floors in wet areas.
  2. Floors composed of 8-by-8-inch tile or larger.
  3. Floors composed of rib-backed tiles.
- D. Blending: For tile with color variations, install blended tiles to produce color variations that match approved Samples.
- E. Extend tile work into recesses and under or behind millwork, casework, equipment and fixtures to produce a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- F. Accurately form intersections and returns. Cut and drill tile without marring visible surfaces. Grind cut edges of tile abutting trim, finish, or built-in items to produce straight aligned joints. Fit tile to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- G. Jointing Pattern: Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.
1. Lay tile in grid pattern.
- H. Joint Widths: Produce uniform joint widths as follows:
1. Per manufacturer's recommendations
- I. Expansion Joints: Form expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Locate joints in tile surfaces directly above joints in concrete substrates, and as recommended by tile manufacturer and or TCA for area covered.
  2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."

- J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile, unless otherwise indicated.
- K. Stone Thresholds: Install stone thresholds set in same type of setting bed as abutting field tile, unless otherwise indicated.
  - 1. Set thresholds in latex-Portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent non-tile floor finish.

### 3.08 INSTALLATION - WALL TILE

- A. Over cementitious backer units install in accordance with TCNA (HB) Method W223, organic adhesive.
- B. Field-Applied Temporary Protective Tile Coating: Apply a continuous film to protect tile surfaces from adhesion of grout.
- C. Back Buttering: Produce 100 percent mortar coverage on tile backs to comply with applicable special requirements for back buttering in ANSI A108 Series tile installation standards in the following locations:
  - 1. Wall installations composed of 8-by-8-inch tile or larger.
- D. Blending: For tile with color variations, install blended tiles to produce color variations that match approved Samples.
- E. Extend tile work into recesses and under or behind millwork, casework, equipment and fixtures to produce a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- F. Accurately form intersections and returns. Cut and drill tile without marring visible surfaces. Grind cut edges of tile abutting trim, finish, or built-in items to produce straight aligned joints. Fit tile to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- G. Jointing Pattern: Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.
  - 1. Lay tile in grid pattern.
- H. Joint Widths: Produce uniform joint widths as follows:
  - 1. Wall Tile: Per manufacturer's recommendations
- I. Refer to TCA's "Handbook for Ceramic Tile Installation" and to ANSI A108 Series of tile installation standards for data on expansion joints. Both the "Handbook" and standards require joints to be shown on Drawings. Descriptive specifications are not an adequate substitute for showing joints on Drawings.
- J. Expansion Joints: Form expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
  - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
  - 2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."

### 3.09 CLEANING AND PROTECTION

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
  - 1. Remove grout residue from tile as soon as possible.
  - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven (7) days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

### **3.10 FLOOR TILE INSTALLATION SCHEDULE**

- A. Interior slab-on-grade floor installation over concrete; thin-set Latex-Portland cement mortar; TCA F113 and ANSI A108.5 and ANSI A108.17 (where applicable).
  1. Tile Type: As indicated in the Drawing "FINISH KEY".
  2. Thin-Set Mortar: Latex-Portland cement mortar.
  3. Medium Thin-set Mortar for Large Format Tiles: Mortar indicated or manufacturer's recommended mortar.
  4. Location: For all slab-on-grade locations except as otherwise noted.
- B. Interior above-grade, structural floor installation on a waterproof membrane over concrete; thin-set Latex-Portland cement mortar; TCA F122 and ANSI A108.5 and ANSI A108.13.
  1. Tile Type: As indicated in the Drawing "FINISH KEY".
  2. Thin-Set Mortar: Latex-Portland cement mortar.
  3. Medium Thin-Set Mortar for Large Format Tiles: Refer to installation method F128 below.
  4. Location: Elevated structural floor concrete slabs.

### **3.11 WALL TILE INSTALLATION SCHEDULE**

- A. Tile Installation: Interior wall installation over backer board; thin-set mortar; W244C (wet conditions) with cementitious backer board and waterproof membrane; W243 (dry conditions) with Type X gypsum board; ANSI A108.5.
  1. Tile Type: As indicated in the Drawing "FINISH KEY".
  2. Thin-Set Mortar: Latex-Portland cement mortar or according to manufacturer's recommendation.
  3. Medium Thin-Set Mortar for Large Format Tiles: Mortar indicated or manufacturer's recommended mortar.

**END OF SECTION**

## SECTION 09 5100 - ACOUSTICAL CEILINGS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

#### 1.02 RELATED REQUIREMENTS

- A. Section 23 3700 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- B. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2014.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components.
- D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

#### 1.05 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Fire-Performance: Provide acoustical panels with surface burning characteristics specified below, based on ASTM E 84 tests performed by UL or other independent agency acceptable to authorities having jurisdiction. Identify packaged products with approval markings of test agency.
  - 1. Flame Spread: 25 or less.
  - 2. Smoke Developed: 50 or less.
- D. Coordination: Coordinate layout and installation of ceiling system with related construction.

#### 1.06 FIELD CONDITIONS

- A. Installation Conditions: Do not install acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and temperature and humidity will be continuously maintained near levels intended for final occupancy.
- B. Fireproofing: All fireproofing which is removed shall be replaced. All penetrations of fireproofing shall be patched or sealed to restore the required fire resistance.



- C. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

## **1.07 DELIVERY, STORAGE AND HANDLING**

- A. Delivery and Storage:
  - 1. Deliver ceiling components to project site in original packages and protect during storage against damage.
  - 2. Before installing acoustical ceiling units, permit them to reach stabilized temperature and humidity of space where they will be installed.
- B. Handling: Handle ceiling components to avoid chipping or damaging them.

## **PART 2 PRODUCTS**

### **2.01 ACOUSTICAL UNITS**

- A. Acceptable Manufacturers: Acoustical ceiling systems are based on the products of manufacturers listed in the finish schedule and finish key of the Drawings.
- B. Substitutions: Subject to compliance with requirements, products of the following manufacturers may be substituted for prior approval upon matching Architect's control sample in color, texture, construction and performance characteristics. Final approval to be determined by Architect.
- C. Suspension Systems for Acoustical Tile Ceiling Systems:
  - 1. USG Ceiling Systems, Inc. - Donn DX Exposed Tee - 15/16", White.
  - 2. Armstrong Commercial Ceilings - Prelude XL Exposed Tee - 15/16", White.
  - 3. CertainTeed Commercial Ceilings - 15/16" Exposed Tee, White.
  - 4. Or Prior Approved Equal.
- D. Ceiling Tiles for Acoustical Ceiling Systems:
  - 1. Refer to Finish Schedule and Finish Key in Drawings for Basis of Design Products.
  - 2. Or Prior Approved Equal.

### **2.02 ACOUSTICAL CEILING UNITS, GENERAL**

- A. Standard for Acoustical Ceiling Units: Provide manufacturers' standard units that comply with ASTM E 1264 classifications specified.
- B. Mounting Method for Measuring NRC: Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches [400 mm] away from the test surface) per ASTM E 795.
- C. Colors and Patterns: Provide products to match appearance characteristics indicated.

### **2.03 METAL SUSPENSION SYSTEMS, GENERAL**

- A. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension systems that comply with ASTM C 635 requirements as specified. System to include die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and security hold down clips where required.
- B. Finishes and Colors: Provide manufacturer's full range of factory-applied finish.
- C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- D. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
  - 1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung) will be less than yield stress of wire, but not less than 0.106-inch diameter (12 gage).
- E. Edge Moldings and Trim: Manufacturer's standard moldings for edges and penetrations, of types and profiles indicated.
  - 1. Material: Roll-formed, hemmed-edge, galvanized steel.
  - 2. Finish: Provide manufacturer's full range of factory-applied finish to match system components.

## **2.04 RELATED MATERIALS**

- A. Concealed Acoustical Sealant: Nondrying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable synthetic rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission, Pecora "BA-98", Tremco "Acoustical Sealant", or similar.

## **2.05 SUSPENSION SYSTEM(S)**

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.

## **2.06 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.
- B. Hold-Down Clips: Manufacturer's standard clips to suit application.
- C. Perimeter Moldings: Same material and finish as grid.
  - 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- D. Acoustical Sealant For Perimeter Moldings: Non-hardening, non-skinning, for use in conjunction with suspended ceiling system.
- E. Touch-up Paint: Type and color to match acoustical and grid units.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.
- C. Examine ambient conditions, substrates and construction to which ceiling system attaches or abuts, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with ceiling installation until unsatisfactory conditions have been corrected.
- D. Layout: Generally, measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half-size units at borders, and comply with reflected ceiling plans.
- E. If drawing dictates specific layout or work point, comply with Drawings.
- F. Coordination: Furnish layouts for preset inserts, clips, and other devices for ceiling hangers which are installed as work of other Sections. Supply devices for installation well in advance of time needed.

### **3.02 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C 636/C 636M, ASTM E 580/E 580M, ASTM C 636/C 636M, ASTM E 580/E 580M, ASTM C 636/C 636M, and ASTM E 580/E 580M and as supplemented in this section.
- B. Arrangement: Arrange acoustical units and orient ceiling suspension grid shown by reflected ceiling plans.
- C. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- D. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size. Unless otherwise indicated.
- E. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

- F. Suspend ceiling hangers from structural components only, not from conduits, pipes, ducts, and other non-structural items. Do not attach hangers to metal deck or permanent metal forms.
- G. Install hangers plumb and free from contact with ducts, pipes, conduits or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counters playing, or other effective means.
- H. Space hangers not more than 4'-0" o.c. along each supported member unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.
- I. Where ducts and other construction interfere with the location of hangers, install supplemental suspension members and hangers in form of trapezes or equivalent devices to support ceiling loads within performance limits established by referenced standards.
- J. Secure wire hangers by looping and wire-tying, either directly to in-place construction or to inserts, eye-screws, or other secure, appropriate devices, and so that attachments will not fail due to age, corrosion, or elevated temperatures.
- K. Assemble and support suspension grid in accordance with grid manufacturer's instructions. Support grid independently of edge moldings; do not use edge moldings for support.
- L. Level suspension system to tolerance of 1/8" in 12'-0".
- M. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- N. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- O. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- P. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- Q. Do not eccentrically load system or induce rotation of runners.
- R. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8" inch in 12' 0". Miter corners accurately and connect securely.
  - 2. Install in bed of acoustical sealant.
  - 3. Use longest practical lengths.
  - 4. Overlap and rivet corners.
- S. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

### 3.03 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
  - 3. Double cut and field paint exposed reveal edges.

- G. Where round obstructions occur, provide preformed closures to match perimeter molding.
- H. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

**3.04 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**

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## SECTION 09 6500 - RESILIENT FLOORING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Resilient base.
- B. Installation accessories.

#### 1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.

#### 1.03 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025a.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- C. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2025.
- D. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021 (Reapproved 2025).
- E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures, for submittal process.
- B. Product Data: Provide data on all specified products and accessories, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- D. Verification Samples: Submit two samples, 2 x 2 inch minimum in size illustrating color and pattern for each resilient flooring product specified.
- E. Concrete Testing Standard: Submit a copy of ASTM F710.
- F. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Flooring Material: 20 square feet of each type and color.
  - 3. Extra Wall Base: 20 linear feet of each type and color.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect roll materials from damage by storing on end.
- B. Deliver products to Project site in original manufacturer's unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- C. Store products in dry spaces protected from the weather with ambient temperatures maintained between 50 degrees F (10 degrees C) and 90 degrees F (32 degrees C).
- D. Move products into spaces where they will be installed at least 48 hours in advance of installation.

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## **1.06 QUALITY ASSURANCE**

- A. Single-Source Responsibility for products: Obtain each type and color of product specified from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- B. Fire Performance characteristics: Provide products with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Cove Base:
    - a. Class B rating in ASTM E-84, NFPA 255, UL No. 273, ANSI 2.5, UBC No. 42.1 "Tunnel Test" with a smoke density of 150-200.

## **1.07 FIELD CONDITIONS**

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.
- B. Close spaces to traffic during installation of products specified in this Section.

## **1.08 SEQUENCING AND SCHEDULING**

- A. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.

## **1.09 EXTRA MATERIALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Floor Tile: Furnish one (1) box for every 20 boxes or fraction thereof, of each type, color, and pattern for floor tile installed.

## **PART 2 PRODUCTS**

### **2.01 RESILIENT BASE**

- A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
  - 1. Manufacturers:
    - a. Burke Flooring: [www.burkeflooring.com/#sle](http://www.burkeflooring.com/#sle).
    - b. Johnsonite, a Tarkett Company: [www.johnsonite.com/#sle](http://www.johnsonite.com/#sle).
    - c. Roppe Corp: [www.roppe.com/#sle](http://www.roppe.com/#sle).
    - d. Or prior approved equal.
  - 2. Height: 4 inch, unless noted otherwise.
  - 3. Thickness: 0.125 inch.
  - 4. Length: Roll.
  - 5. Color: To be selected by Architect from manufacturer's full range.
  - 6. Type: Cove base
  - 7. Inside and Outside Corners NOT ALLOWED.

### **2.02 ACCESSORIES**

- A. Primers, and Seaming Materials: Waterproof; types recommended by flooring manufacturer, and coordinated with Specification Section Crystalline Waterproofing
- B. Adhesives: Bases other than concrete: Water-resistant type recommended by manufacturer to suit resilient flooring product and substrate conditions indicated.
- C. Adhesives: Concrete installation: Bone Dry Vinyl Floor Adhesive, or other adhesives approved by Specification Section 07 1616 manufacturer for use over their concrete sealer.
- D. Moldings, Transition and Edge Strips: Refer to Transition Details Sheet, Finish Key, Finish Schedule and Interior Elevations in Drawings for Basis of Design Manufacturers and Products for moldings, transition and edge strips..

1. Moldings, Transition and Edge Strips identified in the Drawings are to establish the color, design intent, and required standard of quality. It is not the intent to preclude the use of other prior approved, acceptable manufacturers.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

### **3.02 PREPARATION**

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- C. Prohibit traffic until filler is fully cured.
- D. Clean substrate.
- E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

### **3.03 INSTALLATION - GENERAL**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- D. Scribe flooring to walls, columns, floor outlets, and other appurtenances to produce tight joints.

### **3.04 INSTALLATION - RESILIENT BASE**

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Install base on solid backing. Bond tightly to wall and floor surfaces.
- C. Scribe and fit to door frames and other interruptions.

### **3.05 CLEANING**

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

### **3.06 PROTECTION**

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

**END OF SECTION**

## SECTION 09 6813 - TILE CARPETING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Carpet tile, fully adhered.

#### 1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.
- B. Section 07 1616 - Crystalline Waterproofing.

#### 1.03 REFERENCE STANDARDS

- A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- B. CRI 104 - Standard for Installation of Commercial Carpet; 2018.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: For each type of carpet material, carpet cushion, and installation accessory specified. Submit manufacturer's printed data on physical characteristics, durability, fade resistance, and fire-test-response characteristics. Submit methods of installation for each type of substrate.
- C. Shop Drawings showing columns doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet. Indicate the following:
  - 1. Carpet type, color and dye lot.
  - 2. Locations where dye lot changes occur.
  - 3. Seam locations, types, and methods.
  - 4. Type of subfloor.
  - 5. Type of installation.
  - 6. Pile direction.
  - 7. Transition details to other flooring materials.
- D. Samples for verification of the following products, in manufacturer's standard sizes, showing the full range of color, texture and pattern variations expected. Prepare samples from the same material to be used for the Work. Label each sample with manufacturer's name, material type, color, pattern, and designation indicated on Drawings and carpet schedule. Submit the following:
  - 1. 12-inch square samples of each type of carpet material required.
  - 2. 12-inch samples of each type of exposed edge stripping and accessory item.
- E. Schedule of carpet using same room designations indicated on Drawings.
- F. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- G. Maintenance data for carpet to be included in the operation and maintenance manual specified in Division 1. Include the following:
  - 1. Methods of maintaining carpet, including manufacturer's recommended frequency for maintaining carpet.
  - 2. Precautions for cleaning materials and methods that could be detrimental to finishes and performance. Include cleaning and stain-removal products and procedures.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Carpet Tiles: Quantity equal to 3 percent of total installed of each color and pattern installed.



### 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified by the Floor Covering Installation Board (FCIB) or who can demonstrate compliance with FCIB certification program requirements.
- B. Single-Source Responsibility: Obtain each type of carpet from one source and by a single manufacturer.
- C. Provide flooring material to meet the following test performance criteria as tested by a recognized independent testing laboratory. Certified test reports shall be submitted by the carpet manufacturer for each test method. Requirements listed below must be met by all products being submitted for approval:
  - 1. Pill Test / DOC-FF-1-70 (ASTM D 2589) - Requirement: Pass
  - 2. Flooring Radiant Panel / ASTM E 648 - Requirements: Class I (Above 0.45 w/cm).
  - 3. CRI VOC Chamber Test/Indoor Air Quality test (CRI-IAQ) Green Label Plus Test.
  - 4. Lightfastness: Rating of not less than 5 on International Grey Scale after 40 SFU's when tested in accordance with AATCC Test Method 165.
  - 5. Crock fastness: Minimum stain rating on International Grey Scale of not less than 5 wet or dry when tested in accordance with AATCC Test Method 165.
  - 6. Atmospheric Fading: Burned Gas shall not be less than 5 on International Grey Scale after two cycles on each test as per AATCC Test Method 129 Ozone and AATCC Test Method 23.

### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Comply with the Carpet and Rug Institute's CRI 104, Section 5: "Storage and Handling".
- B. Deliver materials to Project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- C. Store materials on-site in original undamaged packages, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, with continuous blocking off ground.

### 1.07 PROJECT CONDITIONS

- A. Comply with CRI 104, Section 6: "Site Conditions".
- B. Space Enclosure and Environmental Limitations: Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and normally dry, work above ceilings is complete and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.
- C. Subfloor Moisture Conditions: Moisture emission rate of not more than 3 lb/1000 sq. ft./24 hours (14.6 kg/1000 sq. m/24 hours) when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55 deg F (12.7 deg C).
- D. Subfloor Alkalinity Conditions: A pH range of 5 to 9 when subfloor is wetted with potable water and pHydration paper is applied.

### 1.08 WARRANTY

- A. The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Carpet Warranty: Submit a written warranty executed by carpet manufacturer and installer agreeing to repair or replace carpet, including all labor and material for the removal of carpet to be replaced, slab preparation, shipping and installation of replacement material, that does not meet requirements for that fails in materials or workmanship within the specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.

1. Warranty Period: Life of the installation.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Tile Carpeting:
  1. Interface, Inc: [www.interface.com/#sle](http://www.interface.com/#sle).
  2. Tarkett : [www.commercial.tarkett.com](http://www.commercial.tarkett.com)
  3. Or prior approved equal.

### **2.02 CARPET TILE**

- A. Basis of Design Products:
  1. Refer to Finish Schedule, Finish Key and Floor Finish Plans in Drawings for Basis of Design manufacturers and products. Specific carpet products are identified to establish the required establish the color, design intent, and required standard of quality. It is not the intent to preclude the use of other prior approved, acceptable manufacturers.
- B. Size: As indicated in Drawings Finish Key and Floor Finish Plans.
- C. Applied Soil-Resistance Treatment: Manufacturer's standard material.
- D. Antimicrobial Treatment: Manufacturer's standard material.
- E. Performance Characteristics: As follows:
  1. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm.
  2. Dry Breaking Strength: Not less than 100 lbf per ASTM D 2646.
  3. Delamination: Not less than 3.5 lb/in. per ASTM D 3936.
  4. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
  5. Dimensional Stability: 0.2 percent or less per ISO 2551 (Aachen Test).
  6. Resistance to Insects: Comply with AATCC 24.
  7. Colorfastness to Crocking: Not less than 4, wet and dry, per AATCC 165.
  8. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) per AATCC 16, Option E.
  9. Antimicrobial Activity: Not less than 2 mm halo of inhibition for gram-positive bacteria; not less than 1 mm halo of inhibition for gram-negative bacteria; no fungal growth; per AATCC 174.
  10. Electrostatic Propensity: Less than 3.5 kV per AATCC 134.
- F. Environmental Requirements: Provide carpet tile that complies with testing and product requirements of Carpet and Rug Institute's "Green Label Plus" program.

### **2.03 INSTALLATION ACCESSORIES**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Edge Strips: Embossed aluminum, color as selected by Architect.
- C. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements to installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
  1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Rubber Edge Strips: Rubber or vinyl in manufacturer's standard matching carpet, of width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints. Refer to Drawings Transition Details Sheet for specific products at varying conditions.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of carpet. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Verify that subfloors and conditions are satisfactory for carpet installation and comply with requirements specified in this Section and those of the following:
  - 1. Carpet manufacturer.

### **3.02 PREPARATION**

- A. Comply with carpet manufacturer's installation recommendations to prepare substrates indicated to receive carpet installation.
- B. Level subfloor within 1/4 inch in 10 feet noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions.
  - 1. Use leveling and patching compounds to fill cracks, holes, and depressions in subfloor as recommended by the following:
    - a. Carpet manufacturer.
- C. Remove subfloor coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone.
- D. Broom or vacuum clean subfloors to be covered with carpet. Following cleaning, examine subfloors for moisture, alkaline salts, carbonation, or dust.
- E. Concrete-Subfloor-Preparation: Apply concrete-slab primer, according to manufacturer's directions, where recommended by the following:
  - 1. Carpet manufacturer.

### **3.03 INSTALLATION**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Comply with carpet manufacturer's recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position. Do not bridge building expansion joints with continuous carpet.
- C. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.
- D. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- E. Extend carpet under all moveable furnishings, equipment or fixtures unless otherwise noted.
- F. Fully adhere carpet tile to substrate.
- G. Complete installation of edge strips, concealing exposed edges.

### **3.04 CLEANING AND PROTECTION**

- A. Perform the following operations immediately after completing installation.
  - 1. Remove visible adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
  - 2. Remove protruding yarns from carpet surface.
  - 3. Vacuum carpet using commercial machine with face-beater element.
- B. Comply with CRI 104, Section 15: "Protection of Indoor Installation".

- C. Provide final protection and maintenance conditions, in a manner acceptable to manufacturer and Installer, that ensure carpet is without damage or deterioration at the time of Substantial Completion.

**END OF SECTION**

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## **SECTION 09 7000 - SPECIAL COATINGS "SEAMLESS EPOXY SHOWER SYSTEM"**

### **PART 1 – GENERAL**

#### **1.01 WORK INCLUDED**

- A. Provide labor, equipment and materials to complete and finish interior walls, and base coatings as indicated in drawings and as specified herein. Walls, and ceilings shall be a seamless system.
- B. All showers, to receive these coatings, unless noted otherwise in the Drawings.

#### **1.02 RELATED SECTIONS**

- A. Specified elsewhere:
  - 1. Section 033000 - Cast-in-Place Concrete.
  - 2. Section 042200 - Concrete Unit Masonry.

#### **1.03 QUALITY ASSURANCE**

- A. References: Cited Standards are incorporated herein by reference and govern the work:
  - 1. Pamphlet No. 03732, International Concrete Repair Institute (Sealing and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays).
- B. Single Source Responsibility - Obtain primary resinous wall and floor materials including hardening agents, finish or sealing coats from a single manufacturer with not less than five (5) years of successful experience in manufacturing and installing the principal materials described in this Section. Provide secondary materials only of type and from a source recommended by the manufacturer of the primary material.
- C. Contractor Experience: Furnish list of projects using materials specified for this project that applicator has furnished during the past five (5) years.
  - 1. Include the following:
  - 2. Letter from the manufacturer/distributor stating that contractor is an approved installer of the products specified in this Section.
  - 3. Submit written description of the contractors experience with the specified material over the last five (5) years.
  - 4. Submit a list of ten (10) projects of similar complexity and size as this project including Owner's names with phone numbers. References must be submitted ten (10) days prior to bid date for approval by Architect. Include with references the product data sheets of manufacturer's material meeting the specified product requirements per paragraph 2.2.D "Product Description".
- D. Sampling of Material:
  - 1. When directed by Architect/Engineer, obtain test samples from material stored at the project site or source of supply.
  - 2. Select samples at random from sealed containers.

#### **1.04 SUBMITTALS**

- A. Submit three (3) copies of manufacturer's product literature indicating technical data. If different than the approved products listed in Article 2.1, product data sheets must be submitted ten (10) days prior to bid date for Architect's approval subject to performance criteria in paragraph 2.2.D "Product Characteristics".
- B. Submit three (3) copies of manufacturer's Installation and Application Guide.
- C. Submit three (3) samples of finished product on substrate to be applied:
  - 1. Prepare samples on each type of material to be covered.
  - 2. Make samples not less than four (4) inches square.
  - 3. Submit samples in accordance with Section 013300.
  - 4. Flooring samples shall have a varying degree of skid resistance.
- D. Submit three (3) copies of manufacturer's Material Safety Data Sheets.

- E. Submit a list of ten (10) projects of similar complexity and size as this project including Owner's names and phone numbers. References must be submitted ten (10) days prior to bid date for approval of any product substitutions by Architect.
- F. Samples: Submit two samples, 2 inch by 4 inch in size illustrating color, texture and pattern for each floor material for each color specified.

#### **1.05 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Material shall be delivered to project site in manufacturer's original unopened containers.
- B. Materials shall be stored indoors, protected from damage, moisture, direct sunlight and temperatures below 40 degrees F or above 90 degrees F.
- C. Store all materials only in area or areas designated by the Owner solely for this purpose. Confine mixing, thinning, clean-up and associated operations, and storage of coating materials related debris before authorized disposal, to these areas. All materials are to be stored on pallets or similar storage/handling skids off the ground.
- D. Mix all coating materials in a designated enclosed mixing area. This enclosed area must protect the mixing operation and materials from direct sunlight, inclement weather, freezing, or other means of damage or contamination. Protect all other concrete and metallic surfaces and finishes from any spillage of material(s) within the mixing area.
- E. Do not use drain piping for disposal of coating materials.
- F. The Contractor shall take all precautions and implement all measures necessary to avert potential hazards associated with the decorative epoxy flooring system materials as described on the pertinent Material Safety Data Sheets or container labels.
- G. Deliver all materials to the job site in new, unopened containers. Each container shall bear the CSM's name and label.
- H. Labels on all material containers must show the following information:
  - 1. Name or title of product.
  - 2. Manufacturer's batch number.
  - 3. Manufacturer's name.
  - 4. Generic type of material.
  - 5. Application and mixing instructions.
  - 6. Hazardous material identification label.
  - 7. Shelf life date.
- I. All containers shall be clearly marked indicating any personnel safety hazards associated with the use of or exposure to the materials.
- J. All materials shall be handled and stored to prevent damage or loss of label.
- K. Do not use or retain contaminated, outdated, prematurely opened, diluted materials, or materials which have exceeded their shelf life.

#### **1.06 JOB CONDITIONS**

- A. Environmental Requirements:
  - 1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied. Surfaces to be coated shall be between 65°F and 90°F. Do not apply coating system at temperatures beyond those limits stated in manufacturer's technical data sheet unless given written permission by the manufacturer.
  - 2. Do not apply finish in areas where dust is being generated.
- B. Protection:
  - 1. Cover or otherwise protect finished work of other trades and surfaces not being coated concurrently or not to be coated.

### 1.07 MOCK UP

- A. Construct mock-up(s) of seamless shower system to serve as basis for evaluation of texture and workmanship.
  - 1. Number of Mock-Ups to be Prepared: One per system
  - 2. Use same materials and methods for use in the work.
  - 3. Locate where directed.
  - 4. Minimum Size: 2' by 2' with full depth base.

## PART 2 – PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Fluid Applied Walls & Ceilings of Showers:
  - 1. Tnemec Series 270 Stranlok, (Basis of Design).
  - 2. Prime Coat Corp.
  - 3. Or prior approved equal

### 2.02 MATERIALS

- A. Fluid Applied Walls & Ceilings of Showers:
  - 1. Tnemec Series 270 Stranlok
    - a. 1st Coat: Tnemec Series 130, Enviro Fill, apply at 60- 80 sq. ft. per gallon.
    - b. 2nd Coat: Tnemec Series 201, Epoxo Prime, apply at 6 - 8 mills thickness.
    - c. 3rd Coat: Tnemec Series 270 Stranlok, 35 - 40 mils thickness.
    - d. 4th Coat: Tnemec Series 280, Tmeme-Glaze, 6 - 8 mils thickness.
- B. Selected coating systems shall be applied in accordance with manufacturer's instructions and these specification documents. Floor and wall coating system are to be provided by a single manufacturer.
- C. Include on labels of containers:
  - 1. Manufacturer's name.
  - 2. Product name.
  - 3. Product number.
  - 4. Color.
  - 5. Instructions for reducing, where applicable.
  - 6. Component description.
- D. Product Characteristics:
  - 1. Wall Seamless System
    - a. Tensile Strength: 1500 psi (ASTM D638-77a).
    - b. Flexural Modulus: 2.1 x 10<sup>5</sup> psi (ASTM D 790).
    - c. Flexural Strength: 4,900 psi (ASTM D 790).
    - d. Heat Resistance Limitation: Continuous exposure: 250°F
    - e. Hardness: 85 Shore D (ASTM D 2240).
    - f. Bond Strength: >400 psi or substrate failure (ASTM D 4541).
    - g. Product Composition:
      - 1) Must contain chopped fiberglass strands, premixed into the material.
      - 2) Must be spray applied.
      - 3) Must form a horizontal matrix within the finished coating.
      - 4) All coatings used must be 100% solids products.
      - 5) Color must be continuous throughout the entire system.

### 2.03 COLORS

- A. Colors shall be as selected by the Designer from manufacturer's full range.

### 2.04 ACCESSORIES

- A. Epoxy coating for steel.

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1. A two (2) component, high-solids epoxy designed as a fast-curing steel or concrete coating with resistance to water, chemicals and abrasion to be used on metal such as access panels in wet areas where required.

## **2.05 FABRICATION**

- A. Shop Assembly/Mixing:
  1. Accomplish job mixing and application only when acceptable to the Architect.
  2. Mix components only in containers furnished by the manufacturer.
  3. Proportioning of two-part and three-part coatings shall be done in strict accordance with manufacturer's recommended procedures.
  4. Prime coat shall be mixed using a variable speed drill with a PS Jiffy blade. Parts A and B shall be pre-mixed and then combined and mixed together a minimum of two minutes. Ensure full blending of both parts with all material measured into the mixing container. Apply the mixed material within the pot life and temperatures recommended by the manufacturer.
  5. Intermediate fiber reinforced coats (not less than two (2)) shall be mixed similar to that method employed for the prime coat.
  6. Glaze coat, consisting of Parts A and B, shall be mixed similar to that method employed for the prime coat.
  7. For all mixing operations, the flooring system components shall be considered as hazardous materials. Read and observe container label warnings and Material Safety Data Sheets for health and safety information prior to starting mixing operations.
  8. Do not reseal mixed material. Permit final chemical set to occur in the container and when set has been achieved; dispose of hardened material by legal means.
  9. Do not apply any material that has exceeded shelf and pot life as determined by manufacturer.

## **PART 3 - EXECUTION**

### **3.01 INSPECTION**

- A. Examine surfaces scheduled to receive coating for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition through preparatory work as included in paragraph 3.2 Preparation of Surfaces.
- B. Notify Owner's agent immediately upon determination that surfaces scheduled to receive coating are unacceptable for proper adhesion or subsequent performance.
- C. Do not proceed with surface preparation or coating application until conditions are suitable.

### **3.02 PREPARATION OF SURFACES**

- A. Concrete Masonry Unit: Prior to installation of high performance coatings, CMU walls shall receive a visual inspection by the onsite manufacturer's representative to assure that the substrate is acceptable for coating. The Masonry Contractor is to correct any deficiencies.
  1. Allow new masonry to cure a minimum of 28 days.
  2. Mortar joints are struck clean and filled tightly to avoid gaps or holes and provide a neat, uniform appearance in accordance with procedures as outlined under Division 4.
  3. Removal of all mortar spatter, protruding mortar edges, and other excessive mortar.
  4. All rough edges shall be ground smooth.
  5. CMU to be cleaned as specified under requirements as outlined under Division 4.
  6. All surfaces shall be clean, dry and free of contaminants prior to installing coating system.

### **3.03 APPLICATION**

- A. General Requirements:
  1. Do not apply initial coating until moisture content of surface is within limitations recommended by coating manufacturer and never install coatings when the substrate temperature is less than five (5) degrees above dew point unless specifically approved, in writing, by the manufacturer.

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2. Apply primer at coverage rates recommended by manufacturer but at a rate that will produce a dry film thickness not less than 8 mils. Airless spray, brush or rollers may be used to apply the primer.
  3. After primer has become tacky apply the fiber reinforced epoxy system using 45:1 air powered airless spray rig with a gravity fed hopper attachment.
  4. When the fiber reinforced epoxy system has cured, abrade the substrates to remove exposed fiberglass and other surface imperfections. Apply glazing coat with a brush, roller or airless sprayer. A total DFT of the complete system shall be a minimum 45 mils thick.
  5. Keep all application equipment free from contaminants and suitable for the finish required.
  6. Comply with recommendations of product manufacturer for cure times and re-coat windows. Unless specifically allowed by the manufacturer re-coat windows will not be violated.
  7. Finish coats shall be smooth to the touch and free of skipped or missed areas. An orange peel texture with occasional fiberglass lump is normal and acceptable.
  8. Where walls and floors abut and are both of a resinous material, obtain all coating materials from a single manufacturer being sure to meet all re-coat windows to insure a seamless installation.
  9. Make edges where adjoining other materials or colors, clean and sharp with no overlapping.
  10. Change colors at points designated by Architect and/or on color schedule where colors differ between adjoining spaces or rooms and where door frames match wall colors.
- B. Mock-up
1. Prior to commencing the installation, the Contractor shall install with the owner's approval, a mutually agreed upon mock-up test sample to show final color, texture and appearance of the decorative epoxy flooring system. No work shall continue until the mock-up is approved by owner or architect.
- C. Walls System:
1. Apply Tnemec Series 130 Envirofill block filler at a minimum rate of 60-80 Sq. Ft. per gallon or as required to completely fill pores and voids. Spot filling maybe required after the block filler application to completely fill voids.
  2. Apply Tnemec Series 201 Epoxo-prime primer at coverage rates of 6- 8 dry mils. Airless spray, brush or rollers may be used to apply the primer.
  3. After primer has become tacky apply Tnemec Series 270 Stranlok to wrap walls and floors to achieve a thickness of 35-40 dry mils. Multiple Passes may be required to achieve the specified film thickness.
  4. When the fiber reinforced epoxy system has cured, abrade the substrates to remove exposed fiberglass and other surface imperfections. Tnemec Series 280, Tneme-Glaze, at a rate of 6-8 dry mils. A total DFT of the complete wall system shall be a minimum 45 mils thick.
  5. Finished product shall be uniform in color and texture and free of skipped or missed areas.
  6. The final finish shall be void and pinhole free.

### **3.04 FIELD QUALITY CONTROL INSPECTION AND TESTING**

- A. Observation by the Architect, Owner or others does not limit the Contractor's responsibilities for quality as specified herein or as required by the CSM's instructions.
- B. The Contractor shall perform the Q.C. procedures listed below in conjunction with the requirements of this Section. The Architect will inspect the work to determine conformance to the contract documents.
1. Degree of Cleanliness.
  2. Visually inspect the degree of cleanliness of substrates to meet the requirements of this Section. The pH of the concrete substrates will be measured using pH indicating papers. pH testing is to be performed once every 100 sq. ft. of surface area to be coated.

3. Acceptable pH values shall be between 8.0 and 11.0 as measured by a full-range (1-12) color indicating pH paper with readable color calibrations and a scale at whole numbers (minimum). Use Hydrion Insta-Chek Jumbo 0-13 or 1-12 or equal. The paper shall be touched to the surface once using moderate finger pressure. The surface shall not be wiped or moved laterally to disturb the surface during pH testing. Following the one touch, lift the paper vertically to not "wipe" the surface. Compare the color indicated with the scale provided and record the pH.
4. Note: If the surface of the concrete is dry, it is not possible to take a pH measurement. However, pH values are still important on dry surfaces. When a dry concrete substrate is encountered for a pH test, the surface where the pH test is to be performed shall be sprayed lightly with distilled, deionized water from a commercially available spray bottle that has been properly rinsed to preclude any dissolved solids. The spray shall just wet the surface to a "shiny" appearance. Wait 60 seconds to allow chemical equilibria to be established and then test the pH of the water on the surface. Perform this test in accordance with ASTM D4262.
5. Concrete Surface Profile
6. Using the replicate rubber specimens inspect the concrete surface profile in accordance with ICRI Guide No. 03732. This should be performed once for every 100 square feet of surface area to be coated.
7. Measure and record ambient air temperature once every two hours of each shift using a thermometer and measure and record substrate temperature once every two hours using a surface thermometer.
8. Measure and record relative humidity every two hours of each shift using a sling psychrometer in accordance with ASTM E337.
9. Inspect correct mixing of coating materials in accordance with the CSM's instructions.
10. Inspect and record that the "pot life" of coating materials used are not exceeded during installation.
11. Measure and record the thickness of the coating system using a notched gauge in accordance with ASTM D4414 for Wet Film Thickness at least once every 10 sq. ft. of coating area.
12. Perform moisture tests on concrete as follows:
  - a. Once for every 500 square feet of surface area to be coated, perform the plastic sheet test in accordance with ASTM D4263. If moisture is indicated, proceed to step 2 below.
  - b. Perform calcium chloride moisture tests in accordance with ASTM D1869 once for every 1000 square feet of surface area to be coated. The maximum limit for moisture vapor emissions rate should be 20.0 lbs. per 24 hours per 1000 sq. ft. If tests indicate rates higher than 20.0, consult with Tnemec's Technical Service Department for further evaluation.
13. Inspect to verify proper curing of the decorative epoxy flooring system as recommended by the CSM.

### 3.05 CLEANING

- A. Remove debris promptly from work area and dispose of properly.
- B. Remove spilled, splashed, or splattered coating materials from all surfaces.
- C. Do not mar surface finish of items being cleaned.

### 3.06 FINISH SCHEDULE

- A. Apply high performance coating systems to all areas shown on the drawings or specified in the Room Finish Schedule.
- B. Install cant cove base as shown in the drawings.
- C. Unless directed by the contract documents, do not install high performance coatings on:
  1. Ferrous metals installed in concrete slabs.
  2. Non-ferrous metals installed in or adjacent to concrete slabs.

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3. Pipe, conduit, floor drains, insulated conductors, or other electrical, mechanical or process-related equipment.

### **3.07 GUARANTY/WARRANTY**

- A. Provide Owner's agent with an appropriate form of warranty against defects in material and workmanship for a period of three (3) years from date of Substantial Completion, or date of beneficial occupancy, if earlier than date of Substantial Completion.
- B. Issuance of Warranty to Owner's agent shall be a conditional precedent to receipt of final payment to the coating contractor.
- C. Extent of Warranty shall be limited to the repair or replacement of defective surfaces at no cost to the Owner, and for any damage directly resulting from such defects during the warranty period. The warranty shall not include any remedy for defects caused by abuse, improper maintenance or operation, or by normal wear, tear and usage.

**END OF SECTION**

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## SECTION 09 9000 - PAINTING AND COATING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished
- D. Do Not Paint or Finish the Following Items:
  - 1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Stainless steel, anodized aluminum, bronze, terne, and lead items.
  - 6. Marble, granite, slate, and other natural stones.
  - 7. Floors, unless specifically so indicated.
  - 8. Ceramic and other tiles.
  - 9. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
  - 10. Glass.
  - 11. Exterior Plaster
  - 12. Concealed pipes, ducts, and conduits.

#### 1.02 RELATED REQUIREMENTS

- A. Section 09 9600 - High-Performance Coatings.

#### 1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2015.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide data on all finishing products, including VOC content.
- C. Samples: Submit two paper chip samples, 12 X 12 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.
  - 1. Where sheen is specified, submit samples in only that sheen.
  - 2. Where sheen is not specified, submit each color in each sheen available.
  - 3. Where sheen is not specified, discuss sheen options with Grace & Hebert Architects, APAC before preparing samples, to eliminate sheens definitely not required.
- D. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

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- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum seven years experience.

#### **1.06 MOCK-UP**

- A. Apply mock-ups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Provide panel, 10 feet long by 10 feet wide, illustrating ALL coating color, texture, and finish.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.08 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
- F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

#### **1.09 EXTRA MATERIALS**

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Supply 1 gallon of each color; store where directed.
- C. Label each container with color in addition to the manufacturer's label.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

- C. Paints:
  1. Basis of Design: Sherwin Williams Company: [www.sherwin-williams.com](http://www.sherwin-williams.com).
  2. Benjamin Moore & Co: [www.benjaminmoore.com/#sle](http://www.benjaminmoore.com/#sle).
  3. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
- D. Primer Sealers: Same manufacturer as top coats.
- E. Block Fillers: Same manufacturer as top coats.
- F. Substitutions: Prior approved equal only.

## 2.02 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
  1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
  4. Supply each coating material in quantity required to complete entire project's work from a single production run.
  5. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
  1. Gypsum Board: Interior Institutional Low Odor/VOC Primer Sealer.
  2. Concrete: Interior Institutional Low Odor/VOC Primer Sealer.
  3. Concrete Masonry: Interior/Exterior Latex Block Filler.
  4. Steel, Uncoated: Interior Rust-Inhibitive Water Based Primer.
  5. Galvanized Steel: Interior Water Based Galvanized Primer.
- C. Volatile Organic Compound (VOC) Content:
  1. Provide coatings that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      - 1) Flat Paints and Coatings: 0 g/L.
      - 2) Nonflat Paints and Coatings: 0 g/L.
      - 3) Industrial Maintenance Coatings: 250 g/L.
      - 4) Dry-Fog Coatings: 150 g/L.
      - 5) Primers, Sealers, and Undercoaters: 100 g/L.
      - 6) Anticorrosive and Antirust Paints Applied to Ferrous Metals: 100 g/L.
      - 7) Zinc-Rich Industrial Maintenance Primers: 340 g/L.
      - 8) Pretreatment Wash Primers: 420 g/L.
      - 9) Floor Coatings: 50 g/L.
      - 10) Shellacs Clear: 730 g/L.
      - 11) Shellacs, Pigmented: 550 g/L.
  2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Colors: As indicated on drawings, or as selected by Architect
  1. Allow for minimum of six colors for each system, unless otherwise indicated, without additional cost to Owner.

2. Extend colors to surface edges; colors may change at any edge as directed by Architect.

### 2.03 PAINT SYSTEMS - EXTERIOR

- A. All Exterior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry, and primed metal.
  1. Preparation as specified by manufacturer.
  2. Two top coats and one coat primer recommended by manufacturer.
  3. Primer(s): As recommended by manufacturer of top coats.
- B. Masonry/Concrete, Opaque, Latex, 3 Coat:
  1. One coat of block filler.
  2. Semi-gloss: Two coats of latex enamel.
- C. Ferrous Metals, Unprimed, Alkyd, 3 Coat:
  1. One coat of alkyd primer.
  2. Gloss: Two coats of alkyd enamel; \_\_\_\_.
- D. Galvanized Metals, Alkyd, 3 Coat:
  1. One coat galvanize primer.
  2. Gloss: Two coats of alkyd enamel; \_\_\_\_.
- E. Galvanized Metals, Latex, 3 Coat:
  1. One coat galvanize primer.
  2. Gloss: Two coats of latex enamel.

### 2.04 PAINT SYSTEMS - INTERIOR

- A. All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry, wood, uncoated steel, shop primed steel, and galvanized steel.
  1. Primer(s): As recommended by manufacturer of top coats.
- B. SC-1:Concrete Floors Indicated to be Painted.
  1. Two top coats and one coat primer.
  2. Top Coat Product(s):
    - a. Sherwin-Williams Tread-Plex Acrylic Floor Coating.
- C. Wood, Transparent, Varnish, Stain:
  1. One coat of stain; as specified.
  2. One coat sealer ; as specified.
  3. Satin: One coat of varnish; as specified.
- D. Concrete/Masonry, Opaque, Latex, 3 Coat:
  1. One coat of block filler.
  2. Semi-gloss: Two coats of latex enamel.
- E. Ferrous Metals, Primed, Alkyd, 2 Coat:
  1. Touch-up with alkyd primer.
  2. Gloss: Two coats of alkyd enamel; As specified.
- F. Galvanized Metals, Alkyd, 3 Coat:
  1. One coat galvanize primer.
  2. Gloss: Two coats of alkyd enamel.
- G. Concrete/Masonry, Epoxy Enamel, 3 Coat:
  1. One coat of catalyzed epoxy primer.
  2. Gloss: Two coats of catalyzed epoxy enamel.
- H. Gypsum Board/Plaster, Latex, 3 Coat:
  1. One coat of latex primer sealer.
  2. Eggshell: Two coats of latex enamel; at areas specified.
  3. Flat: Two coats of latex enamel; Ceilings.

- I. Gypsum Board/Plaster, Epoxy System, 3 Coat:
  1. One coat interior latex primer/sealer.
  2. Semi-gloss: Two coats of water based epoxy gypsum board coating; at all wet areas - restrooms, locker rooms, shower areas, etc.

## **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  1. Gypsum Wallboard: 12 percent.
  2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
  3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
  4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
  5. Concrete Floors and Traffic Surfaces: 8 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
  1. Application of coating indicates acceptance of surfaces and conditions.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or repair existing coatings that exhibit surface defects.
- D. Remove surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- H. Concrete Floors and Traffic Surfaces to be Painted: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- J. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.



- K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

### **3.03 APPLICATION**

- A. Apply paints according to manufacturer's written instructions:
1. Use applicators and techniques suited for paint and substrate indicated.
  2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### **3.04 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

**END OF SECTION**

## **SECTION 09 9723 - CONCRETE AND MASONRY COATINGS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Moisture resistant smooth concrete and masonry coatings.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 09 9000 - Painting and Coating.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2019.
- B. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity; 2015 (Reapproved 2020).
- C. ASTM D6904 - Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied on Masonry; 2003 (Reapproved 2022).
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.
- E. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013 (Reapproved 2021).

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide data indicating coating materials.
- C. Samples: Submit two samples 12 by 12 inch in size illustrating colors available for selection.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- E. Maintenance Data: Include cleaning procedures and repair and patching techniques.

#### **1.05 QUALITY ASSURANCE**

- A. Maintain one copy of each referenced document that applies to application on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- C. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

#### **1.06 MOCK-UP**

- A. Provide mock-up, 4 feet long by 4 feet wide, illustrating coating, color, and surface sheen, for each specified coating.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

#### **1.07 FIELD CONDITIONS**

- A. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.
- B. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.
- C. Restrict traffic from area where coating is being applied or is curing.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for bond to substrate.

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## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Concrete and Masonry Coatings:
  - 1. **Basis of Design:** BASF: BASF Corporation; [www.master-builders-solutions.basf.us](http://www.master-builders-solutions.basf.us)
  - 2. Sika Corporation: [www.usa.sika](http://www.usa.sika)
  - 3. Sto Corp: [www.stocorp.com](http://www.stocorp.com)
  - 4. Or prior approved equal.

### **2.02 CONCRETE AND MASONRY COATINGS**

- A. Provide high-build, weather resistant coating systems that meet the following minimum performance criteria, unless more stringent criteria are specified:
  - 1. Salt Spray Resistance: Passes when tested according to ASTM B117 for 2000 hours.
  - 2. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0, maximum, when tested in accordance with ASTM E84.
  - 3. Accelerated Outdoor Exposure: Passes when tested according to ASTM G153 for 5,000 hours.

### **2.03 MATERIALS**

- A. Coatings - General: Provide complete systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated.
- B. Water Based Weather Resistant Smooth Coating: Single component acrylic coating, color pigments, and acrylic polymer.
  - 1. Dry Film Thickness: 8.4 mils minimum, per coat.
  - 2. Moisture Resistance: No adhesion loss, discoloration, blistering, cracking, or flaking when tested in accordance with ASTM D2247, 14 day exposure.
  - 3. Wind Driven Rain Resistance: No water penetration when tested according to ASTM D6904; weight gain less than 0.02 lbs for one coat, weight gain less than 0.09 lbs for two coats.
  - 4. Color: To be selected by Architect from manufacturer's custom range.
  - 5. Manufacturers:
    - a. **Basis of Design:** Master Builders Solutions; MasterProtect HB 400: [www.master-builders-solutions.com/en-us/#sle](http://www.master-builders-solutions.com/en-us/#sle).
    - b. Sika Corporation; Thorocoat 400: [www.usa.sika](http://www.usa.sika)
    - c. Sto Corp; StoColor Acryl Plus: [www.stocorp.com/#sle](http://www.stocorp.com/#sle).
    - d. Or prior approved equal

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.
- C. Cementitious Substrates: Do not begin application until substrate has cured 28 days minimum and measured moisture content is not greater than 16 percent.

### **3.02 PREPARATION**

- A. Clean surfaces of loose foreign matter.
- B. Remove substances that would bleed through finished coatings.
- C. Remove finish hardware, fixture covers, and accessories and store.
- D. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

### **3.03 PRIMING**

- A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.
- B. Concrete and Masonry: Prior to priming, patch holes and indentations and fill cracks with manufacturer's recommended crack repair material.

### **3.04 COATING APPLICATION**

- A. Apply coatings in accordance with manufacturer's instructions, to thicknesses specified.
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

### **3.05 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

### **3.06 PROTECTION**

- A. Protect finished work from damage.

**END OF SECTION**

## SECTION 10 1400 - SIGNAGE

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Work required for this section includes code required signs, including ADA, and supplementary items necessary to complete their installation.
- B. Handicapped Bathroom Signage
- C. Emergency Exit Signage
- D. Room and door signs.
- E. Emergency evacuation maps.
- F. Building identification signs.
- G. Acrylic Signage
- H. Plaque.

#### 1.02 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures, for submittal process.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
  - 1. Submit for approval by Owner through Architect prior to fabrication.
- D. Shop Drawings:
  - 1. Include fabrication and installation details and attachments to other work.
  - 2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
  - 3. Show message list, typestyles, graphic elements, and layout for plaque at least half size.
  - 4. Show locations of electrical service connections.
  - 5. Include diagrams for power, signal, and control wiring.
- E. Samples: Submit , of size similar to that required for project, illustrating sign style, font, and method of attachment.
- F. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- H. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

#### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

#### 1.04 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

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## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Flat Signs:
  - 1. 2/90 Sign Systems: [www.290signs.com](http://www.290signs.com) or approved equal.
  - 2. Contact: Jessica Roy at AOS, Phone Number- 504-561-8400
    - a. Sign Type Drawings: Re: Signage Drawings for Type & Location.
- B. Dimensional Letter Signs:
  - 1. A.R.K. Ramos Signage Systems - Product: Reverse Channel Letters.
  - 2. ASI Sign Systems, Inc. - Product: LF Series Dimensional Letters.
  - 3. Or approved equal.
- C. Plaques:
  - 1. Cosco Industries: [www.coscoarchitecturalsigns.com/#sle](http://www.coscoarchitecturalsigns.com/#sle).
  - 2. FASTSIGNS: [www.fastsigns.com/#sle](http://www.fastsigns.com/#sle).
- D. Acrylic Dimensional Lettering:
  - 1. ASI LPP Series Acrylic Dimensional Letters
  - 2. Or approved equal.
- E. Stenciled Painted Lettering:
  - 1. Painted stenciled lettering and numbering to be surface applied to substrate. Provide room name or cell letter/number (name/number info as stipulated by Owner.)
  - 2. Stenciled lettering to be located on detention and cell doors or wall above door to named rooms in areas where no door is available.

### **2.02 SIGNAGE APPLICATIONS**

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
  - 1. Sign Type: signs with panel media as specified.
  - 2. Provide "tactile" signage, with letters raised minimum and Grade II braille.
  - 3. At all signage located in detention areas or indicated in drawings as detention signage, provide tamper resistant tactile and braille signage.
  - 4. Character Height: As indicated in drawings.
  - 5. Sign Height: As indicated in drawings by signage type designation.
  - 6. Office Doors: Identify with at signage types indicated.
  - 7. Conference and Meeting Rooms: Identify with at signage types indicated.
  - 8. Service Rooms: Identify with .
  - 9. Rest Rooms: Identify with pictograms, the names "MEN", "WOMEN", "UNISEX", or "RESTROOM" as indicated in Drawings, and braille.
- C. Emergency Evacuation Maps:
  - 1. Allow for one map per elevator lobby.
  - 2. Allow for four maps per floor to be installed at location as directed by code official or Owner.
  - 3. Map content to be provided by Owner.

### **2.03 SIGN TYPES**

- A. Flat Signs: Signage media without frame. Provide end caps at sign types where indicated in Drawings.
  - 1. Edges:
  - 2. Corners: Square at Sheriff's Office signage, Radiused at Detention Signage and Other Signage as Indicated in Drawings..
  - 3. Provide Endcaps at Signage Types Indicated in Drawings

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- a. Basis of Design: Slimline (SL)
  - b. Color: Metallic as selected by Architect from Manufacturer's Full Range
- 4. Wall Mounting of One-Sided Signs:
- B. Color and Font Flat Signs: Unless otherwise indicated:
  - 1. Character Font: Helvetica Regular.
  - 2. Character Case:
  - 3. Insert Color: Color as provided by Architect
  - 4. Vinyl Color: Color as provided by Architect
  - 5. Edge Style: Slimline
  - 6. End Cap Color: Color as provided by Architect
  - 7. Character Color: Color as provided by Architect

#### **2.04 TACTILE SIGNAGE MEDIA**

- A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
  - 1. Total Thickness:
- B. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
  - 1. Total Thickness:
  - 2. Letter Thickness:
  - 3. Letter Edges:

#### **2.05 PLAQUES**

- A. Metal Plaques:
  - 1. Metal:
  - 2. Metal Thickness: , minimum.
  - 3. Size as Indicated in Drawings
  - 4. Text and Typeface:
    - a. Character Font:
    - b. Character Case:
    - c. Character Color: color.
  - 5. Border Style:
  - 6. Background Texture:
  - 7. Surface Finish:
  - 8. Painted Background Color:
  - 9. Protective Coating:

#### **2.06 STENCIL LETTERING**

- A. Signage Type XI: Provide painted stencil lettering and numbering at Cell Doors and Other Locations as Indicated.
  - 1. 3" High Lettering at Cell Doors
  - 2. Lettering Height at other Locations to be Determined based on Room Name as Architect's Direction.

#### **2.07 ACRYLIC DIMENSIONAL LETTERING**

- A. Text: As indicated in Drawings.
- B. Mount Letters to wall with tape or concealed fasteners.
  - 1. Lobby Signage to be Pin Mounted
- C. Size: As Indicated in Drawings.
  - 1. Lobby Signage: 4 1/2" Height
- D. Depth: 1"
- E. Color: As selected by Architect from Manufacturer's Full Range
- F. Edges to be Painted to Match Finish Face

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## 2.08 DIMENSIONAL LETTERS

- A. Fabricated Channel Characters: Metal face and side returns, formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability and for securing fasteners; and as follows:
  - 1. Manufacturers: As indicated above.
  - 2. Illuminated Characters: Backlighting character construction with LED lighting including transformers, insulators, and other accessories for operability, with provision for servicing and concealing connections to building electrical system. Use tight or sealed joint construction to prevent unintentional light leakage. Space lamps apart from each other and away from character surfaces as needed to illuminate evenly.
    - a. Power: As indicated on electrical drawings.
    - b. Weeps: Provide weep holes to drain water at lowest part of exterior characters. Equip weeps with permanent baffles to block light leakage without inhibiting drainage.
    - c. Locations: Exterior signage to be illuminated.
  - 3. Character Material: Sheet or plate painted aluminum.
  - 4. Material Thickness: Manufacturer's standard for size and design of character.
  - 5. Character Height: As indicated in drawings.
  - 6. Character Depth: As indicated in drawings.
  - 7. Finishes:
    - a. Integral Painted Aluminum Finish: As selected by Architect from full range of industry finishes.
  - 8. Mounting: As indicated.
  - 9. Typeface: As indicated.
- B. Metal Letters:
  - 1. Metal:
  - 2. Finish:
  - 3. Character Height: As indicated in drawings.
  - 4. Mounting:

## 2.09 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

## 2.10 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
  - 1. Use concealed fasteners and anchors unless indicated to be exposed.
  - 2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
  - 3. Exposed Metal-Fastener Components, General:
    - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
    - b. Fastener Heads: For nonstructural connections, use flathead or countersunk screws and bolts with tamper-resistant Allen-head, spanner-head, or one-way-head slots unless otherwise indicated.
  - 4. Sign Mounting Fasteners:



- a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
  - b. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, installed in predrilled holes.
- B. At all Signs Located in Detention Areas or Indicated as Detention Signage, provide tamper resistant fasteners and secure to walls. Tape Adhesive not acceptable at these locations.
- C. Tape Adhesive: Double sided tape, permanent adhesive, for flat signs

## 2.11 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
  - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
  - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
  - 3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
  - 4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
  - 5. Internally brace signs for stability and for securing fasteners.
  - 6. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
  - 7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
- B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.
  - 1. Aluminum Brackets: Factory finish brackets to match sign background finish unless otherwise indicated.

## PART 2 EXECUTION

### 3.01 EXAMINATION

- A. Acceptance of Surfaces and Conditions: Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.
- B. Verify that electrical service is correctly sized and located to accommodate signs.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION, GENERAL

- A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to the following, unless otherwise specified:
  - 1. Respective manufacturer written installation instructions.
  - 2. Accepted submittals.
  - 3. Contract Documents.

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- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.
- C. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
  - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
  - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- D. Install in accordance with manufacturer's instructions.
- E. Install neatly, with horizontal edges level.
- F. Locate signs where indicated or as required by Architect.
  - 1. Room and Door Signs: Locate on wall at latch side of door with centerline of sign at 60 inches above finished floor.
- G. Mounting Methods:
  - 1. At all Signs Located in Detention Areas or Indicated as Detention Signage, provide tamper resistant fasteners and secure to walls. Tape Adhesive not acceptable at these locations.
  - 2. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry and Concrete Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
  - 3. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
  - 4. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position so that signage is correctly located and aligned.
  - 5. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
  - 6. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of plaque and of suitable quantity to support weight of plaque without slippage. Keep strips away from edges to prevent visibility at plaque edges. Place plaque in position, and push to engage tape adhesive.

### 3.03 PREPARATION

- A. General: Comply with manufacturer's instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.

### 3.04 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
  - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
  - 2. Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent

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walls. Locate to allow approach within 3 in. of sign without encountering protruding objects or standing within swing of door.

### **3.05 CLEANING AND PROTECTION**

- A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.
- B. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- C. Remove temporary protective coverings and strippable films as signs are installed.
- D. On completion of installation, clean exposed surfaces of plaques according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain plaques in a clean condition during construction and protect from damage until acceptance by Owner.
- E. Protect from damage until Substantial Completion; repair or replace damaged items.

### **3.06 SCHEDULE OF SIGNS**

- A. Interior Signs:
  - 1. Provide a sign at each door to each room of the building except teacher closets within each classroom.
  - 2. Reference signage spec drawings for each type of sign, materials, and colors.
    - a. Include braille message as required by ADA.
- B. Exterior Room Signs:
  - 1. Provide weather rated exterior sign at each of the following doors on the exterior of the building:
    - a. Fire Riser Room
    - b. Electrical (if exists)
    - c. Kitchen (if exists)
- C. Interior Job Plaque:
  - 1. Provide interior plaque sign. Reference signage spec drawings for materials and details.
- D. Exterior Address Signs:
  - 1. Provide a vinyl number sign above the front entry doors to the building on glass. 8" minimum high.
  - 2. Provide aluminum cast numbers large enough, 8" minimum, to meet local FD requirements in location to be determined by AHJ.
- E. Exterior Building Sign:
  - 1. Provide aluminum letters as shown in attached drawings - labeled Building Signage.
- F. Job Sign:
  - 1. Provide 3 - 4' x 8' sheet of plywood or Masonite with Owner directed signage to be included for project job sign. Mount on 4 x 4 posts or as needed to stand for duration of project.

**END OF SECTION**

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## **SECTION 10 2113.19 - PLASTIC TOILET COMPARTMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Solid plastic toilet compartments.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 05 5000 - Metal Fabrications: Concealed steel support members.
- B. Section 06 1000 - Rough Carpentry: Blocking and supports.
- C. Section 10 2800 - Toilet, Bath, and Laundry Accessories.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM International (ASTM):
  - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 2. ASTM B 85 - Standard Specification for Aluminum-Alloy Die Castings.
  - 3. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- B. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Submittal Procedures.
- B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- C. Product Data: Provide data on panel construction, hardware, and accessories. Include preparation instructions and recommendations, storage and handling requirements and recommendations, and installation methods.
- D. Samples: Submit two samples of partition panels, 4 by 4 inch in size illustrating panel finish, color, and sheen.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.
- B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.
- C. Performance Requirements:
  - 1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
    - a. Class B flame spread/smoke developed rating, tested to ASTM E84.
  - 2. Material Fire Ratings:
    - a. National Fire Protection Association (NFPA) 286: Pass

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.

## 1.08 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.09 WARRANTY

- A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Solid Plastic Toilet Compartments:
  - 1. ASI Accurate Partitions; Solid Plastic (HDPE) Partitions, Floor Anchored, Overhead Braced: [www.asi-accuratepartitions.com/#sle](http://www.asi-accuratepartitions.com/#sle).
  - 2. ASI Global Partitions: [www.asi-globalpartitions.com/#sle](http://www.asi-globalpartitions.com/#sle).
  - 3. **Basis of Design:** Scranton Products (Santana/Comtec/Capital); Eclipse Partitions: [www.scrantonproducts.com/#sle](http://www.scrantonproducts.com/#sle).
  - 4. Or prior approved equal..

### 2.02 MATERIAL

- A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface;
  - 1. Fire-resistance Rating: Tested in Accordance with NFPA 286.
  - 2. Fire-resistance Rating: Tested to meet ASTM E84, Class B.
  - 3. Standard Collection, Does not meet NFPA 286 or ASTM E84
- B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.
- C. Aluminum Die Castings: ASTM B85, A380 alloy.
- D. Stainless Steel Castings: ASTM A167, Type 304.
- E. Rubber: Abrasion resistant Styrene Butadiene Rubber, 65 to 80 Shore A durometer, black

### 2.03 SOLID PLASTIC TOILET COMPARTMENTS AND SCREENS

- A. Basis of Design: Eclipse Toilet Partitions as manufactured by and supplied by Scranton Products.
  - 1. Style: Floor mounted overhead-braced toilet compartments.
- B. Doors and Panels: High density polyethylene (HDPE), fabricated from extruded polymer resins, forming single thickness panel.
  - 1. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
  - 2. Thickness: 1 inch (25 mm).
  - 3. Edges: Shiplap.
- C. Panel Color: To be selected by Architect from manufacturer's full range.
- D. Doors and Dividing Panels:
  - 1. Panels - Extra Privacy:
    - a. Height: 84 inches (2133 mm) high.
- E. Metal Posts: 82.75 inches (2102 mm) high, heavy duty extruded aluminum, clear anodized finish, fastened to foot with stainless steel tamper resistant screw.
- F. Hidden Shoe (Foot): One-piece molded polyethylene invisible shoe inserted into metal post and secured to metal post with stainless steel tamper resistant screw.

- G. Headrail Cap and Corner Cap: One-piece molded polyethylene secured to metal post with stainless steel tamper resistant screw; adjustable to level headrail to finished floor.
- H. Wall Brackets: Continuous heavy duty extruded aluminum, clear anodized finish, inserted into slotted panel and fastened to panels with stainless steel tamper resistant screws.
  - 1. Length: 71 inches (1803 mm).
- I. Headrail: Heavy duty extruded aluminum, designer anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant screw and to headrail cap or corner cap with stainless steel tamper resistant screw.
  - 1. Headrail Brackets: Heavy duty extruded aluminum, clear anodized finish, secured to wall with stainless steel tamper screws.
- J. Door Hardware:
  - 1. Hinges:
    - a. Edge-mounted helix style stainless steel continuous hinge.
      - 1) Closing degree: 5 degrees.
      - 2) Comes to a full close on its own weight
  - 2. Occupancy Indicator Latch and Housing:
    - a. Material: Satin stainless steel.
    - b. Occupancy indicators: Green for occupied and red not occupied.
    - c. Slide bolt and button.
  - 3. Coat Hook and Door Bumper Combination:
    - a. Material: Chrome plated Zamak
    - b. Handicap Door: Equip with second door pull and door stop.
  - 4. Door Pulls: Chrome plated Zamak

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect

### **3.03 INSTALLATION**

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Locate bottom edge of doors and panels 4 inches (102 mm) above finished floor.
- C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).
- D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- E. Finished surfaces shall be cleaned after installation and be left free of imperfections

### **3.04 TOLERANCES**

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

### **3.05 ADJUSTING**

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

### **3.06 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion

**END OF SECTION**

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## SECTION 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Utility room accessories.

#### 1.02 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Concealed supports for accessories, including in wall framing and plates and above ceiling framing.
- B. Section 06 1000 - Rough Carpentry: Placement of concealed anchor devices.
- C. Section 10 2113.19 - Plastic Toilet Compartments.

#### 1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.
- C. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Commercial Toilet, Shower, and Bath Accessories:
  - 1. **Basis of Design:** Bobrick Washroom Equipment, Inc.
  - 2. ASI - American Specialties, Inc: [www.americanspecialties.com](http://www.americanspecialties.com).
  - 3. Bradley Corporation: [www.bradleycorp.com](http://www.bradleycorp.com).
  - 4. Or prior approved equal.

#### 2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
- B. Stainless Steel Sheet: ASTM A666/A666M, Type 304.
- C. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- D. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

#### 2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.



## 2.04 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, stainless steel, spindle less type for tension spring delivery designed to prevent theft of tissue roll.
  - 1. Attached Purse Shelf - where noted: 0.03 inch satin finished stainless steel, with rolled or formed edge at front.
  - 2. Products:
    - a. American Specialties, Inc; Model - 0697-GAL: [www.americanspecialties.com/#sle](http://www.americanspecialties.com/#sle).
    - b. Bradly Corp., Model - 5263
    - c. Bobrick, Model - B-2840.
    - d. Or prior approved equal.
- B. Combination Towel Dispenser/Waste Receptacle: Recessed with projecting waste receptacle, stainless steel; seamless wall flanges, continuous piano hinges, tumbler locks on upper and lower doors.
  - 1. Towel dispenser capacity: 600 C fold.
  - 2. Waste receptacle capacity: 15 gallons.
  - 3. Products:
    - a. American Specialties, Inc; Model - 20469: [www.americanspecialties.com](http://www.americanspecialties.com)
    - b. Bradley Corp., Model - 237
    - c. Bobrick, Model B-43944
- C. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator.
  - 1. Minimum Capacity: 40 ounces.
  - 2. Products:
    - a. Or prior approved equal.
- D. Mirrors: Stainless steel framed, 1/4 inch thick tempered safety glass; ASTM C1048.
  - 1. Size: 24 inch wide by 36 inch high unless indicated otherwise.
  - 2. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
- E. Grab Bars: Stainless steel, nonslip grasping surface finish.
  - 1. Standard Duty Grab Bars:
    - a. Push/Pull Point Load: 250 pound-force, minimum.
    - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
    - c. Length and Configuration: As indicated on drawings.
    - d. Products:
      - 1) American Specialties, Inc: [www.americanspecialties.com/#sle](http://www.americanspecialties.com/#sle).
      - 2) Bradley Corp.
      - 3) Bobrick
      - 4) Or prior approved equal.

## 2.05 UTILITY ROOM ACCESSORIES

- A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
  - 1. Hooks: 4, 0.06 inch stainless steel rag hooks at shelf front.
  - 2. Mop/broom holders: Three min. spring-loaded rubber cam holders at shelf front.
  - 3. Length: Manufacturer's standard length for number of holders/hooks.
  - 4. Products:
    - a. American Specialties, Inc; Model 1308-3: [www.americanspecialties.com/#sle](http://www.americanspecialties.com/#sle).
    - b. Bradley Corp., Model 9933
    - c. Bobrick, Model B-239.
    - d. Or prior approved equal.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.

### **3.02 PREPARATION**

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

### **3.03 INSTALLATION**

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

### **3.04 PROTECTION**

- A. Protect installed accessories from damage due to subsequent construction operations.

**END OF SECTION**

## SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

#### 1.03 REFERENCE STANDARDS

- A. FM (AG) - FM Approval Guide; Current Edition.
- B. NFPA 10 - Standard for Portable Fire Extinguishers; 2013.
- C. UL (DIR) - Online Certifications Directory; Current Edition.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

#### 1.05 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Fire Extinguishers:
  - 1. Ansul, a Tyco Business; Cleanguard: [www.ansul.com/#sle](http://www.ansul.com/#sle).
  - 2. JL Industries, Inc: a division of Activar Construction Products Group.
  - 3. Larsen's Manufacturing Co; [www.larsensmfg.com](http://www.larsensmfg.com).
  - 4. Potter-Roemer; [www.potterroemer.com](http://www.potterroemer.com)
  - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Fire Extinguisher Cabinets and Accessories:
  - 1. Ansul, a Tyco Business: [www.ansul.com/#sle](http://www.ansul.com/#sle).
  - 2. Larsen's Manufacturing Co: [www.larsensmfg.com/#sle](http://www.larsensmfg.com/#sle).
  - 3. Potter-Roemer: [www.potterroemer.com/#sle](http://www.potterroemer.com/#sle).

#### 2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
  - 1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
  - 1. Class: A:B:C type.
  - 2. Size: 10 pound.
  - 3. Finish: Baked polyester powder coat red color.
  - 4. Temperature range: Minus 40 degrees F to 120 degrees F.
- C. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
  - 1. Located at Kitchen Area.
  - 2. Class: K type.

3. Size and classification as scheduled.
4. Finish: Polished stainless steel.

### **2.03 FIRE EXTINGUISHER CABINETS**

- A. Cabinet Configuration: Surface mounted type.
  1. Size to accommodate accessories.
  2. Trim: Flat rolled edge, with 1 1/2 inch wide face.
  3. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.
- B. Door Glazing: Tempered glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.
- C. Weld, fill, and grind components smooth.
- D. Finish of Cabinet Exterior Trim and Door: No. 4 - Brushed stainless steel.
- E. Finish of Cabinet Interior: White colored enamel.

### **2.04 ACCESSORIES**

- A. Cabinet Signage: As required by local building officials.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.
- C. Examine walls and partitions for suitable framing depth and blocking where recess and semi recessed cabinets will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Prepare recesses for recessed and semi recessed fire extinguisher cabinets as required by type and size of cabinet and trim style.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, 60 inches from finished floor to top of cabinet, unless otherwise indicated in drawings.
- C. Fasten cabinets to structure, square and plumb.
  1. Where indicated or at locations required when installed in fire-rated wall assemblies by wall construction, provide recessed fire extinguisher cabinets. If wall thickness is inadequate for recessed cabinets, provide semi recessed fire extinguisher cabinets.
  2. Fasten mounting brackets to inside surface of fire extinguisher cabinets, square and plumb.
- D. Place extinguishers in cabinets.

### **3.04 ADJUSTING AND CLEANING**

- A. Remove temporary protective coverings and strippable films, if any, as fire extinguisher cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire extinguisher cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire extinguisher cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire extinguisher cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire extinguisher cabinet and mounting bracket manufacturers.

- E. Replace fire extinguisher cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION**

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| 571506 / New Jetson Center for Youth | 10 4400 - 3 | Fire Protection Specialties |
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## SECTION 10 5100 - LOCKERS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Metal lockers.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking and nailers

#### 1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

#### 1.04 QUALITY ASSURANCE

- A. All parts and hardware shall be AWI compliant, structurally sound and free from defects, in material and workmanship under normal use and service for the full warranty period

#### 1.05 SUBMITTALS

- A. Product Data: Manufacturer's published data on locker construction, sizes and accessories.
- B. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.
- C. Samples: Submit two samples 4 by 4 inches in size, of each color scheduled.
- D. Manufacturer's Installation Instructions: Indicate component installation assembly.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in a dry, ventilated area until ready for installation.
- B. Protect locker finish and adjacent surfaces from moisture, soiling, and damage.

#### 1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions(temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. During and after installation, maintain same temperature and humidity conditions in building spaces as will occur after occupancy.
- C. Protect locker finish and adjacent surfaces from damage.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Metal Lockers:
  - 1. Basis of Design: Penco Products, Inc; [Patriot Duty Lockers]: [www.pencoproducts.com](http://www.pencoproducts.com).
  - 2. Art Metal Products: [www.artmetalproducts.com](http://www.artmetalproducts.com).
  - 3. Lyon Workspace Products: [www.lyonworkspace.com](http://www.lyonworkspace.com).
  - 4. Republic Storage Systems Co: [www.republicstorage.com](http://www.republicstorage.com).
  - 5. Or prior approved equal.

#### 2.02 LOCKER APPLICATIONS

- A. Lockers: Four tier metal lockers, wall mounted with matching closed base.
  - 1. Locations: As Indicated in Drawings at Lobby.
  - 2. Width: 12 inches
  - 3. Depth: 12inches
  - 4. Height: 72 inches - full unit, each locker - 18 inches high
  - 5. Fittings: 2 coat hooks.
  - 6. Locking: Built-in key locks with spring bolt action..

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## 2.03 METAL LOCKERS

- A. Lockers: Factory assembled, welded, made of formed sheet steel, ASTM A653/A653M SS Grade 33/230, with G60/Z180 coating, stretcher leveled; metal edges finished smooth without burrs; baked enamel finished inside and out.
  - 1. Where ends or sides are exposed, provide flush panel closures.
  - 2. Provide filler strips where indicated, securely attached to lockers.
  - 3. Color: To be selected by Architect; allow for 2 different colors.
- B. Locker Body: Formed and flanged; with steel stiffener ribs; electric spot welded.
  - 1. Body, Sides, and Shelves: 16 gage, 16 inch.
  - 2. Back: one piece 18 ga steel
  - 3. Base: 16 gage, 16 inch.
  - 4. Metal Base Height: 4 inch Zee base.
- C. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
  - 1. Door Frame: 16 gage, 0.0598 inch, minimum.
  - 2. Provide ventilation slots in top and bottom of door frame.
- D. Doors: Hollow double pan, sandwich construction, 1-3/16 inch thick; welded construction, channel reinforced top and bottom with intermediate stiffener ribs, grind and finish edges smooth.
  - 1. Door Outer Face: 16 gage, 16 inch, minimum.
  - 2. Door Inner Face: 20 gage, 0.0359 inch, minimum.
  - 3. Form recess for operating handle and locking device.
  - 4. Provide ventilation slots in top and bottom of door.
- E. Hinges: Two for doors under 42 inches high; three for doors over 42 inches high; weld securely to locker body and door.
  - 1. Hinge Thickness: 14 gage, 0.0747 inch.
- F. Number Plates: Provide oval shaped brass plates. Form numbers \_\_\_\_ inch high of block font style with ADA designation, in contrasting color.

## 2.04 FABRICATION

- A. Lockers shall be fabricated using doweled and glued & nailed assembly process.
- B. Fabricate lockers square, rigid, and without warp, with finished faces flat and free of scratches and chips.
- C. Machine all parts and attachment holes accurately and without chips.
- D. Fabricate corners, fillers, scribes, tops as required for installation.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Do not begin installation until adjacent substrates and finishes have been properly prepared.
- B. Verify that prepared bases are in correct position and configuration.
- C. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Verify adequacy of backing and support framing.

### 3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

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- B. Set and secure lockers in place. Install lockers rigid, plumb, level, and square.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Conceal screw heads with plastic caps to match locker interior.
- E. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 lb.
- F. Bolt adjoining locker units together to provide rigid installation.
- G. Install end panels, filler panels, and sloped tops as indicated on the approved shop drawings.
- H. Install accessories.
- I. Replace components that do not operate smoothly.

#### **3.04 ADJUSTING**

- A. Adjust moving or operating parts to function smoothly and correctly.

#### **3.05 CLEANING**

- A. Clean locker interiors and exterior surfaces.

#### **3.06 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace products before Substantial Completion.

**END OF SECTION**

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## SECTION 10 7300 - EXTRUDED ALUMINUM CANOPIES

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. The bidding documents, General Conditions, Supplementary Conditions, drawings and requirements of Division One specifications shall apply to Work specified in this Section.

#### 1.02 DESCRIPTION OF WORK

- A. Work in this Section includes building supported overhead suspended pre-engineered extruded aluminum canopies and pre-engineered T-Bent column supported system, as indicated in drawings.
- B. Definition: Extruded Aluminum Canopy shall consist entirely of extruded aluminum sections (roll-formed not acceptable). System shall consist of heli-arc welded, one-piece rigid structural bents (column and beam assemblies), decking, fascia, accessory items and hardware to provide a complete system.
- C. Water shall drain from deck into designated beams and out at grade level of columns through weepholes.
- D. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering walkway covers by employing qualified professional engineer, registered to practice in the state of Louisiana, to prepare design calculations, shop drawings, and foundation details to withstand hurricane force winds as indicated in structural drawings. Pre-Engineered Metal Canopy supplier shall be responsible for the design and detailing of all canopy column footings. Geotechnical report is included as part of this Project Manual for reference.

#### 1.03 SUBMITTALS

- A. Shop Drawings: Submit detailed drawings, layout of canopy system, bent locations (identify drain columns and wet bents), all mechanical joint locations with complete details, connections, jointing and accessories. Include details of concrete footings and bent anchorage.
- B. Product Data: Submit manufacturer's product data, specifications, component performance data and installation instructions.
- C. Calculations: Provide signed and sealed structural calculations for the proposed walkway cover, by a professional engineer registered in the state of Louisiana, who professes his discipline to be structural engineering.

#### 1.04 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following except as otherwise indicated:
  - 1. International Building Code, latest edition with amendments, if any.
  - 2. AWS (American Welding Society) standards for structural aluminum welding.
- B. Manufacturer: Obtain aluminum covered walkway system from only one (1) manufacturer, although several may be indicated as offering products complying with requirements.
- C. Installer Qualification: Firm with not less than three (3) years experience in installation of aluminum walkway covers of type, quantity and installation methods similar to work of this Section.
- D. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work. However, allow for adjustments within specified tolerations wherever taking of field measurements before fabrication might delay work.
- E. Shop Assembly: Preassemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

- F. Coordination: Coordinate Work of this Section with work of other sections which interface with covered walkway system (sidewalks, curbs, building fascias, fencing, etc.)

## 1.05 PERFORMANCE REQUIREMENTS

- A. System Performance: Provide extruded aluminum canopy system that has been designed, produced, fabricated and installed to withstand normal temperature changes as well as live loading, dead loading and wind loading in compliance with International Building Code requirements for geographic area in which work is located and as follows:
1. Live Load: As indicated on structural drawings.
  2. Structural design for wind forces: Comply with ANSI A58.1-1982
  3. Design Wind Velocity: As indicated on structural drawings.
  4. Importance Factor: As indicated on structural drawings.
- B. Sizes shown on drawings are to be considered minimum.
- C. Structure shall be capable of sustaining severe hail, hurricane force winds and supporting a concentrated load such as being walked upon.

## PART 2 PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following manufacturers:
1. AVAdek; [www.avadek.com](http://www.avadek.com).
  2. Mapes Architectural Canopies - Super Lumideck Extruded, Lincoln, Nebraska, 1.888.273.1132; [www.mapes.com](http://www.mapes.com).
  3. **Basis of Design:** Peachtree Protective Covers; [www.peachtreecovers.com](http://www.peachtreecovers.com).
  4. Perfection Architectural Systems, Inc.; [www.perfectionarch.com](http://www.perfectionarch.com).
  5. AACE, Inc.
  6. Mitchell Metals, LLC
  7. Williams Fence & Aluminum
  8. Or prior approved equal.
- B. Equivalent systems by other manufacturers will be approved by Addendum provided the following are submitted fourteen (14) days prior to bid opening and are complete:
1. Submit evidence of having operated a successful business of manufacturing and installing complete extruded aluminum walkway cover systems.
    - a. Business must have been in operation under submitted name and ownership for a minimum of ten (10) years.
    - b. Submit a list of successfully completed projects of similar scope, size and complexity within the state of Louisiana. List shall include job name, date of completion, architect's firm name and contact information, Owner's name with representative and contact number.
    - c. Comply with the requirements pertaining to substitution as set forth in Instructions to Bidders and Division One Section 016000 - Product Requirements.

### 2.02 MATERIALS

- A. All aluminum extrusions shall be alloy 6063 heat treated to a T-6 temper.
- B. Standard finish for all components shall be 2-coat Kynar finish. Color to be selected by Architect from manufacturer's full range.
- C. Columns:
1. Radius-cornered aluminum tubular extrusion, size as required by manufacturer structural engineering design.
  2. Grout Key: Provide two 1-1/2 inch diameter holes in column base, one each in opposite sides.
  3. Provide clear acrylic protection coat on surfaces in contact with grout.

- D. Beams: Open top aluminum tubular extrusions.
  - 1. Size and Profile: As required by manufacturer's structural engineering design.
  - 2. Provided welded endplate water dams where sections terminate at other than drainage channels.
- E. Overhead Supported Canopy:
  - 1. Hanger Rod: Manufacturer's standard hanger rod assembly.
- F. Fascia: Manufacturer's standard extruded aluminum fascia sections as required to complete the installation resulting in a neat finished appearance.
  - 1. At overhead rod supported canopies - manufacturer's standard extruded aluminum fascia sections as required to complete the installation resulting in a neat finished appearance.
    - a. Include manufacturer's standard concealed extruded aluminum gutters.
  - 2. At building supported canopy system - manufacturer's standard flush fascia and soffit panels.
- G. Fasteners:
  - 1. Deck Screws (rivets not permitted): Type 18-8 non-magnetic stainless steel sealed with neoprene "O" ring beneath 5/8" outside dimension, conical washer.
  - 2. Fascia Rivets: Size 3/16" by 1/2" grip range aluminum rivets with aluminum mandrel.
  - 3. Bolts: All bolts, nuts and washers to be 18-8 non-magnetic stainless steel.
  - 4. Tek Screws: not permitted.
  - 5. Other Fasteners: Type 18-8 stainless steel, type recommended by manufacturer for specific condition.
- H. Warranty:
  - 1. Manufacturer shall warrant the entire system against defects in labor and materials for a period of one (1) year commencing on the date of Substantial Completion as established in Division One of these Specifications.
  - 2. Intention of this warranty is that the manufacturer will come onto the jobsite and do all necessary to effect corrections of any deficiencies
  - 3. Prima Fascia Evidence of defects in labor and material may include but is not limited to, one or more of the following:
    - a. Moisture leaks
    - b. Metal failure including excessive deflection.
    - c. Fastener failure
    - d. Finish failure

## 2.03 FABRICATION

- A. Comply with indicated profiles, dimensioned requirements and structural requirements.
- B. Use sections true to details with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture, free from defects impairing strength and durability.
- C. All welding to be done by heli-arc process.
- D. Bents shall consist of shop welded one piece units. When size of bents do not permit shipment as a welded unit, concealed mechanical joints may be used.
- E. Mechanical joints shall consist of stainless steel bolts with a minimum of two (2) bolts per fastening. Bolts and nuts shall be installed in a concealed manner utilizing 1/2" thick by 1 1/2" aluminum bolt bars welded to structural members. All such mechanical joints must be detailed on shop drawings showing all locations.
- F. Roof Deck: Extruded Aluminum shapes, interlocking self-flashing sections. Shop fabricate to lengths and panels widths required for field assembly. Depth of sections to comply with structural requirements. Provide shop induced camber in deck units with spans greater than 16'-0" to offset dead load deflections. Welded dams are to be used at non-draining ends of deck.

- G. Expansion joints, design structure for thermal expansion and contraction. Provide expansion joints as required.
- H. Exposed rivets used to fasten bottom of fascia to deck to have finish to match fascia.
- I. Apply a shop applied dip-coat of clear acrylic enamel to each column end terminating in concrete to insulate from electrolytic reaction. Column ends shall be pierced to "key" grout to bent for maximum uplift protection.

### **PART 3 EXECUTION**

#### **3.01 DELIVERY, STORAGE AND HANDLING**

- A. Deliver, store and handle covered walkway system components as recommended by manufacturer. Handle and store in a manner to avoid deforming members and to avoid excessive stresses.

#### **3.02 EXAMINATION**

- A. Examine adjacent work for conditions that would prevent quality installation of system.
- B. Do not proceed until defects are corrected.

#### **3.03 CONCRETE FOOTINGS**

- A. Concrete footings are to be part of the Work of this Section.
- B. Sleeves (Styrofoam block outs) shall be furnished and installed by walkway cover manufacturer & installer.

#### **3.04 FIELD DIMENSIONS**

- A. General Contractor shall field confirm bent locations, dimensions and elevations shown up on shop drawings prior to fabrication.

#### **3.05 INSTALLATION**

- A. Erection: Set roof support frames (bents) into pockets provided in top of footings; set to required elevations, align, plumb and level; and grout in place with 2,000 psi Portland cement grout. Assure that grout fills all voids and "keys" to columns. Fill downspout units with grout to bottom of discharge level. Install aluminum deflectors after grouting. Follow manufacturer's instructions. Match to finish and elevation of adjacent sidewalks.
- B. Install roof deck sections, accessories and related flashing in accordance with manufacturer's instructions. Provide roof slope for rain drainage without ponding water. Align and anchor roof deck units to structural support frames.
- C. Assemble all components in a neat, workmanlike manner.

#### **3.06 FLASHING**

- A. Flashings: Flashings required between covered walkway system and adjoining structures are not work of this Section. Refer to "Sheet Metal Flashing and Trim", Section 076200.

#### **3.07 CLEANING AND PROTECTION**

- A. Damaged Units: Replace roof deck panels and other components of the Work which have been damaged or have deteriorated beyond successful minor repair.
- B. Cleaning: Remove protective coverings at time in project construction sequence which will afford greatest protection of Work. Clean finished surfaces as recommended by manufacturer. Maintain in a clean condition during construction.
- C. Protection: Advise Contractor of protection and surveillance procedures, as required to ensure that Work of this Section will be without damage or deterioration at time of Substantial Completion.

**END OF SECTION**

## SECTION 10 7500 - FLAGPOLES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Aluminum Flagpoles.

#### 1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete base and foundation construction.

#### 1.03 REFERENCE STANDARDS

- A. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; 2016.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- D. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube; 2016.
- E. NAAMM FP 1001 - Guide Specifications for Design Loads of Metal Flagpoles; 2007.

#### 1.04 SUBMITTALS

- A. Product Data: Provide data on pole, accessories, and configurations.
- B. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.
- C. Foundation Drawings: Indicate detailed dimensions, concrete mix design requirements, and reinforcing details.
- D. Maintenance Data: Provide lubrication and periodic maintenance requirement schedules

#### 1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Design flagpole foundation under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed the State in which the Project is located.
  - 1. Coordinate flagpole foundation design with site design conditions surrounding flagpole location. Any footing foundation shall be located below concrete pavement.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Spiral wrap flagpole with protective covering and pack in protective shipping tubes or containers.
- B. Protect flagpole and accessories from damage or moisture.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Flagpoles:
  - 1. American Flagpole: [www.americanflagpole.com/#sle](http://www.americanflagpole.com/#sle).
  - 2. Concord Industries, Inc: [www.concordindustries.com/#sle](http://www.concordindustries.com/#sle).
  - 3. Pole-Tech Co, Inc: [www.poletech.com/#sle](http://www.poletech.com/#sle).
  - 4. Or prior approved equal.

#### 2.02 FLAGPOLES

- A. Flagpoles: Designed in accordance with NAAMM FP 1001
  - 1. Material: Aluminum.
  - 2. Design: Cone tapered.
  - 3. Mounting: Ground mounted type.

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4. Outside Butt Diameter: 6 inches.
  5. Outside Tip Diameter: 3 1/2 inches.
  6. Nominal Height: 30 ft; measured from nominal ground elevation.
  7. Halyard: Interior type . 1/8" diameter stainless steel braided aircraft cable.
- B. Performance Requirements:
1. Minimum Flag Pole Pad Requirements: Concrete pad of minimum 3000 psi, 4" thick, 6 feet square (or 8 foot diameter), light broom finish - or larger as indicated in Drawings.

### **2.03 POLE MATERIALS**

- A. Aluminum: ASTM B221 (ASTM B 221M) , 6063 alloy , T6 temper.

### **2.04 ACCESSORIES**

- A. Finial Ball: 14 gauge Aluminum, 6 inch diameter, mount to truck assembly
- B. Truck Assembly: Cast aluminum; revolving, stainless steel ball bearings, non-fouling.
- C. Flag: American "Stars and Stripes" Flag design, 5 ft by 8 ft size, nylon fabric, brass grommets, hemmed edges.
- D. Flag: Louisiana State Flag design. 4 ft by 6 ft size, nylon fabric, grommets, hemmed edges.
- E. Flag snaps: Satin chrome plated bronze with neoprene covers.
- F. Cleat Box: Aluminum, with built-in hinge and hasp assembly, attached to pole with tamper proof screws inside box.
- G. Halyard: 1/8 inch diameter stainless steel aircraft cable.
- H. Connecting Sleeve For Multiple Section Poles: Same material as pole, precision fit for field assembly of pole, concealed fasteners.
- I. Flash Collar: Spun or cast aluminum, size to cover foundation tube.

### **2.05 MOUNTING COMPONENTS**

- A. Foundation Tube Sleeve: AASHTO M 36, corrugated 16 gage, 0.0598 inch corrugated steel, galvanized, depth as indicated.
- B. Grounding Spike: Minimum 3/4 inch diameter steel rod, minimum 6 feet length, welded to base plate, entire assembly galvanized after fabrication.

### **2.06 FINISHING**

- A. Aluminum: Mill finish.
- B. Finial: Spun finish.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.

### **3.02 PREPARATION**

- A. Coat metal sleeve surfaces below grade and surfaces in contact with dissimilar materials with asphaltic paint.

### **3.03 INSTALLATION**

- A. Install flagpole , base assembly, and fittings in accordance with manufacturer's instructions.
- B. See Section 03 3000 for placement of anchor devices and foundation sleeve.
- C. Fill foundation tube sleeve with concrete specified in Section 03 3000.

### **3.04 TOLERANCES**

- A. Maximum Variation From Plumb: 1 inch.

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### **3.05 ADJUSTING**

- A. Adjust operating devices so that halyard and flag function smoothly.

### **3.06 SCHEDULES**

- A. Front Yard Pole: Two, 30 feet

**END OF SECTION**

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## SECTION 11 1550 - VEHICULAR SLIDE GATE OPERATOR

### PART 1 - GENERAL

#### 1.01 WORK INCLUDED

- A. Furnish and install a complete microprocessor based vehicular slide gate operator system, with a solid-state board to control all functions of the slide operator, as described herein and shown on the plans. Include all necessary boards, power supplies, loop detectors, connectors, and accessories for a complete operational system.

#### 1.02 CONTRACT DOCUMENTS

- A. All equipment and work specified in this section shall comply, with all the General Conditions of the specifications, contract documents, and drawings as indicated.

#### 1.03 RELATED WORK

- A. All necessary conduit, raceways and pull boxes shall be installed by the Contractor.
- B. Installation of the vehicular slide gate operator system shall be coordinated with the installation of other related systems.

#### 1.04 QUALITY ASSURANCE

- A. Installation shall comply with all applicable codes.
- B. All equipment shall be new, in current production, and the standard products of a manufacturer of vehicular gate operator equipment.
- C. Manufacturer shall guarantee availability of parts, for a minimum of seven (7) years from date of shipment.
- D. If required, manufacturer shall be able to demonstrate features, functions and operating characteristics to the Owner.
- E. System shall be installed by a factory authorized contractor, with technicians specifically trained in this system.
- F. On-site maintenance and repair service shall be available locally and within twenty-four (24) hours of notification for emergency condition.

#### 1.05 REFERENCE STANDARDS

- A. Vehicular Slide Gate Operator shall be in compliance with Underwriter Laboratories Inc. (UL) Standard for Safety - Door, Drapery, Gate, Louver and Window Operators and Systems, UL 325 Fourth Edition; and Underwriters Laboratories Inc. (UL) Standard for Safety - Tests for Safety-Related Controls Employing Solid-State Devices, UL 991 Second Edition.
- B. Vehicular Slide Gate Operator shall be tested for compliance to UL 325 and UL 991 and shall be LISTED by a Nationally Recognized Testing Laboratory (NRTL).

#### 1.06 SUBMITTALS

- A. Shall include an equipment list, data sheet(s), system description, block diagrams on equipment to be furnished and electrical wiring diagrams for installation.
- B. Shall include all data necessary to evaluate design, quality and configuration of proposed equipment and system(s).

#### 1.07 WARRANTY

- A. Systems shall include a factory warranty that equipment is free from defects in design, material, manufacturing and operation.
- B. Factory warranty period shall be for two (2) years parts and workmanship; 24-months from date of acceptance.
- C. Installing contractor shall guarantee the equipment, wire and installation for 12-months from date of acceptance.



## **PART 2 - PRODUCTS**

### **2.01 ACCEPTABLE MANUFACTURERS**

- A. The system as described herein, is based on the Model 9310 vehicular slide gate operator system, manufactured by: DoorKing, Inc., Inglewood, California; Tymetal Corporation, TYM-1000 model; or Eagle Access Control Systems, Model Eagle 2000 Series. The vehicular slide gate system specified meets requirements of the specifications and shall be considered as the acceptable Base Bid.
- B. Substitutions must meet requirements of the specifications, the desired functional operation, quality, reliability, design, size, and appearance of the equipment, and the support capabilities of the manufacturer described in Paragraph A.

### **2.02 SYSTEM DESCRIPTION**

- A. Technical Data:
  - 1. The slide gate operator shall use a microprocessor based solid-state control board that controls all functions of the operator. The slide gate operator shall include two (2) convenience outlets, built-in power switch and built-in reset switch.
    - a. Industrial (Class III) applications.
    - b. Maximum gate length is 30-feet, maximum gate weight is 1000 lbs. with 1 / 2 HP motor.
    - c. 1 / 2 or 1 HP continuous duty motor operates at 208 volt, 3 phase.
    - d. Primary reduction and power transfer is provided by worm gear running in a continuous oil bath.
    - e. The pulling medium consists of #40 roller chain.
  - 2. The gate operator speed is set at 1 foot per second.
  - 3. Operator housing is 1 / 4-inch ABS finished in charcoal gray, coarse suede texture.
  - 4. The gate operator shall have two convenience outlets available for accessory transformer power, and also have a built-in lockable power disconnect and reset switch.
  - 5. A positive dead bolt shall operate in a fail-safe mode, i.e.: only when the gate is forced open, to reduce solenoid lock wear and failure, or be capable of operating in a fail-secure mode, i.e.: after each operation.
- B. Control Circuit:
  - 1. The slide gate operator shall use microprocessor based control board that will control all functions of operation.
  - 2. An adjustable timer shall be built into the control board to allow the gate to automatically close.
  - 3. Operator shall allow a stop, or a stop and reverse function (settable) from a safety related input.
  - 4. Control board shall have two ports for plug in of optional loop detectors.
  - 5. A dry set of relay contacts shall be available for external use, and shall have four programmable functions.
  - 6. A special input shall allow the gate to be partially opened.
  - 7. A timer override function shall cause an opening gate to stop and then reverse direction when the reverse loop(s) or reverse input is clear even if the gate has not reached the full open position, to help reduce tailgating.
  - 8. Control board shall have separate inputs for external contact and non-contact entrapment protection devices.
  - 9. Functions will be user programmable by DIP-switches located on the control board.
- C. Inherent Reverse:
  - 1. The gate operator shall be designed in such a way that if an obstruction is met during the opening or closing cycles, the gate operator will automatically reverse the gate.
  - 2. For enhanced safety, the control board shall check the primary entrapment sensing system circuit at each cycle of the operation. Should the control board detect a fault in the system, the motor shall not be allowed to start.

3. This reverse system shall be inherently designed into the operator so that if the external reverse devices fail or become inoperative, the operator will still have the capability to sense the obstruction and reverse the gate.
  4. The inherent reverse system in the gate operator shall consist of a primary sensing system that will reverse the gate if an obstruction is sensed. Should the primary system fail or become inoperative, a secondary inherent system will sense the obstruction and reverse the gate.
  5. The primary system shall monitor motor current and reverse the gate upon a significant increase in current draw.
- D. Entrapment Protection:
1. The gate operator shall stop and activate the internal alarm upon sensing an entrapment (two sequential activations of the inherent sensing system) and shall require activation of the reset switch prior to returning to normal operation, as required by UL 325 safety standard.
  2. For enhanced safety, the operator shall upon sensing an entrapment, release pressure on the gate and shall assume a fail-safe condition to allow any entrapment the opportunity to free itself without the need of outside intervention.
- E. Manual Release:
1. The gate operator shall incorporate a "fail-safe" design that will allow manual operation of the gate from either the inside or the outside without the need of any hand cranks, keys or other mechanical devices, as the primary manual release device.
  2. The manual release device shall be affixed to the operator and be capable of being quickly operated in an entrapment situation.
    - a. The release must be an integral (non-removable) part of the operator.
    - b. A single non-repetitive movement shall cause an action that will allow the gate to be manually operated.
    - c. The manual release or manual operation of the gate shall not result in a risk of injury to persons if the operator is activated while the manual release is activated or being used.

## 2.03 EQUIPMENT

- A. Vehicular Slide Gate Operator:
1. Approximate Dimensions: 27-1/2 inches high, 21-1/2 inches wide, 16-1/2 inches deep.
  2. Weight: Approximately 125-185 pounds.
- B. Optional Equipment:
1. Loop Detectors: Loop detectors plug into main control board and prevent the gate from closing on vehicular traffic.
  2. Convenience Open Drive System:
    - a. A battery powered convenience open DC drive.
    - b. The DC drive system shall monitor the primary power source and shall power the gate upon command, or automatically, if power to the operator is interrupted.
    - c. When power is restored, the DC drive system shall automatically set the operator to return to normal operation and disengage.
    - d. The system shall provide a trickle charge to the batteries to maintain nominal battery power levels.
    - e. LIMITATIONS: This convenience open DC drive system is not intended to operate the slide gate operator continuously during a power interruption. Its sole purpose is to provide a convenient method to open the slide gate should a power interruption occur.
- C. A complete operational system shall be provided.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Shall be installed by qualified technicians who have been factory trained and certified.
- B. Gate Operator is designed to be pad mounted.
  - 1. Mounted directly to a concrete pad.
  - 2. The operator is designed to be front or rear mounted.
- C. Wiring shall be uniform and in accordance with national electric codes and manufacturers instructions.
- D. Equipment shall be mounted directly to a concrete pad.
- E. All splices shall be in easily accessible junction boxes or on terminal boards.
- F. All cable runs in all junction boxes shall be tagged and identified.
- G. Coordinate all work with other effected trades and contractors.
- H. H. It is the intent of these specifications that this gate operator will work in conjunction with the access control system.

### **3.02 SYSTEM INITIALIZING AND PROGRAMMING**

- A. System shall be turned on and adjustment made to meet requirements of specifications and on-site conditions.
- B. System shall function as specified.

### **3.03 SYSTEM TEST PROCEDURES**

- A. System shall be completely tested to assure that all components, and accessories are hooked-up and in working order.
- B. System shall be pre-tested by contractor and certified to function in accordance with plans and specifications.
- C. System shall be tested in presence of owner's representative.

### **3.04 OWNER INSTRUCTIONS**

- A. Installation contractor shall conduct up to four (4) hours of instruction in use and operation of the system to designated owner representatives, within (30) days of acceptance.
- B. Installation contractor shall conduct up to four (4) hours of technical training, in troubleshooting and service of the system, to designated owner representatives within (90) days of system acceptance.

### **3.05 MANUALS AND DRAWINGS**

- A. Contractor shall provide owner with (2) copies of standard factory prepared operation, installation and maintenance manuals. Manuals shall include typical wiring diagrams.
- B. Contractor shall provide owner with (2) copies of any risers, layouts, and special wiring diagrams showing any changes to standard drawings, if required on project.

**END OF SECTION**

## SECTION 11 1900 - DETENTION EQUIPMENT

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

- A. This section must be provided under this contract by a qualified DEC contractor.
- B. This Section consists of furnishing all plant, labor equipment, appliances, services and materials to perform all work in connection with the installation of detention equipment complete, in strict accordance with the specifications and the applicable drawings. The types of work included in this section are as follows:
  - 1. Detention hollow metal doors and frames.
  - 2. Detention hollow metal borrowed light frames and Security Glass.
  - 3. Detention Access Doors.
  - 4. Related items of work to be performed by others include the following:
    - a. Electronic Wiring and termination for all above controls.
    - b. Unloading, handling and setting of items, which are to be embedded in masonry or concrete.
    - c. Field cleaning, touch-up and finish painting.
    - d. Installation of all mechanical connections and plumbing connections.
    - e. All concrete, masonry work and caulking.
  - 5. Related Documents:
    - a. Detention Contractors Work:
      - 1) The work consists of the provision and installation of all detention items delineated within the detention drawings and specifications.
      - 2) The scope of the work includes all work required for the complete installation of detention hollow metal doors, detention frames, security glazing including 1/2" polycarbonate.
    - b. The following sections shall be provided by one DEC contractor:
      - 1) Section 111900 – Detention Equipment
      - 2) Section 111910 – Detention Furnishing
      - 3) Section 111940 – Security Glazing
      - 4) All related Division 28 Sections
      - 5) The detention contractor shall be responsible for the coordination, supply and layout of all steel imbeds as required for a complete installation of windows and furnishings.
      - 6) Detention contractor shall set, brace, level and plumb all Security Door Frames.
      - 7) If the Detention Contractor needs additional AC Power other than as shown on drawings, the cost of additional power shall be responsibility of the Detention Contractor.
  - 6. The following items are by the General Contractor:
    - a. All Security Caulking.
    - b. All Finish Painting.
  - 7. The following items are furnished and installed by the Detention Equipment Contractor:
    - a. Security Hollow Metal Door Frames. Frames shall be properly braced prior to masonry being installed. Any frame out of tolerance shall be removed and reinstalled at the Detention Contractor's expense.
    - b. Security Doors.
    - c. Security Hardware - DEC shall furnish and install all detention locking hardware for work of project.
    - d. Security Glazing.

#### 1.02 QUALITY ASSURANCE

- A. Qualifications of Detention Equipment Contractor:

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- B. Any Detention Equipment Contractor who intends on submitting a bid on this section of the specifications shall specialize in and be experienced in the manufacturing, delivery, installation and maintenance of detention equipment. Each Detention Equipment Contractor including those listed herein must submit the following information as herein listed.
1. Evidence that the Detention Equipment Contractor as named on bid documents has documented experience and has documented experience in successfully completing projects of equal scope and magnitude with the same specified herein. DEC to provide list of previous completed projects that indicate experience. List is to include an overall scope and size description of project, total construction cost, total DEC contract amount, and general contractor and architect's current contact information.
  2. A list of all jobs in the past five (5) years in which the Detention Equipment Contractor has been involved in litigation with a local, state and/or federal governmental agency and the status thereof.
  3. Grounds for disqualification shall exist if it is proven that the information submitted is inaccurate or, in the opinion of the Owner, Architect, Engineer, does not satisfy the qualification requirements.
  4. Approval of a Security Contractor does not relieve the Detention Equipment Contractor of furnishing information listed above or from furnishing materials from the manufacturers herein specified.
  5. Qualification of the Detention Equipment Contractor, Manufacturer: Throughout the specification and drawings, type of material may be specified by the manufacturer's name and catalog number in order to establish standards of quality and performance. The bidder shall include all items as specified. Substitutions must be submitted seven (7) working days prior to receipt of bids. Approved products, items will be published and issued by addenda (only). Substitutions will NOT be considered after deadline. Should the substituted items not be accepted, the bidder must provide, furnish and install the specified approved product, item. The following submittal requirements must be strictly adhered to when submitting a substitute product to the Architect for approval.
    - a. Submittal Requirements: In addition to a written request for equality, a sample of each lock, device, control, etc. performance data, catalog information, and a written list showing names, locations, and Architects, engineers of seven (7) institutions of which similar materials have been installed for a period of seven (7) years shall also be submitted.
    - b. Operating and Maintenance Manuals: Detention equipment contractor shall furnish three (3) copies of a parts manual for all security locks, hardware, control systems equipment and provide instructions for the operation and care of the equipment. Manuals shall be scanned and provided on CD for inclusion with other manuals.
  6. Detention Hollow Metal: Provide products and items from manufacturers who have not less than seven (7) years successful experience with, and shall now be actively engaged in, the design and manufacturing of detention hollow-metal doors, frames of the type required for this project. The same manufacturer shall produce all detention hollow-metal doors and frames.
    - a. Submittal Requirements: In addition to a written request for equality, a full-size corner sample of each type door and frame showing door construction, face stiffening, insulation, and top hinge reinforcement; details of each type of door and frame, performance data; catalog information and a written list showing the names, locations, and architects of a minimum of seven (7) institutions for which similar materials have been installed for a period of seven (7) years shall be submitted.

### 1.03 CODES

- A. All work shall be in compliance with the latest editions (and revisions thereto) of the following codes and requirements:
1. State and Local codes and ordinances.
  2. National Electrical Code.

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3. Local electrical code at location of installation.
4. Occupational Safety and Health Administration, U.S. Department of Labor.
5. Test Reports: As required herein.

#### **1.04 GUARANTEE**

- A. Prior to final acceptance, Detention Equipment Contractor shall provide a written warranty-covering door operating and locking mechanisms. Warranty shall guarantee the satisfactory operation of all doors operating and locking mechanisms for a period of two (2) years (except on paint finish) after final acceptance. During this period, Detention Equipment Contractor shall, without cost to Owner, make any necessary adjustments to the mechanism or replace any worn or broken parts due either to faulty material or defective construction within twenty-four (24) hours of notification.
- B. The Detention Equipment Contractor is to warranty his material and workmanship on this project for a period of two (2) years (except on paint finish) after date of acceptance by Owner. Detention Equipment Contractor agrees to repair replace any defective security materials and to correct any defective security work when given written notice during the warranty period. In no event shall the Detention Equipment Contractor be liable for consequential, incidental special damages. Vandalism, misuse or excessive abuse is also excluded from this warranty.

#### **1.05 DELIVERY AND HANDLING OF DETENTION EQUIPMENT**

- A. Embedded items of Detention Equipment that are to be set in concrete or masonry by the General Contractor shall be furnished and delivered by the Detention Equipment Contractor, F.O.B. his truck or common carrier, to the building site and there unloaded by the General Contractor so as not to delay the truck's departure from the building site. General contractor shall be responsible for security of the embedded items of detention equipment at the job site.
- B. The General Contractor shall provide the required openings of sufficient size through the outside walls to permit the placing of the detention equipment in the areas of the building where it is to be installed, as designated by Detention Equipment Contractor.
- C. The Detention Equipment Contractor shall deliver and be responsible for placing in the building, all Detention Equipment that he is to install as part of his contract.

#### **1.06 COORDINATION OF DOOR CONTROL INTERFACE RESPONSIBILITIES**

- A. DEC to coordinate all door control interface responsibilities. Reference Division 28 "Electronic Safety and Security" for Security Equipment Contractor responsibilities.
- B. Detention Equipment Contractor responsibilities shall include the following:
  1. Furnish wiring drawings and other information as required for design and installation of the door control system. Shop drawings shall be furnished to the SEC for coordination and installation.
  2. Provide boxes or pockets in the door frame for the door position switches, locks, keyswitches, push buttons, etc.
    - a. Extend the lock pocket to accommodate jamb mounted push buttons and/or keyswitches or provide a means to install and maintain these devices.
    - b. Provide interconnecting conduit in the door frame to interconnect the boxes and pockets.
    - c. Provide door locks, door position switches, limit switches, lock feature switches, keyswitches, and push buttons for the system to perform the functions specified throughout all specification sections.
      - 1) Locking hardware that has direct current (DC) solenoids shall include diodes for transient protection.
    - d. Interconnect all components described herein to a cable harness that provides a single point of interconnection for the SEC.
      - 1) For swing doors, the interface point between the door control system and the door hardware shall be the lock pocket.

- 2) The cable harness shall include a 6 inch minimum "pigtail" terminated with Molex type connectors. This connector(s) shall provide all of the interconnection between the components at the door and the control system.
- e. Adjust all locks and switches for proper mechanical alignment after installation. The door position switch shall be adjusted to provide an open indication before the door or gate is opened far enough to provide a 1/16 inch gap between the strike plate and the lock.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

- A. All materials required for the work specified herein shall be new and produced especially for the detention use or shall conform to accepted standards of the detention equipment industry.
- B. Electrical components, including motors, switches and relays, shall be the best of their kind and quality manufactured by nationally recognized manufacturers.

### **2.02 DETENTION LOCKS AND HARDWARE**

- A. All detention locks and cylinders shall be provided by a single manufacturer for work of project. Approved manufacturers of Detention Hardware for the project are Southern Steel, Folger Adams, RR Brink, and Airteq.
- B. Institutional Mortise Locks: Mortise Locks shall be as indicated in the Detention Hardware Schedule based on Southern Steel 10500/10600 Series. Include mogul cylinder operation. Standard features include the following:
  1. Lever handles.
  2. Faceplate with security fasteners.
  3. High security roses with security fasteners.
  4. Deadlock indication switch at electrified locks.
- C. Electro/Mechanical Detention locks: Doors to be provided with Electro/Mechanical Detention Locks shall be as indicated on the Detention Door/Hardware schedule. Interior mechanism of the detention lock shall provide for the following:
  1. Remote electric push-button unlocking with indications.
  2. Manual unlocking by key at the door.
  3. Automatic mechanical deadlocking of door upon closing.
  4. Electro/Mechanical Lock shall be mounted in special pocket in doorframe as shown on drawings/templates.
  5. Swinging doors to be equipped with an Electro/Mechanical Detention Lock shall be provided with heavy-duty institutional concealed door closer with built-in door position switch indicator included as indicated on security hardware schedule.
- D. Door closers: Shall be Norton 7970 Series, Sargent 269 Series, or LCN 2210 Series, to be provided where indicated by the Detention Door Hardware Schedule or where indicated to have a door position switch on the Security Electronics plans, and shall function as follows:
  1. All detention doors to have a closer.
  2. All exterior detention doors to be insulated.
  3. All exterior detention doors to have weather stripping and ADA compliant threshold.
  4. All fire-rated doors to have a closer and gasketing.
  5. All smoke doors to have gasketing.
- E. Keys: Mogul Detention Keys shall be silicon bronze/copper alloy having a tensile strength of 60,000 p.s.i., a yield strength of 20,000 p.s.i., and a Rockwell hardness of B-73/75. Furnish three (3) keys for each key change. All keys are to be stamped with designated identifying number of letter.
- F. Key Schedule: Furnish complete key schedule for all locks to be provided under this section. The Owner's representative shall provide Detention Equipment Contractor with the

required information for preparation of the key schedule. Owner and DEC to coordinate key schedule after information is provided.

- G. Keying Conference: Conduct conference at Project site and is to be attended by Architect, Owner, Umbrella Agency and User Agency, hardware consultant and hardware supplier. Keying conference to incorporate the following criteria into the final keying schedule document:
  - 1. Function of building, purpose of each area and degree of security required.
  - 2. Plans for existing and future key system expansion.
  - 3. Requirements for key control system.
  - 4. Installation of permanent keys and cylinder cores.
  - 5. Address and requirements for delivery of keys.
- H. Detention Door Hinges: Detention Type Hollow Metal Swinging Doors shall be hung on four (4) #4-1/2 x 4-1/2 butt hinges. Plate Detention Swing Doors or Tube Detention Swing Doors shall be hung on four (4) 5" x 5" butt weld on hinges. Hinges shall be ASTM Grade 1 and manufactured by a U. S. manufacturer.
- I. Detention Door Pulls: Shall be flush pulls as indicated in Drawings, and as fabricated by Trimco 1115B Flush Pull Set, Rockwood 94 Series Flush Pull, Southern Steel 214S or prior approved equal.
- J. Door Stops: Detention Doors/Hardware Schedule indicates doors to be with stops for limiting swings of doors in the open position. Detention Hollow Metal doors under this section shall be provided, where indicated, with heavy-duty dome type floor-mounted bumpers.
- K. Kick Plates: Shall be based on Rockwood K1050 series as specified the Detention Hardware Schedule. Provide beveled edges and countersunk screw holes. Equal manufacturers include Ives and Trimco.
- L. Thresholds and Weatherstrip: Thresholds, weatherstripping, and gasket seals to be of type and design as specified in the Detention Hardware Schedule. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated. Products based on Pemko. Equal manufacturers include Zero and National Guard Products.

## 2.03 DETENTION DOOR HARDWARE SETS

- A. Manufacturer Abbreviations:
  - 1. SS - Southern Steel
  - 2. KG – Kingsway Group
  - 3. PE - Pemko
  - 4. RO - Rockwood
  - 5. TC - Trimco
  - 6. NO – Norton

### **Set: D1.0**

Doors: 100A, 100B, A102, A103A, A115, C107A, J101, R108C, S108B, S139B, T107A, T110A

Description: Single Exterior (Control)

|   |                      |                                 |       |    |
|---|----------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                         | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V                   | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder                  | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount          | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer     | 7970                            | 689   | NO |
| 1 | Kick Plate           | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |

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|   |                     |                            |       |    |
|---|---------------------|----------------------------|-------|----|
| 1 | Detention Door Stop | 420                        | BLACK | SS |
| 1 | Gasketing           | 290APK Torx (Head & Jambs) |       | PE |
| 1 | Rain Guard          | 346C Torx                  |       | PE |
| 1 | Sweep               | 315CN Torx                 |       | PE |
| 1 | Threshold           | 2705AT Torx                |       | PE |
| 1 | Magnetic Switch     | 200MRS TB                  |       | SS |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D2.0**

Doors: D108, D108B, F108, F108B, G108, G108B, H108, H108B, J100B, K108, K108B, L108, L108B, N108, N108B, P108, P108B, Q108, Q108B

Description: Single Exterior (Control)

|   |                      |                             |       |    |
|---|----------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                     | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V               | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder              | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer     | 7970                        | 689   | NO |
| 1 | Detention Door Stop  | 420                         | BLACK | SS |
| 1 | Gasketing            | 290APK Torx (Head & Jambs)  |       | PE |
| 1 | Rain Guard           | 346C Torx                   |       | PE |
| 1 | Sweep                | 315CN Torx                  |       | PE |
| 1 | Threshold            | 2705AT Torx                 |       | PE |
| 1 | Magnetic Switch      | 200MRS TB                   |       | SS |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D3.0**

Doors: A100, A103B, A108A, A121, A123C, B102A, B102B, C101A, C104, C105, C107, C116, S108A, S139A, T110B

Description: Single Interior (Control)

|   |                      |                                 |       |    |
|---|----------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                         | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V                   | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder                  | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount          | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                         | 689   | NO |
| 1 | Kick Plate           | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Wall Stop            | KG182GR Torx                    | 630   | KG |
| 1 | Silencer             | 608-RKW                         |       | RO |

Notes: Template closer for maximum degree of opening.

**Operation:**

|                                      |             |                     |
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1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D4.0**

Doors: D103, F103, G103, H103, K103, L103, N103, P103, Q103

Description: Single Interior (Control)

|   |                      |                             |       |    |
|---|----------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                     | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V               | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder              | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                     | 689   | NO |
| 1 | Wall Stop            | KG182GR Torx                | 630   | KG |
| 1 | Silencer             | 608-RKW                     |       | RO |

Notes: Template closer for maximum degree of opening.

**Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D5.0**

Doors: A104, A105, A110A, A123A, B103, B103A, B103B, B103C, B103D, B104, C100, C100A, C103, C106, C110, C118, C120, C122, D101, D102, D106, D107, F101, F102, F106, F107, G101, G102, G106, G107, H101, H102, H106, H107, K101, K102, K106, K107, L101, L102, L106, L107, N101, N102, N106, N107, P101, P102, P106, P107, Q101, Q102, Q106, Q107, R107A, R108

Description: Single Interior (Control)

|   |                      |                                 |       |    |
|---|----------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                         | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V                   | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder                  | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount          | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                         | 689   | NO |
| 1 | Kick Plate           | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Detention Door Stop  | 420                             | BLACK | SS |
| 1 | Silencer             | 608-RKW                         |       | RO |

Notes: Template closer for maximum degree of opening. Eliminate stop where not viable.

**Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D6.0**

Doors: A109A, A110B, A120A, A123B, A125, A128, A145A, A145B, A153A, A153B, B102C, C102, C108, C112A, C112B, C114, D100, F100, G100, H100, K100, L100, N100, P100, Q100, R104, S116, S125

Description: Single Interior Rated (Control)

|                                      |             |                     |
|--------------------------------------|-------------|---------------------|
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|--------------------------------------|-------------|---------------------|

|   |                      |                                 |       |    |
|---|----------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                         | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V                   | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder                  | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount          | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                         | 689   | NO |
| 1 | Kick Plate           | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Detention Door Stop  | 420                             | BLACK | SS |
| 1 | Gasketing            | P88D                            |       | PE |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D7.0**

Doors: J100A, R100, R106, R107, S100, S101, S102, S103, S104, S105, S106, S131, S133, S135, S137, S138, S140, T100, T105, T108

Description: Single Interior Rated (Control)

|   |                      |                             |       |    |
|---|----------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                     | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-2 24V               | GALV  | SS |
| 2 | Mogul Cylinder       | Mogul Cylinder              | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                     | 689   | NO |
| 1 | Detention Door Stop  | 420                         | BLACK | SS |
| 1 | Gasketing            | P88D                        |       | PE |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.
2. Door position switch to signal door open/closed to the central control system.

**Set: D8.0**

Doors: A106, A107, A122, A125A, A125B, A125C, A125D, A125E, A125F, A130, D104, F104, G104, H104, J114, K104, L104, N104, P104, Q104, R106B, S107, S136, T102

Description: Single Holding Cell, Youth Restroom (Control)

|   |                      |                             |       |    |
|---|----------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                     | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-1 24V               | GALV  | SS |
| 1 | Mogul Cylinder       | Mogul Cylinder              | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                     | 689   | NO |
| 1 | Detention Door Stop  | 420                         | BLACK | SS |
| 3 | Silencer             | 608-RKW                     |       | RO |

**Notes: Operation:**

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during

|                                      |             |                     |
|--------------------------------------|-------------|---------------------|
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power failure with a mechanical key override.

2. Door position switch to signal door open/closed to the central control system.

**Set: D9.0**

Doors: A125H, D110, D111, D112, D113, D114, D115, D116, D117, D118, D119, F110, F111, F112, F113, F114, F115, F116, F117, F118, F119, G110, G111, G112, G113, G114, G115, G116, G117, G118, G119, H110, H111, H112, H113, H114, H115, H116, H117, H118, H119, K110, K111, K112, K113, K114, K115, K116, K117, K118, K119, L110, L111, L112, L113, L114, L115, L116, L117, L118, L119, N110, N111, N112, N113, N114, N115, N116, N117, N118, N119, P110, P111, P112, P113, P114, P115, P116, P117, P118, P119, Q110, Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119, S134

Description: Single Holding Cell, Youth Restroom Rated (Control)

|   |                      |                             |       |    |
|---|----------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                     | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-1 24V               | GALV  | SS |
| 1 | Mogul Cylinder       | Mogul Cylinder              | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                     | 689   | NO |
| 1 | Wall Stop            | KG182GR Torx                | 630   | KG |
| 1 | Gasketing            | P88D                        |       | PE |

Notes: Operation:

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.

2. Door position switch to signal door open/closed to the central control system.

**Set: D10.0**

Doors: A124, A126

Description: Single Holding Cell, Youth Restroom Rated (Control)

|   |                      |                             |       |    |
|---|----------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge  | 204FMSS                     | US32D | SS |
| 1 | Full Cycle Deadlatch | 10120AM-1 24V               | GALV  | SS |
| 1 | Mogul Cylinder       | Mogul Cylinder              | US26D | SS |
| 1 | Flush Pull           | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull           | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer     | 7970DPS                     | 689   | NO |
| 1 | Detention Door Stop  | 420                         | BLACK | SS |
| 1 | Gasketing            | P88D                        |       | PE |

Notes: Operation:

1. Doors electrically unlocked or locked during established time zones as programmed by the central control system. When doors are locked central control grants access. Locksets mechanically lock during power failure with a mechanical key override.

2. Door position switch to signal door open/closed to the central control system.

**Set: D11.0**

Doors: S116A

Description: Single College Academy

|   |                     |                             |       |    |
|---|---------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 | Roller Latch        | 590 TORX                    | US26D | RO |
| 1 | Deadlock            | 10516                       | US32D | SS |
| 1 | Flush Pull          | 214S - Push Side Mount      | US26D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |

|                                      |             |                     |
|--------------------------------------|-------------|---------------------|
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|   |                     |         |       |    |
|---|---------------------|---------|-------|----|
| 1 | Concealed Closer    | 7970    | 689   | NO |
| 1 | Detention Door Stop | 420     | BLACK | SS |
| 3 | Silencer            | 608-RKW |       | RO |

**Set: D12.0**

Doors: A129, A133, A141, A143, A147

Description: Single Dentist, Opt, Exam, Lab Rated

|   |                     |                             |       |    |
|---|---------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 | Storeroom Lock      | 10572 SK x SK               | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer    | 7970                        | 689   | NO |
| 1 | Detention Door Stop | 420                         | BLACK | SS |
| 1 | Gasketing           | P88D                        |       | PE |

**Set: D13.0**

Doors: A112, R110, R112

Description: Single Storage, Office

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                         | US32D | SS |
| 1 | Storeroom Lock      | 10573                           | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer    | 7970                            | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Detention Door Stop | 420                             | BLACK | SS |
| 3 | Silencer            | 608-RKW                         |       | RO |

**Set: D14.0**

Doors: A129A, A129B

Description: Single XRAY, Equipment

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                         | US32D | SS |
| 1 | Storeroom Lock      | 10573                           | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer    | 7970                            | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Wall Stop           | KG182GR Torx                    | 630   | KG |
| 3 | Silencer            | 608-RKW                         |       | RO |

**Set: D15.0**

Doors: R115

Description: Single Janitor

|   |                     |                             |       |    |
|---|---------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 | Storeroom Lock      | 10573 SK                    | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer    | 7970                        | 689   | NO |
| 1 | Wall Stop           | KG182GR Torx                | 630   | KG |
| 3 | Silencer            | 608-RKW                     |       | RO |

**Set: D16.0**

Doors: R100A, R100C

Description: Single Storage

|   |                     |         |       |    |
|---|---------------------|---------|-------|----|
| 4 | Institutional Hinge | 204FMSS | US32D | SS |
|---|---------------------|---------|-------|----|

|                                      |              |                     |
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|   |                     |                             |       |    |
|---|---------------------|-----------------------------|-------|----|
| 1 | Storeroom Lock      | 10573 SK                    | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer    | 7970                        | 689   | NO |
| 1 | Detention Door Stop | 420                         | BLACK | SS |
| 3 | Silencer            | 608-RKW                     |       | RO |

**Set: D17.0**

Doors: B115, E103, E104, E106, E107, E108, E109, E112, E113, E114, E115, E116, E117, E120, E121, E122, E123, R100D, S115, S121

Description: Single Invest, Chase, Work, Elec Rated (DPS)

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                         | US32D | SS |
| 1 | Storeroom Lock      | 10573                           | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer    | 7970DPS                         | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Detention Door Stop | 420                             | BLACK | SS |
| 1 | Gasketing           | P88D                            |       | PE |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D18.0**

Doors: A127, B111, B113, T101

Description: Single Bio, Office, Break, Commander Rated

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                         | US32D | SS |
| 1 | Storeroom Lock      | 10573                           | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer    | 7970                            | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Detention Door Stop | 420                             | BLACK | SS |
| 1 | Gasketing           | P88D                            |       | PE |

**Set: D19.0**

Doors: M109, S108C, T104

Description: Single Mech, Chase Rated (DPS)

|   |                     |                                 |       |    |
|---|---------------------|---------------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                         | US32D | SS |
| 1 | Storeroom Lock      | 10573                           | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 | Concealed Closer    | 7970DPS                         | 689   | NO |
| 1 | Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 | Wall Stop           | KG182GR Torx                    | 630   | KG |
| 1 | Gasketing           | P88D                            |       | PE |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D20.0**

Description: Single Elec Rated (DPS)

|   |                     |         |       |    |
|---|---------------------|---------|-------|----|
| 4 | Institutional Hinge | 204FMSS | US32D | SS |
| 1 | Storeroom Lock      | 10573   | US32D | SS |
| 1 | Concealed Closer    | 7970DPS | 689   | NO |

|                                      |              |                     |
|--------------------------------------|--------------|---------------------|
| 571506 / New Jetson Center for Youth | 11 1900 - 11 | DETENTION EQUIPMENT |
|--------------------------------------|--------------|---------------------|

|              |                                 |       |    |
|--------------|---------------------------------|-------|----|
| 1 Kick Plate | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 Wall Stop  | KG182GR Torx                    | 630   | KG |
| 1 Gasketing  | P88D                            |       | PE |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D21.0**

Doors: A111, A125G, D105, F105, F109, G105, H105, J116, K105, K109, L105, N105, P105, Q105, T100A, T105A

Description: Single Storage, Chase, Office, Snack, Staff Restroom (DPS)

|                       |                                 |       |    |
|-----------------------|---------------------------------|-------|----|
| 4 Institutional Hinge | 204FMSS                         | US32D | SS |
| 1 Storeroom Lock      | 10573                           | US32D | SS |
| 1 Flush Pull          | 1115 TORX - Pull Side Mount     | 630   | TC |
| 1 Concealed Closer    | 7970DPS                         | 689   | NO |
| 1 Kick Plate          | K1050 10" x 2" LDW BEV CSK TORX | US32D | RO |
| 1 Detention Door Stop | 420                             | BLACK | SS |
| 3 Silencer            | 608-RKW                         |       | RO |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D22.0**

Doors: J110, J112

Description: Single Office, Snack (DPS)

|                       |                             |       |    |
|-----------------------|-----------------------------|-------|----|
| 4 Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 Storeroom Lock      | 10573 SK                    | US32D | SS |
| 1 Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 Concealed Closer    | 7970DPS                     | 689   | NO |
| 1 Detention Door Stop | 420                         | BLACK | SS |
| 3 Silencer            | 608-RKW                     |       | RO |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D23.0**

Doors: R121, R122, R122A, S114, S140A

Description: Single Storage Rated

|                       |                             |       |    |
|-----------------------|-----------------------------|-------|----|
| 4 Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 Storeroom Lock      | 10573 SK                    | US32D | SS |
| 1 Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 Concealed Closer    | 7970                        | 689   | NO |
| 1 Detention Door Stop | 420                         | BLACK | SS |
| 1 Gasketing           | P88D                        |       | PE |

**Set: D24.0**

Doors: J120, S112

Description: Single Storage Rated (DPS)

|                       |                             |       |    |
|-----------------------|-----------------------------|-------|----|
| 4 Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 Storeroom Lock      | 10573 SK                    | US32D | SS |
| 1 Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |

|                                      |              |                     |
|--------------------------------------|--------------|---------------------|
| 571506 / New Jetson Center for Youth | 11 1900 - 12 | DETENTION EQUIPMENT |
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|   |                     |         |       |    |
|---|---------------------|---------|-------|----|
| 1 | Concealed Closer    | 7970DPS | 689   | NO |
| 1 | Detention Door Stop | 420     | BLACK | SS |
| 1 | Gasketing           | P88D    |       | PE |

Notes: Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D25.0**

Doors: T107

Description: Single Storage Rated (DPS)

|   |                     |                             |       |    |
|---|---------------------|-----------------------------|-------|----|
| 4 | Institutional Hinge | 204FMSS                     | US32D | SS |
| 1 | Storeroom Lock      | 10573 SK                    | US32D | SS |
| 1 | Flush Pull          | 1115 TORX - Pull Side Mount | 630   | TC |
| 1 | Concealed Closer    | 7970DPS                     | 689   | NO |
| 1 | Detention Door Stop | 420                         | BLACK | SS |
| 1 | Gasketing           | P88D                        |       | PE |

Notes: Mount pull above safety knob on pull side.

Operation:

1. Door position switch to signal door open/closed to the access control system.

**Set: D26.0**

Doors: A108B

Description: Single Manual Sliding Door

Notes: All hardware by door supplier. Include manual slider with mechanically keyed locking.

**Set: D27.0**

Doors: G1, G2, G5, G6, GD108, GF108, GH108, GK108, GL108, GP108

Description: Single Detention Gate (Control)

|   |                    |       |  |    |
|---|--------------------|-------|--|----|
| 1 | Electric Gate Lock | 1050D |  | SS |
|---|--------------------|-------|--|----|

Notes: Balance of hardware including hinges and closer furnished by gate manufacturer. Gates to be prepped and reinforced to accept hardware. Prior to ordering hardware or fabricating gates, coordinate to ensure hardware is compatible with gate system.

**Set: D28.0**

Doors: G7

Description: Single Gate

Notes: All hardware by gate supplier.

**Set: D29.0**

Doors: G8

Description: Pair Gate

Notes: All hardware by gate supplier.

**Set: D30.0**

Doors: G3, G4, G9

Description: Sliding Gate

|                                      |              |                     |
|--------------------------------------|--------------|---------------------|
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Notes: All hardware by gate manufacturer.

## 2.04 DETENTION HOLLOW METAL

- A. Items covered under this section of the specifications are:
1. Detention type doors of all types and all related items necessary to complete the work-related items necessary to complete the work indicated on the drawings and as described in the specifications.
  2. Detention type frames of all types including sidelights, visitation area framing and all related items necessary to complete the work indicated on the drawing, and as described in the specifications.
  3. Quality Assurance
    - a. Experience Criteria: Documented experience in manufacturing detention hollow metal products.
    - b. Product Supplier: one company shall manufacture both doors and frames. Supply samples of each type of door and frame.
    - c. Shop Assembly: Pre-assemble products in shop to greatest extent possible to minimize field splicing and assembly. Disassemble products only as necessary for shipping and handling limitations. Clearly mark products for reassemble.
    - d. Fire Rated Assemblies:
      - 1) Wherever a detention hollow metal assembly is located in a fire-rated wall/partition, the detention hollow metal assembly must meet or exceed the fire rating of the wall/partition. Identify each fire door and frame with UL labels indicating applicable fire rating.
      - 2) Install assemblies to comply with NFPA standard #80.
    - e. Performance Testing:
      - 1) Submit an independent testing laboratory report certifying the following minimum performance of the manufacturer's typical prison door.
      - 2) Static Load Test: Under centrally applied load of 14,000 lbs. At quarter points, the maximum permitted deflection shall be 0.45" with a rebound of 0.010" after release of load.
      - 3) Rack Test: Under a concentrated load of 7,000 lbs., maximum deflection shall not exceed 3.5" without failure
    - f. Delivery, Storage and Protection:
      - 1) Delivery of detention hollow metal doors crated to provide protection during transit. Frames shall ship with two (2) spreader bards.
      - 2) Inspect hollow metal work upon delivery for damage.
      - 3) Store doors and frames under cover. Place units on at least 4" high wood sills or on floors in a manner that will prevent rust or damage. Avoid the use of non-vented plastic or canvas, which could create a humidity chamber. Provide a 1/4" space between stacked doors to promote air circulation.
  4. Applicable Reference Standards:
    - a. Comply with the following standards:
      - 1) ASTM A569-Hot rolled low carbon steel sheets.
      - 2) ASTM A366-Cold rolled low carbon steel sheets.
      - 3) ASTM A525-Zinc coated by hot dipped process steel sheets.
      - 4) ASTM A526-Zinc coated by hot dipped process steel sheets.
  5. Submittal:
    - a. Shop Drawings:
      - 1) Submit composite type drawings showing detailed construction including door and frame elevations, sections, anchors, visitation areas detail and related type of construction. (All drawings must be computer generated).
      - 2) Submit on-site instructions.
  6. Acceptable Manufacturers:

- a. The following manufacturers are pre-approved to furnish detention hollow metal for this project:
  - b. **Basis of Design:** R & S Corporation
  - c. Habersham
  - d. Trussbilt
  - e. Pioneer Industries
  - f. Other manufacturers requesting approval must meet the requirements specified in Section 1.2, C, 1 and furnish the additional information listed below:
    - 1) List of projects completed in the last five (5) years (include Owner and Architect's address and phone number).
    - 2) List of projects under construction (include Owner and Architect's address and phone number).
7. Fabrication:
- a. Detention Doors:
    - 1) General: Provide detention-type hollow metal doors and related frames where designated on drawings.
    - 2) Door Construction:
      - (a) Type: Detention hollow metal doors, nominal 2" thick jambs, unless indicated otherwise or as required to fit existing door frame conditions, and 4" head sections as designated on drawings; flush design, with smooth seamless steel faces and side edges of 12 gauge steel unless otherwise noted. Use galvanized steel at exterior doors.
      - (b) Vertical steel channel or steel hat sections full height of door with flanges occurring against each door face at not more than 3" on centers, each welded to face sheets at maximum 4" o.c. or inner reinforcements may be a continuous true truss design form with flat apexes occurring against each door face at not more than 3" o.c. and each apex spot welded to face sheet at maximum 4" o.c.
      - (c) Channel perimeter reinforcement: Minimum 10 gauge welded to face sheets at maximum 4" o.c. around full perimeter of door.
      - (d) Insulation: 6 lb. density wool filling voids within door panel.
    - 3) Hardware Preparation:
      - (a) Prepare and reinforce doors for operation and hardware specified in detention door hardware schedule.
      - (b) Where hardware requires fastener attachment, provide additional concealed reinforcing, drill and tap to receive tamper-resistant security fasteners. Through bolting will not be accepted in place of additional reinforcing.
      - (c) For mortise hinges, provide back-up reinforcement of 3/16" x 1-1/2" x 9" steel plate at each hinge, welded to perimeter channel of door.
      - (d) For surface hinges when applicable, provide additional back-up reinforcement of minimum 3/8" x 9" steel plat at each hinge, welded into door between vertical reinforcement.
      - (e) Provide special reinforced lock pockets where detention locks are required consisting 3/16" steel plate on sides and perimeter edges of pocket, and provide for removable lock cover plate on secure side of door to be flush with door face.
    - 4) Door Edges:
      - (a) Bevel vertical edges of swinging doors as required to prevent binding, but no greater than 1/8" in 2".
      - (b) Top and bottom edges of door of flush construction, top watertight when exposed to weather elements. Side edges flush and seamless produced by continuously welding joint of face sheets and grinding smooth. Furnish astragal for door pairs in exterior walls.

- 5) Vision Panels:
  - (a) Prepare and enforce doors for vision panels where required. Provide frame and stops to accommodate glazing.
  - (b) Weld frame and stop to door on "detention" side. Attach frame and stop on "non-secure" side with tamper-resistant security fasteners at 4" o.c.
- 6) Accessory Items:
  - (a) Provide for installation of accessory items for doors.
  - (b) Prepare and reinforce doors for these accessory items to maintain rigidity and security of basic door construction.
  - (c) Provide flush side edges at opening, welded and ground smooth.
- 7) Detention Door Frames:
  - (a) Detention hollow metal frames: Formed with integral stops, fabricated to size and profile shown using minimum 12 gauge steel unless otherwise noted.
    - (1) Corners of frames shall be fully mitered, continuously welded and ground smooth.
    - (2) Fabricated from galvanized sheet steel at exterior locations.
  - (b) Anchors: Provide door frames built-in to concrete or masonry with a floor anchor at each jamb and minimum 4 wall anchors, each jamb of type detailed and suitable for wall construction involved.
    - (1) For conditions, which require welded anchorage, provide for such welded anchorage.
    - (2) Furnish frames to job-site with temporary bottom spreader.
  - (c) Hardware Preparation:
    - (1) Prepare and reinforce frame for operation and hardware specified in detention door hardware schedule.
    - (2) Where hardware requires fastener attachment, drill and tap to receive tamper-resistant security fasteners.
    - (3) For mortise hinges, provide minimum 3/16" x 1-1/2" x 9" steel plate reinforcement welded to frame at each hinge.
    - (4) For surface hinges, provide minimum 3/8" x 1-1/2" x 9" steel plate reinforcement welded to frame at hinge.
    - (5) Provide reinforced lock pockets for jamb mounted Electro/mechanical locks consisting of minimum 3/16" steel plate back-up reinforcement welded to frame, and provide for removable lock cover plate on secure side of frame, flush with face of frame unless otherwise detailed.
    - (6) Provide slots in frames to receive latch and lock bolts as applicable and provide for strike plate for bolt keeper plate as required.
    - (7) Provide steel mortar guard at lock bolt keeper slot and behind other cutouts for mortise hardware as applicable.
    - (8) Provide factory installed metal junction boxes and metal conduit between lock pocket and door position indicator on door frames receiving jamb-mounted electric lock and concealed door closure. Junction box, minimum 1/2" conduit and related connectors shall be UL approved.
  - (d) Sidelight/Transom Frames:
    - (1) Provide fixed stops and loose steel stops as detailed. Use loose stops on "non-secure" side of opening and attach at countersunk tamper-resistant security fasteners.
    - (2) Verify thickness of glazing material and clearances required for installation, prior to fabrication of frames and stops.
  - (e) Edge Clearances: Provide the following edge clearances:
    - (1) Between doors and frames at head and jamb: 1/8"
    - (2) Between meeting stiles: 1/8"

- (3) Sill without threshold: 1/2"
- (4) Sill with threshold: 1/8" between threshold and door.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL REQUIREMENTS:**

- A. Examine and inspect all surfaces, anchors and grounds that are to receive materials, fixtures, assemblies and equipment specified herein. Report all unsatisfactory conditions in writing to the Architect and Construction Manager.
- B. Check location, "roughing in", and field dimensions prior to beginning work.
- C. Do not begin installation until all satisfactory conditions have been corrected

#### **3.02 RESPONSIBILITIES:**

- A. The Electrical Contractor shall be responsible for the following:
  - 1. Electrical power to factory installed terminal blocks and power outlets including cut-off switches and all other electrical equipment incidental to supply power.
  - 2. The DEC shall be responsible for the installation and final adjustments of the following items:
    - a. Security doors and locking systems
    - b. Security glass

#### **3.03 CONDUIT AND WIRING:**

- A. All Conduit and Wiring associated with the Detention Equipment Contractor Work to be provided and installed as specified in Division 28 "ELECTRONIC SAFETY AND SECURITY".

**END OF SECTION**

|                                      |              |                     |
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## SECTION 11 1910 - DETENTION FURNISHING

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. This section must be provided by DEC Contractor.

#### 1.02 SUMMARY

- A. This Section includes the following:
  - 1. Stainless Steel Detention Mirrors\*\*\*
  - 2. Stainless Steel Recessed Toilet Paper Holders
  - 3. Stainless Steel Grab Bars @ Detention H/C showers & Toilets. \*\*\*
  - 4. Detention Safety Clothing Hooks\*\*\*
  - 5. Stainless Steel Shelf with Safety Hooks\*\*\*
  - 6. Detention Floor Mounted Bench- Admissions/Processing & Waiting
  - 7. These furniture items require embed plates. Embeds are furnished by Detention Contractor and installed by the General Contractor per layout drawing provided by the Detention Contractor.
- B. MATERIALS
  - 1. All materials required for the work specified herein shall be new and produced especially for the detention use or shall conform to accepted standards of the detention equipment industry.

#### 1.03 PERFORMANCE REQUIREMENTS

- A. STAINLESS STEEL DETENTION MIRRORS
  - 1. Detention-type mirror shall be as indicated on the drawings. Faceplate shall be 18-gauge stainless steel frame. Mirror shall be 12 ½" x 16 ½" x ¼" overall with a 10" x 14" Mirror Surface. Provide 1/4-20 x 3/8" Stainless Steel Torx Security Screws to attach mirror to a 1/4" steel embed plate on masonry walls. Refer to plans for quantity required. Center mirror over lavatory, coordinate location to avoid conflict with the height of plumbing fixture. Provide Mirror Embed Plate at all masonry walls.
  - 2. General Contractor shall install embed plate per layout drawings provided by Detention Contractor.
  - 3. Mirror embed plate shall be prime painted. Finish coat of paint is be the painting subcontractor.
- B. STAINLESS STEEL GRAB BARS
  - 1. Provide ¼" x 4" Stainless Steel Embed Plates x 9" high to anchor all Stainless Steel Grab Bars located in the Security Inmate Areas. These embed plates are to be delivered to the General Contractor. The General Contractor shall unload, store and protect embeds until installed in the masonry. Installation is by the Masonry Contractor under the supervision of the General Contractor. Detention Contractor shall provide layout drawings for installation.
  - 2. Provide 1 ½" ID Stainless Steel Grab Bars at Security H/C Showers and Security H/C Toilets in Inmate Housing Areas.
  - 3. Detention Contractor shall weld Stainless Steel Grab Bars to the Stainless Steel Embed Plates with #304 Stainless Steel Rods. All welds shall be buffed to remove all discoloration
  - 4. Wire brush the weld to blend the finish to an acceptable appearance as determined by the Architect.
  - 5. General Contractor shall verify all rough-in dimensions prior to installation. Use bar as template to locate mounting holes.
- C. RECESSED TOILET PAPER DISPENSER:

1. Satin-finish stainless steel with one piece seamless construction. Provide with theft-resistant spindle. Located as indicated on drawings.
- D. DETENTION SAFETY CLOTHING HOOKS
1. Safety hook shall be designed to thwart suicides by collapsing under a heavy load. Construction of 10 gauge galvanized steel; the hook will be attached with security screws. A friction washer assembly that maintains proper pressure on the collapsible hook is adjustable by means of a special tool. Provide and install four per bath room.
- E. STAINLESS SHELF WITH SAFETY HOOKS
1. Safety hook shall be designed to thwart suicides by collapsing under a heavy load, constructed of 10 gauge stainless steel. The hook will be attached with security screws. A friction washer assembly that maintains proper pressure on the collapsible hook is adjustable by means of a special tool.
  2. Provide a 20" x 10" x 1/4" Stainless Steel Embed Plate pre-drilled and tapped for (4) Safety Hooks. Embed plate shall have (4) 3/16" x 2" Stainless Steel Straps x 6" with (2) 1" holes. Provide loose drop- in "TEE" Anchors for each strap. "TEE" Anchors will be installed by masonry contractor
  3. Provide Safety Hooks at all Showers (see drawings for locations)
  4. General Contractor shall install embed plate per layout drawings provided by Detention Contractor.
  5. End Plates create a bin effect to keep articles on the shelf.
  6. Unit shall have (2) safety hooks securely welded to the lower section of shelf.
- F. FURNITURE - DETENTION FLOOR MOUNTED BENCH- WAITING/ INTAKE
1. Bench is constructed of 10 gauge formed mild steel and have 2" rolled edge. Bench size as indicated on drawing.
  2. Mounting plates of 1/4 inch thick steel are securely welded to riser legs.
  3. Bolt holes are factory punched to size as specified.
  4. Detention contractor shall anchor benches to the floor with Wedge Anchors.
  5. Bolts shall be cut and tack welded.
  6. Benches shall be Powder Coated in Color to be selected.

#### **1.04 SUBMITTALS**

- A. Submit each item in this article according to the Conditions of the General Contract and Division 1 Specification section.
- B. Product data for each different item, accessory and other manufactured product specifications.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Storage and Protection: Protect assemblies from damage, after delivery to site and, before installation.
- B. Embedded items of Detention Equipment that are to be set in concrete or masonry by the General Contractor shall be furnished, delivered, and located by the Detention Equipment Contractor, F.O.B. his truck or common carrier, to the building site and there unloaded by the General Contractor so as not to delay the truck's departure from the building site. General contractor shall be responsible for security of the embedded items of detention equipment at the job site.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. The following manufacturers are pre-approved to furnish detention furnishing for this project:
  1. Chief Industries
  2. R & S Corporation
  3. American Jail Products
  4. Slate Security

- B. Substitutions: Submit proposed substitution in writing to the Architect within 7 working days of the bid due date. Submit samples and product data for Architects review and addendum approval.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Verify field measurements on Shop Drawings.
- B. Ensure that embedded plates and anchors are correctly located and installed.

#### **3.02 FIELD ASSEMBLY**

- A. Assemble in accordance with manufacturer's instructions.
- B. If not factory applied, apply Loctite Dri-Loc 204 sealant to bolts prior to assembly.
- C. Use Torx tamper-resistant screws where fasteners are exposed or accessible.

#### **3.03 INSTALLATION**

- A. Install assemblies in accordance with manufacturer's instructions for each type of condition encountered.
- B. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation.

#### **3.04 PROTECTION**

- A. Protect assemblies from damage until adjacent construction is complete.

#### **3.05 CLEANING**

- A. Do not remove protective material until finish work in adjacent areas is complete. When protective material is removed, clean exposed metal surface to comply with manufacturer's instructions.

**END OF SECTION**

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| 571506 / New Jetson Center for Youth | 11 1910 - 3 | DETENTION FURNISHING |
|--------------------------------------|-------------|----------------------|

## SECTION 11 1940 - SECURITY GLAZING

### PART - 1 GENERAL

#### 1.01 DESCRIPTION

- A. Related Documents
  - 1. Detention Contractors Work:
    - a. The work consists of the provision and installation of all detention items delineated within the detention drawings and specifications.
    - b. The scope of the work includes all work required for the complete installation of a detention hollow metal doors, detention frames and detention hardware, detention hollow metal window frames.
    - c. The following sections shall be provided by one DEC contractor:
      - 1) Section 111900 – Detention Equipment
      - 2) Section 111910 – Detention Furnishing
      - 3) Section 111940 – Security Glazing
  - 2. The detention contractor shall be responsible for the coordination, supply and layout of all steel imbeds as required for a complete installation of detention doors, frames, windows and furnishings.

#### 1.02 SUMMARY

- A. This section includes, but is not limited to the following items to be furnished and installed:
  - 1. Security type glazing for security hollow metal doors and frames.
  - 2. Refer to schedules on drawings for glass type and location.

#### 1.03 REFERENCES

- A. ANSI Z97.LA-1977 – Safety glazing materials used in buildings.
- B. FGMA – Glazing Manual, 1986 Edition.

#### 1.04 SUBMITTAL

- A. Shop Drawings:
  - 1. Required for glazing material indicating types, locations, sizes and manufacturer's recommendations for support, clearances, and sealing in frame members.
  - 2. Coordinate with shop drawings for window, door and frame assemblies to receive glazing material.
- B. Product Data: Manufacturer's product sheets for glazing material and for glazing accessories.
- C. Samples: 12" x 12" of each type glass.
- D. Quality control submittal: For information only.
  - 1. Test reports: Manufacturer's certification accompanies with evidence of test reports that bullet-resistant glazing furnished meets specification requirements.
  - 2. Certification: Manufacturer's certification attesting to ability to furnish replacement glass units within 4 weeks of notification.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer's experience criteria:
  - 1. Experience manufacturing specified security glass.
  - 2. Successful installation of specified security glass on an existing correctional facility.
- B. Manufacturer's replacement capability: Capable of furnishing owner with replacement components.

#### 1.06 DELIVERY, STORAGE & HANDLING

- A. Delivery materials to job site protected to prevent breakage or damage. Deliver with manufacturer's shipping material, packaging and labels intact. Do not remove labels until material has been installed.



- B. Protect glazing materials before, during and after installation. Keep material free from contamination by materials capable of staining plastic.
- C. Handle glazing materials to prevent scratching or marring of surfaces, and to prevent edge damage.
- D. Delivery compounds in manufacturer's unopened, labeled containers.

#### **1.07 COORDINATION**

- A. Coordinate size and thickness of specified glazing materials with frames or retainers to receive glazing material.
- B. Coordinate sizes with fabricators of windows and doors that are not factory pre-glazed.

#### **1.08 WARRANTY**

- A. Manufacturer: Written one (1) year warranty signed by manufacturer against delaminating or becoming opaque under normal wear and tear. Warranty shall include labor to remove failed units and replacement with new units.
- B. Manufacturer: Written one (1) year warranty signed by manufacturer against deterioration of mirrored glazing.

### **PART 2 – PRODUCTS**

#### **2.01 MANUFACTURER**

- A. The following manufacturers are approved to furnish security glazing on this project:
  1. **Basis of Design:** Global Security Glazing - [www.security-glazing.com](http://www.security-glazing.com).
  2. Dlubak Specialty Glass Corporation - [www.dlubakglass.com](http://www.dlubakglass.com).
  3. Other manufacturers may submit evidence of compliance with specification Section 111900, paragraph 2.1 and with paragraph 1.4 of this section for consideration as equal.
- B. Security glazing furnished on project shall be products of a single manufacturer.

#### **2.02 GENERAL REQUIREMENTS**

- A. Glass and other glazing materials shall be from new stock, free from chips, cracks, scratches, or other defects that mar appearance or impair strength and performance. Factory label each glass pane showing type, strength grade and thickness.

#### **2.03 MATERIALS**

- A. Security Glass  
 SECURITY GLAZING: \*\*\*See Door Elevations for Glazing Locations.
  1. **Type SG-1** - Basis of Design: 1/2" Monolithic Abrasion Resistant - Clear Polycarbonate - Lexan MR10 - ASTM F 1233, Class II, ASTM 1915 Grade 4, HP White Level 1-TP-0500.02, as manufactured by Global Security Glazing or prior approved equal.
  2. **Type ISG-1** - Insulated Security Glazing: Basis of Design: 1 1/16" insulated security glazing system as manufactured by Global Security Glazing or prior approved equal.
  3. **Type SG-2** - Basis of Design : 13/16" Glass Clad Polycarbonate (FRP 4510) Grade 4 - (Fire rating as required by wall assembly indicated)
- B. Glazing Accessories
  1. Neoprene setting blocks.
  2. Neoprene spacers.
  3. Silicone sealant, GE 1200 or Dow Corning 999.
  4. Resilient, non-hardening tapes. (Pre-shimmed tape optional).
- C. Heat-strengthened and fully tempered glass shall be free of tong marks unless tong marks would otherwise be concealed in retainer or glazing stops.
- D. Sealants for use with laminated glass material shall be compatible with plastic interlayer of laminated unit.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Examine premises before start of work and ascertain conditions, as they actually exist.
  - 1. Verify that other related work has been completed.
- B. Examine glazing surfaces to ascertain that surfaces will assure quality application of glass.
- C. Verify that glazing channels and glass are free of imperfections or damage that would prevent quality installation of glass.
- D. Carefully field measure glass opening and provide minimum required tolerances and clearances as recommended by glass manufacturer.
- E. Clean metal and glass surfaces free of foreign matter and coatings.

### **3.02 GLAZING**

- A. Do not install materials with edge damage.
- B. Install glazing material and related glazing accessories in strict accordance with respective manufacturer's instructions, applicable procedures recommended in FGMA Glazing Manual and reviewed shop drawings. Provide watertight and airtight installation exposed to weather provide airtight installation elsewhere for interior locations.
- C. Verify size required prior to cutting or fabrication of glazing material.
- D. Set and block to provide equal margins at perimeter, with glass not in contact with frames, and without springing. Install plumb, straight, square and level and in proper alignment with related work. Install securely to prevent rattling, breakage or displacement and yet allow for expansion and contraction. Maintain required clearance and support of glazing units in accordance with shop drawings and manufacturer's instructions.
- E. Wet glaze metal frames with glazing tape and silicone sealant. Verify with glazing manufacturer that selected tapes and sealants are compatible with laminated sheets.
- F. Use sealing and glazing accessories in strict accordance with recommendations and instructions of manufacturer for condition applicable to this project.

### **3.03 ADJUSTING AND CLEANING**

- A. Check installed glazing material for looseness and weather tightness. Correct deficiencies.
- B. Clean glazing material in accordance with glass manufacturer's instructions and recommendations.
  - 1. Remove excess glazing sealants from installed glazing materials.
  - 2. Remove labels from glazing materials.
  - 3. Thoroughly wash and polish both faces in glazing.
- C. Remove debris from site.

### **3.04 PROTECTION**

- A. Attach bright color crossed streamers away from face.
- B. Replace broken, scratched, chipped or otherwise-damaged glazing material.

**END OF SECTION**

## SECTION 11 3013 - RESIDENTIAL APPLIANCES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Kitchen appliances.

#### 1.02 REFERENCE STANDARDS

- A. UL (DIR) - Online Certifications Directory; Current Edition.

#### 1.03 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- D. Operation and Maintenance Data: For each residential appliance, include in operation and maintenance manual.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.
- C. Source Limitations: Obtain residential appliances from single source and each type of residential appliance from single manufacturer.
- D. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

#### 1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five (5) year manufacturer warranty on refrigeration system of refrigerators.
- C. Provide ten (10) year manufacturer warranty on magnetron tube of microwave ovens.

### PART 2 PRODUCTS

#### 2.01 KITCHEN APPLIANCES

- A. Refrigerator: Free-standing, bottom-mounted freezer, and frost-free.
  - 1. Capacity: Total minimum storage of 20 cubic ft; minimum 15 percent freezer capacity.
  - 2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
  - 3. Features: Include glass shelves, automatic icemaker, and light in freezer compartment.
  - 4. Exterior Finish: Stainless steel, color as indicated.
  - 5. Manufacturers:
    - a. Frigidaire Home Products: [www.frigidaire.com](http://www.frigidaire.com).
      - 1) Refrigerator: Model: FGRU19F6QF
      - 2) Side by Side: Model: FGHS2613PF
    - b. GE Appliances: [www.geappliances.com](http://www.geappliances.com).
    - c. Whirlpool Corp: [www.whirlpool.com/#sle](http://www.whirlpool.com/#sle).
- B. Undercounter Refrigerator: Built-in, undercounter, and manual defrost.
  - 1. Capacity: Total minimum storage of 3 cubic ft; minimum 0 percent freezer capacity.
  - 2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
  - 3. Features: Include light in compartment.

4. Exterior Finish: Stainless steel.
5. Manufacturers:
  - a. True Manufacturing Company: [www.true.com](http://www.true.com)
    - 1) ADA Height Undercounter Refrigerator
  - b. Summit Appliance: [www.summitappliance.com](http://www.summitappliance.com)
    - 1) 24" wide Built-In All-Refrigerator, ADA Compliant - Model AL54
  - c. American BioTech Supply: [www.americanbiotechsupply.com](http://www.americanbiotechsupply.com)
    - 1) Solid Door Undercounter Refrigerator Built-In, ADA - Product No: ABT-HC-UCBI-0404-ADA.
  - d. Or prior approved equal.
- C. Undercounter Freezer: Built-in, undercounter, and manual defrost.
  1. Capacity: Total minimum storage of 3 cubic ft; minimum 15 percent freezer capacity.
  2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
  3. Features: Include light in freezer compartment.
  4. Exterior Finish: Stainless steel.
  5. Manufacturers:
    - a. True Manufacturing Company: [www.true.com](http://www.true.com)
      - 1) ADA Height Undercounter Freezer
    - b. Summit Appliance: [www.summitappliance.com](http://www.summitappliance.com)
      - 1) 20" wide Built-In Commercial All-Freezer, ADA Compliant - Model SCF505SSTBADA
    - c. American BioTech Supply: [www.americanbiotechsupply.com](http://www.americanbiotechsupply.com)
      - 1) Pharmacy/Vaccine Undercounter Built-In ADA - Product No. PH-ABT-HC-UCBI-0420-ADA
    - d. Or prior approved equal.
  - D. Microwave: Countertop.
    1. Capacity: 2.0 cubic ft.
    2. Power: 1200 watts.
    3. Features: Include turntable.
    4. Exterior Finish: Stainless Steel.
    5. Manufacturers:
      - a. Frigidaire Home Products: [www.frigidaire.com](http://www.frigidaire.com).
      - b. GE Appliances: [www.geappliances.com](http://www.geappliances.com).
      - c. Whirlpool Corp: [www.whirlpool.com/#sle](http://www.whirlpool.com/#sle).

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.
- C. Examine walls, ceilings, and roofs for suitable conditions where overhead exhaust hoods will be installed.
- D. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.

- B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- D. Utilities: Comply with plumbing and electrical requirements.

### **3.03 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
  - 1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturer's written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
  - 2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
  - 3. Operational Test: After installation, start units to confirm proper operation.
  - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
- C. An appliance will be considered defective if it does not pass tests and inspections.

### **3.04 ADJUSTING**

- A. Adjust equipment to provide efficient operation.

### **3.05 CLEANING**

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.

**END OF SECTION**

## **SECTION 11 4000 – FOOD SERVICE EQUIPMENT**

### **PART 1 GENERAL**

#### **1.01 GENERAL REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### **1.02 STANDARDS**

- A. Equipment and installation thereof shall meet all requirements of applicable portions of latest editions of Standards listed below.
  - 1. American Society for Testing Materials (ASTM)
  - 2. National Electrical Code (NEC)
  - 3. American Gas Association (AGA)
  - 4. Louisiana State Board of Health
  - 5. National Sanitation Foundation (NSF)
  - 6. Factory Mutual (FM)
  - 7. Underwriters Laboratory (UL)
  - 8. Occupational Safety and Health Administration (OSHA)
  - 9. National Fire Protection Association (NFPA)
  - 10. International Building Code (IBC)
  - 11. American Disabilities Act (ADA)

#### **1.03 DESCRIPTION OF WORK**

- A. Work in This Section Includes the Following:
  - 1. Furnishing, delivery, uncrating, setting in place at locations indicated on drawings. Installation to include mounting, leveling, adjusting, and cleaning all equipment specified herein.
  - 2. Apply permanent foot/caster placement markings to building floor at all cooking equipment requiring coverage of fire suppression system in accordance with NFPA-96 codes.
  - 3. All components required for a complete assembly to serve intended function when connected to mechanical and electrical services.
  - 4. Coordination of all work required for a complete installation with other trades and subcontractors.
  - 5. Field verification of plumbing and electrical rough-ins by Food Service Equipment Contractor to ensure requirements and locations are correct. Said verification shall include all electrical characteristics (amperage, voltage, and phase) for all Existing, Contractor-Furnished, and Owner-Furnished Equipment. Field verification shall commence prior to release of equipment order and pouring of concrete slab by General Contractor.
  - 6. Sink faucets, strainers, vacuum breakers, duo drains, lever handle drains and tailpieces specified under heading entitled Fabrication Standards.
  - 7. Furnishing and mounting of all electrical starting switches, controls, light fixtures, and receptacles included in Itemized Equipment Specifications or as required for operation of equipment specified herein.
  - 8. Furnish and install all refrigeration lines and components for remote condensers in accordance with manufacturers' requirements.
  - 9. Cutting of all holes in equipment tops, shelves and bodies required for piping (gas, water, and drains) and wiring.
  - 10. Threaded hanger rods with brackets and turn buckles required to support Exhaust Hoods.

11. Threaded hanger rods with brackets and turn buckles required to support walk-in cooler and/or freezer ceiling panels (where applicable).

**B. Related Work Specified Elsewhere:**

1. Water/gas piping, line shut-off valves and final connections to equipment.
2. Drain piping, floor drains, floor sinks, "P" traps, grease traps, and final connections to equipment.
3. Electrical wiring, overload protection devices, line-disconnect switches, and final connections to equipment.
4. Install cord/plug assemblies provided by Food Service Equipment Contractor.
5. Concrete pad for remote walk-in cooler/freezer refrigeration unit package located outside building.
6. Exhaust/supply fans (including magnetic starters/ductwork/roof curb) and welding exhaust ducts to exhaust duct collars of exhaust hoods to meet applicable fire codes.
7. Air balancing of exhaust/supply fans of Exhaust Hoods to meet project requirements.
8. Structural framing where required at hanger rod locations to support Exhaust Hoods and/or Walk-In Coolers and/or Freezers.
9. Wall blocking for support of wall-mounted equipment (where applicable).

#### **1.04 DRAWINGS AND SPECIFICATIONS**

- A. Specifications and drawings shall be considered as a part of the Contract to be executed. Intent of said Drawings and Specifications is for all components required for a complete installation of food service equipment specified.
- B. Should any error, omission or conflict occur in Drawings and Specifications, Contractor shall not avail himself of such error, omission or conflict but shall have same explained and adjusted prior to signing the Contract.
- C. All addenda shall be considered as a part of original Contract Documents.

#### **1.05 QUALITY AND WORKMANSHIP**

- A. All equipment shall be constructed in strict compliance with standards of National Sanitation Foundation and shall bear the NSF label. All equipment shall meet all standards set by state and local regulations.
- B. All electrical equipment shall be approved by Underwriter's Laboratories and shall bear its seal of approval.
- C. All electrical components of equipment shall meet requirements of National Electric Code.
- D. All material shall be new (latest model at time of delivery) and of first quality. All equipment shall be installed in an undamaged condition. Where brands, materials, apparatus, or equipment are specifically designated, no substitution shall be made without prior approval in writing.
- E. Provide all Work in best manner in conformity with best standard practices. Employ qualified, efficient, and skillful workers for installation in a first-class manner.
- F. It is required that custom fabricated equipment be fabricated by a Food Service Equipment Fabricator who has plant, personnel and engineering facilities to design, detail and manufacture high quality equipment.

#### **1.06 FOOD SERVICE EQUIPMENT CONTRACTOR QUALIFICATIONS**

- A. Contractor shall possess experience and ability to perform the necessary services for a complete and workmanlike installation of food service equipment.

- B. Contractor experience shall include a minimum of five (5) years' experience as a successful Food Service Equipment Contractor and shall have successfully completed installation of at least five (5) comparable projects of similar size and nature.
- C. Contractor's in-house capabilities shall include preparation of dimensioned mechanical/electrical rough-in Drawings, experienced personnel to coordinate with other trades the proper equipment installation, warranty services, and proper demonstration of equipment on operation, service, and maintenance.

#### **1.07 SUBMITTALS**

- A. Submittals shall include product data (manufacturer's specification sheets) of standard-manufactured equipment, shop drawings of custom-fabricated equipment and equipment modified to meet project requirements, and dimensioned mechanical and electrical rough-in drawings of equipment utility requirements. Partial submittals will be given no consideration.
  - 1. Product data shall be submitted in electronic pdf format unless stated otherwise in Contract Documents and shall be in numerical order (by equipment item numbers). Each manufacturer's specification sheet shall be preceded with a type-written sheet that includes equipment description, quantity, brand/model number, accessories, and modifications to meet project requirements.
  - 2. Shop drawings are not to be based upon reproduction of Contract Document drawings. Shop drawings shall be submitted in electronic pdf format unless stated otherwise in Contract Documents. Shop drawings for custom-fabricated equipment shall be drawn at a minimum scale of 3/4" to the foot with cross-sections drawn at 1-1/2" to the foot. Sheet sizes shall be same size as sheet sizes of Contract Document drawings, not to exceed 30" x 42".
  - 3. Equipment floor plan, mechanical, and electrical rough-in drawings are not to be based upon reproduction of Contract Document drawings. Drawings shall be submitted in electronic pdf format. Rough-in drawings shall show utility requirements of equipment specified, existing equipment to be re-used, future equipment (including vendor-furnished equipment), area clean-up floor drains, and electrical convenient outlets shown on Contract Document drawings. Rough-in requirements shall be accurately drawn to scale with dimensions from centerline of columns or finished walls. Contractor shall be responsible for determining exact locations on building walls and floors and not connection points on equipment. Contractor shall visit project site to verify correct locations of utility stub-outs and floor recesses/block-outs prior to pouring of concrete slab and report discrepancies found to Architect and/or Consultant. Refer to certification requirements of Description of Work of this section.
  - 4. Contractor shall be responsible for taking all field dimensions which affect equipment and installation thereof. At the time of taking field measurements and observation of existing conditions, Contractor shall report in writing to Architect all work performed by other trades which will prevent him from execution of his work required by Contract Documents and shall obtain Architect's instructions before proceeding with his work.

#### **1.08 PROTECTION OF WORK AND MATERIALS**

- A. Contractor shall always cover and protect his Work, material, and equipment to save same from damage. Contractor shall always exercise due care to protect the work of others. Cost of any repair or replacement of damaged Work, material and equipment shall be borne by Contractor.

#### **1.09 BRANDS AND TRADE NAMES**

- A. Contractors are cautioned that only food service equipment and related items manufactured in accordance with Specifications will be acceptable. Where brand names and model numbers



are specified, it is not intended that competition be limited, but to set standards of performance, design, capacity, durability, and appearance. Bidders desiring to quote and/or supply brands of equipment other than those specified shall submit a written request to Architect with a copy to Consultant seven (7) days prior to bid date in order that such substitutions can be considered for approval and if approved, an addendum issued to all plan holders. It is understood that approval of substitutions does not relieve Contractor from furnishing equipment to meet intent and requirements of Specifications. Approval of substitutions does not relieve Contractor from additional costs of mechanical and electric utilities and other requirements not included in Contract Documents.

## **1.010 WARRANTIES**

- A. Contractor shall provide a one (1) Year Warranty from date of Substantial Completion or occupancy on all Work provided under these Specifications. Warranty shall cover replacement of defective material, transportation, and labor, but does not include costs of replacement parts and labor caused by Owner's carelessness or misuse of equipment. An additional four (4) year warranty (labor included) shall be provided on all refrigeration compressors. Contractor shall provide a reputable and qualified service agency, located within fifty (50) miles of Project site, to provide immediate service for all refrigeration equipment.

## **PART 2 PRODUCTS**

### **2.01 CUSTOM FABRICATED EQUIPMENT MANUFACTURERS**

- A. Equipment manufacturers shall be Low Temp Industries, Inc.; Atlanta Custom Fabricators; and Stainless & Aluminum Fabrication, or a prior approved equivalent.
- B. All fabricated equipment shall be manufactured by one (1) manufacturer to ensure uniformity in design and finish.

### **2.02 ELECTRICAL REQUIREMENTS**

- A. Refer to Drawings for specific requirements.
- B. Fixtures wired for three-phase shall have loads balanced as equally as possible.

### **2.03 SWITCHES AND CONTROLS**

- A. A suitable control switch or starter of proper type in accordance with Underwriter's Code shall be supplied for each motorized appliance or electrically-heated unit.
- B. Said switches and controls shall be mounted in recessed die-stamped stainless-steel cups or otherwise indented to prevent damage.

### **2.04 METAL FABRICATION STANDARDS**

- A. Materials:
  - 1. All stainless steel shall be type 302 or 304 with 18% chromium, 8% nickel, and a maximum of 0.12% carbon. All sheets shall have a No. 4 finish with colors and finish uniform throughout.

- B. Welding:
1. All welded parts shall be non-porous and free from imperfections, pits, cracks, or discolorations.
  2. Stainless steel joints and seams shall be heli-arc welded ground smooth and polished to a No. 4 finish. Tinning of welds is not acceptable. All welds shall be ground smooth and polished to original finish of metal.
- C. Field Joints:
1. Field joints shall be located for practical construction with sizes convenient for shipping and entry into building spaces.
  2. All field joints shall be fully (continuous) welded with same type metal, ground smooth and polished to original finish of metal.
- D. Table and Counter Tops:
1. All tops, unless otherwise specified, shall be constructed of 14-gauge stainless steel. Exterior edges not adjacent to walls or other equipment shall be turned down on a 90-degree angle or rolled down 1-3/4" with corners bullnosed. Tops adjacent to walls shall be turned up 6" and back 1" (minimum) on a 90-degree angle to form a backsplash. Tops adjacent to other equipment shall be flanged straight down 1-3/4". Sound deadening material shall be provided between frame members and stainless-steel tops.
  2. Edges of dishtable tops not adjacent to walls shall be turned up 3" and rolled down 1-1/2" with corners bullnosed. Dishtable tops adjacent to walls shall be turned up 10", back 2-1/2" on a 45-degree angle and down 2" to form a pipe chase. All horizontal edges and internal corners of dishtable tops shall be coved on a 5/8" minimum radius. Ends of backsplashes shall be closed, welded, ground smooth and polished.
  3. Edges of preparation counter tops (with sinks) not adjacent to walls shall be turned up 7/8" on a 45-degree angle and turned down on a 90-degree angle or rolled down 2-5/8" to form a marine roll unless specified otherwise. Preparation counter tops (with sinks and cantilevered overself uprights) adjacent to walls shall be turned up 10", back 2-1/4" on a 45-degree angle and turned down 1" on 90-degree angle to form a backsplash with pipe chase. All horizontal edges and internal corners of preparation counter tops shall be coved on a 5/8" minimum radius. Ends of backsplashes shall be closed, welded, ground smooth and polished. Backsplashes of counter tops with sinks shall be pierced on 8" centers over sinks.
  4. All tops shall be reinforced on the underside with 12-gauge (minimum) stainless steel hat channels running from front to back with center bracing where required to hold tops flat. Channels shall be stud welded and bolted to underside of tops with legs, bodies and drawer housings secured to channels so that bolts or rivets will not extend through work tops. Holes required for counter equipment shall be neatly die-punched with raised edges.
- E. Backsplashes:
1. Backsplashes of table and countertop with 90-degree turnbacks adjacent to walls shall be turned down 1" at 90-degrees and secured to building walls with 4" long 14-gauge stainless steel "zee" clips on 36" centers. Cracks between backsplashes and building walls shall be sealed with clear silicone sealant.
  2. Backsplashes of preparation counters and dishtables with 45-degree turnbacks adjacent to walls shall be turned down 1" at 135-degrees and secured to walls with 4" long 14-gauge stainless steel "zee" clips on 36" centers. Cracks between backsplashes and building walls shall be sealed with clear silicone sealant.
- F. Open Bases:
1. Open bases shall be constructed of 1-5/8" OD 16-gauge stainless steel tubular uprights and crossbraces fully welded together, ground smooth and polished. Top of cross braces shall be 12" above floor. Refer to Drawings for arrangement of crossbraces. Uprights shall be fitted at floor with adjustable, sanitary stainless steel bullet feet inserted into uprights

with inside threads to eliminate any possibility of threading collecting dirt and other matter. Tops of legs shall be fitted into die-stamped fully enclosed stainless steel gussets equivalent to Component Hardware No. A20-0206-C welded to reinforcing channels on underside of stainless-steel tops.

2. Tables 6'-0" long and under shall have four (4) legs, and tables 7'-0" long shall have six (6) legs. Legs shall be spaced not more than 5' 0" apart unless specified otherwise.

G. Cabinet Bodies and Bases:

1. All cabinet bodies and bases shall be enclosed with 18-gauge stainless steel. Exterior vertical corners shall be square.
2. Bodies and bases shall be mounted on 6" high sanitary adjustable counter legs equivalent to component Hardware No. A48-5048.

H. Undershelves and Interior Shelves:

1. All undershelves and interior shelves shall be constructed of 18-gauge stainless steel.
2. Undershelves on open base tables shall be sectional, removable, and rolled down over crossbraces, unless otherwise specified in Itemized Equipment Specifications. Shelves adjacent to walls and other equipment shall turn up 2". Shelves shall be notched around table uprights and crossbraces, so that undershelves are easily removable. All edges of sections adjacent to each other shall be turned down 1" (minimum) for rigidity.
3. All interior shelves of cabinet bodies and bases shall be stationary unless specified otherwise. Sides and rear edges of shelves shall be turned up 1-1/2", down 1-1/2" and in 2" on front. Shelves shall be welded to cabinet bodies and braced on underside. Welding marks or spots shall not be visible on exterior of counter base panels. Where removable interior shelves are specified, edges of shelves shall be turned down 1-1/2" on all sides with sections supported by angle framework. Where plumbing and other appurtenances pass through counter bases, 5" wide open chases, concealed by 6" wide rear vertical pilaster trim, shall be provided to accommodate piping.

I. Elevated Shelves:

1. Elevated shelves shall be constructed of 16-gauge stainless steel and shall be turned down 1-1/2" on front and ends with sanitary semi-rolled edges with bullnosed corners. Rear sides of shelves shall be turned up 1-1/2".
2. Free-standing shelves, unless specified otherwise, shall be mounted on 1" OD stainless steel tubular uprights mounted to counter tops in a sanitary manner (tube inserts when accessible from bottom of counter). Wall mounted shelves shall be equipped with stainless steel angle wall brackets anchored to building wall.
3. Shelves, where specified to be mounted on cantilever brackets, shall be mounted on 1-5/8" diameter stainless steel tubular uprights welded to framing of table and counter tops.

J. Drawers:

1. All drawers shall be 20" x 20" x 5" deep unless specified otherwise. Removable pans shall be formed of one-piece die-stamped 18-gauge stainless steel with top edges flanged out 2". Faces of drawers shall be equivalent to Component Hardware No. J85-2000. Drawers shall operate on ball-bearing roller stainless steel extension slides to allow full opening and shall be fitted with adjustable stops to prevent drawers from being pulled out too far so they will drop down.
2. Drawers shall be completely enclosed in 18-gauge stainless steel housing attached to undersides of tops on open base tables and shall be attached to framework of cabinet base tables.

K. Casters:

1. Casters specified for open base tables shall be equivalent to Component Hardware Nos. C23-1250 (5" diameter non-braking) and C23-1251 (5" diameter braking).

L. Sinks:

1. Sinks shall be constructed of 14-gauge stainless steel having back, bottom and front formed of one (1) continuous sheet of metal with ends and partitions welded in place. All vertical and horizontal corners of sink compartments shall be coved with metal on a 5/8" (minimum) radius. No solder filleting will be acceptable. All edges of sink counter tops not adjacent to walls shall be turned up 7/8" on a 45-degree angle and rolled down 2-5/8" to form a marine roll unless specified otherwise. Edges of sink counter tops adjacent to wall shall be turned up 10", back 2-1/4" on a 45-degree angle and down 2" to form a backsplash with pipe chase. All ends of backsplashes shall be closed, ground smooth and polished. Backsplashes shall be pierced on 8" centers over compartment dividers of two, three and four compartment sinks and over center of one compartment sinks unless specified otherwise. Bottom of each sink compartment shall be fitted with Component Hardware No. D50-7200 lever handle drain. Overflow drain assemblies when specified shall be Component Hardware No. D50-7215. Drains shall set into embossed openings in sink bottoms, gasketed and locked in place without use of rivets or bolts. Sinks shall be mounted on 1-5/8" OD 16-gauge stainless steel legs with adjustable stainless-steel feet (same as specified for open base tables). All sink partitions shall be 7/8" thick double wall construction. A model No. B-0231 T & S mixing faucet (12" spout) shall be mounted at center of each single compartment sink and over each partition of each multiple compartment sink. Preparation and utensil wash sinks shall be 12" and 14" deep respectively unless specified otherwise.

## 2.05 ITEMIZED EQUIPMENT SPECIFICATIONS

- A. Item No. 1 Exterior-Grade Mixing Faucet w/Hose Threads – Division 22
- B. Item No. 2 Air Door (One Required):
1. Mars Air Doors No. N260-1UA-SS or approved equal with components/features/accessories as follows:
    - a. One (1) micro-switch for automatic on/off operation
    - b. No. HSG-304SS-STD stainless steel housing
- C. Item No. 3 Storage Shelving Units (Seventeen Required):
1. Metro Super Erecta (MetroSeal 3 series) or approved equal, each with components/features/accessories as follows:
    - a. Five (5) 21" wide x 48" long epoxy-coated adjustable wire shelves
    - b. Four (4) 74" long epoxy-coated tubular uprights with foot levelers
- D. Item No. 4 Dunnage Racks (Twenty-Eight Required):
1. Metro Nos. HP2236PD, HP2248PD, and HP2260PD or approved equal, arrangement indicated on drawings
- E. Item No. 5 Spare Number
- F. Item No. 6 Spare Number
- G. Item No. 7 Walk-In Cooler/Freezer (One Required):
1. General: Walk-in shall be pre-fabricated modular construction, designed and constructed to allow for fast and easy field assembly, relocation, and modification by addition of modular panels. Walk-in and components thereof shall meet 2009 Energy Code Standards. Walk-in shall be installed and/or commissioned by a certified factory technician.

2. Project Requirements: Walk-in shall be floor-type installed within 8" deep concrete slab recess with 3" concrete cap and field-applied epoxy wearing floor surface (concrete cap and epoxy finishing by General Contractor) in accordance with drawings. Finished floor within cooler shall be 1/4" higher than finished floor outside walk-in.
3. Size: Walk-in shall be 22'-1 1/2" wide x 25'-11 1/2" deep x 8'-6" high overall, with arrangement indicated on drawings.
4. Finishes: Exposed exterior wall and ceiling panels (including exposed floor and ceiling caps) shall be 20-gauge type 304 No. 3 finish stainless steel. Interior wall and ceiling panels shall be 26-gauge galvanized steel with mill-applied white enamel. Interior/exterior door/door panels shall be 20-gauge type 304 No. 3 finish stainless steel with 36" high kick plates. Unexposed wall and ceiling panels shall be 26-gauge galvanized steel. Floor panels shall be 14-gauge galvanized steel (unexposed) with 3500-psi fiber-reinforced concrete cap (by G.C.).
5. Panel Construction: Panels shall consist of metal pans, formed to precise dimensions, with "foamed-in-place" urethane to permanently bond to inner metal surfaces to form strong rigid units. Standard wall, ceiling, and floor panels shall 11½", 23", 34½", 46", and 69" wide. Standard corner panels shall be 12" x 12" on 90-degree angle. Special fabricated panels shall be provided to meet project requirements. Panels shall be equipped with NSF-approved double-bead interior and exterior vinyl gaskets which are resistant to stains, grease, oil, mildew, and sunlight. Panels shall be equipped with cam-action locking mechanisms (hook and arm assemblies) securely mounted in matching panel locations to form air-tight and vapor-proof joints. Locking mechanism parts shall be equipped with urethane plugs and snap-in caps to match interior finish of panels.
6. Insulation: Insulation shall be 4" thick rigid, low ozone depleting HCPC 22 blown Class 1 urethane foam classified according to UL723 (ASTM-E-84) as tested by Underwriter's Laboratories, Inc. Four (4) inch core material shall have a flame spread of 25 or less and a smoke density of 250. Insulation shall have a thermal conductivity (K Factor) of not more than 0.125 BTU/hr/sf per degree Fahrenheit/inch, on overall coefficient of heat transfer (U factor) of not more than .031, and R factor of 32. Pre-fabricated urethane foam panels shall be supplied with a Class 1 fire hazard classification according to UL723 (ASTM-E-84) as tested by Underwriter's Laboratories, Inc. Panels shall have a flame spread rating of 25 or less with a certifying UL label.
7. Entrance Doors and Door Panels: Refer to drawings for door locations and directions of door swings. Doors shall be 48" wide x 76" high, infitting flush-mounted type with one-piece perimeter PVC accordion-type removable gasket with magnetic core at top and side perimeters at doors. Adjustable wiper gaskets shall be mounted on bottom edge of doors. Door latches shall be high pressure zinc die cast with polished chrome finish with padlock provisions and break-away inside safety release handles so that doors can be opened from inside, even if locked, and cylinder locks. Doors shall be equipped with Kason No. 1346 Performer adjustable hinge. Doors shall be equipped with positive-action hydraulic door closers to ensure positive closing of doors. Hinges of 36" wide doors shall be 9-inch modified strap, cam-lift, self-closing design with door lift-off capability, same type and finish as door latches. Hinges of 48" wide doors shall include 21-inch straps. Rubber door stopper shall be installed on exterior front panel to prevent damage of panel by handle when door is opened to a full 180 degrees. Aluminum diamond treadplates (1/8" thick) shall be mounted on the lower 36" of interior and exterior door surfaces. Door panels shall be equipped with heavy reinforced steel "U" channel frame on entire door perimeter. Anti-sweat heater cables shall be run in breaker strips located behind removable heavy-gauge stainless steel trim for easy access to heater cables. Heater cables shall be run within heavy-gauge "U" channels of 12-gauge stainless steel (minimum) thresholds. Each door

panel shall include a pre-wired Kason No. 11806LEDGU24 LED light fixture with globe and 11.5-watt lamp, 2½" diameter chrome face, and flush-mount dual-reading adjustable dial thermometer on exterior surface to provide temperature readings of minus 40-degrees F to plus 60-degrees F and minus 40-degrees C to 15-degrees C.

8. Pressure Relief Ports: Walk-in cooler and freezer rooms shall include 2-way heated pressure relief ports (vents) to equalize pressure between interior and exterior pressures caused by sudden temperature changes due to opening doors, loading of products, and/or defrosting of coils. Pressure relief port(s) quantities, sizing, and locations to be determined by walk-in manufacturer.
9. Ceiling Light Fixtures: Thirteen (13) Kason No. 1810LC4000 48" long LED-light fixtures, each with two lamps (40-watt total) shall be furnished and installed by this Contractor. Junction box assemblies shall include threaded electrical conduit (urethane-filled), junction boxes (installed on top of ceiling panels), and 120-volt wiring to junction box.
10. Warranty: Walk-in panels shall include a ten (10) year factory warranty (including labor) for defects in materials and workmanship from date of Substantial Completion of project.
11. Trim Strips and Closure Panels: Trim strips to match finish of exposed exterior walk-in panels shall be furnished and installed in a workmanlike manner to conceal cracks between walk-in and building walls. Closure panels, constructed in accordance with drawings and project requirements, shall be mounted on top of walk-in to match exposed exterior walk-in panels. Where required for access to top of walk-in, removable closure panels are required. Trim strips and closure panels shall be constructed of 18-gauge stainless steel.
12. Temperature Alarm System: Each cooler/freezer room shall include one (1) flush-mounted Modularm No. 75LC multi-monitor, 3-button user interface, digital temperature indicator, built-in audible alarm, built-in dry contacts for remote notification capability of an audio and/or visual alarm condition, built-in transformer, built-in rechargeable battery with recharging circuitry, and built-in data/comm port for system expansion. System shall be provided with Energy Independence and Security Act compliant timing lighting control, Hi-Lo temperature alarm, panic alarm, and door ajar alarm. System shall include magnetic contacts for each door and low voltage IP-1 illuminated push button (to provide light switch and panic alarm functions) inside each cooler/freezer room by the door. The IP-1 will remain lit at all times, even during a power failure. Multiple IP-1's shall be provided by each door in multi-door compartments to integrate with timed lighting function and to replace conventional 3-way light switching. Walk-in manufacturer shall furnish and install rigid conduit and wiring from each flush-mounted monitor mounted in door panels to top of ceiling panels (for field wiring to ceiling lights and specified components, by electrical contractor). Wiring to sensors within cooler/freezer rooms shall be furnished and installed by Food Service Equipment Contractor. System shall include low voltage MD-1 motion detector inside walk-in cooler and freezer rooms above the door for occupancy detection and automatic light control. Temperature sensors shall be located behind the evaporator coils to typify the average ambient temperature of the room. Sensor wiring shall be run above top of walk-in ceiling panels with penetrations (thoroughly sealed with silicone and foam urethane to prevent condensation) at sensor locations. Sensor wiring shall be secured to top of walk-in ceiling panels with continuous duct tape to prevent wiring damage.
13. Plastic Door Curtains: Exterior cooler/freezer entrance doors shall be equipped with Clear Vu stripless swinging door curtains manufactured by CCI Industries, Inc. (350-A Fischer Ave., Costa Mesa, CA 92626) Phone: (800) 854-5719.
14. Quality Standards: Walk-in shall be manufactured by Thermo-Kool, American Panel, or approved equal.

15. Refer to Item No. 8 for refrigeration system.

H. Item No. 8 Cooler/Freezer Remote Refrigeration System (One Required):

1. System shall be pre-engineered, factory-assembled, air-cooled, multi-compressor type mounted within a common type 304 stainless steel housing with one-piece louvers and hail guards on a concrete pad (by General Contractor) outside building where indicated on drawings.
2. System shall include pre-assembled components to include scroll type compressors (EPA-approved refrigerant), condensers, ball-bearing fan motors, suction filters, sight glasses, liquid line filter/driers, liquid line inlet/outlet valves, fan cycling switches and/or adjustable head pressure regulator/controls, phase loss monitors, crankcase heaters, high pressure super-hose connections, suction/discharge absorbers and additional accessories for a complete assembly to meet project requirements.
3. System shall include factory pre-wired control panel, with individual circuit breakers, contactors, and main line non-fused disconnect for a single point electrical connection.
4. System shall include evaporator coils with factory-assembled thermostats, solenoid valves, expansion valves, on/off disconnect switch, and additional accessories for a complete and workmanlike installation to meet project requirements. Evaporator coils shall include factory pre-wired Eco-Smart KE2 controllers for on-demand defrost; off-cycle/air defrost for coolers and electric heat for freezers.
5. System shall include refrigerant leak detection system with two (2) pre-wired leak sensors on each evaporator coil. A suction line check valve and electric liquid line shut-off valve shall be provided for field-installation on refrigerant lines outside of the refrigerated compartments and within 10-feet of each serviced evaporator coil in an easily accessible location.
6. System shall be Refrigerated Design Technologies (RDT) or approved equal to include one (1) rack No. ROAM01017L02026T3F (29645) with the following components:
  - a. One (1) No. YS17KSE compressor and one (1) No. KLP318MA evaporator coil for Cooler Room R108A
  - b. One (1) No. YF13KAE compressor and one (1) No. KLP314LE evaporator coil for Freezer Room R108B
  - c. One (1) No. YF13KAE compressor and one (1) No. KLP314LE evaporator coil for Freezer Room R108C
7. Shop drawing required for approval.
8. Contractor shall furnish and install all necessary valves, controls, oil separators, refrigerant tubing, refrigerant R-454A, condensate drain lines, and accessories for a complete and neat workmanlike job in accordance with the best refrigeration practices. Refrigerant piping shall be pressure-tested with nitrogen at 300 psi after condensing units and evaporator coils have been connected prior to charging with refrigerant and testing. All refrigerant lines subject to sweating shall be insulated with AP/Armaflex insulation ( $\frac{3}{4}$ " minimum thickness for coolers and 1" thickness for freezers) with all joints sealed with glue as recommended by the manufacturer of the insulation. Duct tape at joints is not acceptable. Thickness of insulation shall be increased to 1-1/2" and 2" for cooler and freezer rooms respectively in poorly ventilated confined areas to reduce probability of condensation of refrigerant lines. Refrigerant lines shall be rigid, type L copper with all joints soldered to meet the best refrigeration practices. Refrigerant lines shall be anchored to building structure with clamps and galvanized steel saddles as required. Exterior refrigerant lines shall be wrapped with self-fastening 0.016-inch-thick Type 3003-H14 aluminum alloy jacketing utilizing aluminum strapping and seals in accordance with jacketing manufacturer's recommendations for complete weather-tight protection of

refrigerant line insulation. Condensate drain lines shall be rigid, type L copper securely fastened to walk-in panels with non-corrosive clamps (straps are not acceptable). Condensate drain lines installed in freezer rooms shall be wrapped with spiral-installed heater tape. Condensate drain lines shall be generously sloped (1/2" per lineal foot minimum) to the bottom of walk-in rooms, extended through walk-in panel, through building walls (where applicable), and trapped outside walk-ins. All refrigeration systems shall be checked out to the Owner's satisfaction. This contractor shall provide an acceptable, local refrigeration service agency which shall provide 24-hour, 7-day warranty service.

- I. Item No. 9 Mobile Storage Shelving Units (Twelve Required):
  - 1. Metro Super Erecta (MetroSeal 3 series) or approved equal, each with components/features/accessories as follows:
    - a. Four (4) 21" wide x 48" long epoxy-coated adjustable wire shelves
    - b. Four (4) 63" long epoxy-coated tubular uprights
    - c. Four (4) 5" diameter urethane swivel casters, two (2) with brakes
- J. Item No. 10 Dunnage Racks (Twenty Required):
  - 1. Metro Nos. HP2236PD, HP2248PD, and HP2260PD or approved equal, arrangement indicated on drawings
- K. Item No. 11 Preparation Counter w/Sinks (One Required):
  - 1. 60" wide x 12'-6" long x 36" high, arrangement indicated on drawings, custom fabricated double-sided, stainless steel open base type with components/features/accessories as follows:
    - a. 6" high x 6" wide x full-length enclosed backsplash with total of four (4) NEMA 5-20R receptacles; two (2) on each end.
    - b. Marine roll top edges on front and each end of sink side
    - c. Two (2) 24" x 24" x 12" deep sinks
    - d. One (1) splash-mount faucet
    - e. Undershelf, except at sinks
- L. Item No. 12 Work Table (One Required):
  - 1. 30" wide x 8'-0" long x 36" high, custom fabricated stainless steel open base type with components/features/accessories as follows:
    - a. Rear splash
    - b. Undershelf
- M. Item No. 13 Slicer (One Required):
  - 1. Hobart No. HS7-1 or approved equal
- N. Item No. 14 Mobile Work Table (One Required):
  - 1. 30" wide x 5'-0" long x 36" high, custom fabricated stainless steel open base type with components/features/accessories as follows:
    - a. Undershelf
    - b. 5" diameter casters w/brakes
- O. Item No. 15 Mobile Utility Carts (Two Required):
  - 1. Lakeside No. 943 or approved equal, each with standard vinyl corner bumpers



- P. Item No. 16 Stainless Steel Hand Sinks (Four Required):
1. Advance Tabco No. 7-PS-50 or approved equal, each with components/features/accessories as follows:
    - a. Splash-mounted faucet with wrist handles
    - b. Lever drain
    - c. Overflow
    - d. Chrome plated "P" trap
- Q. Item No. 17 Pot/Pan Sink w/Overshelf (One Required):
1. 30" wide x 12'-0" long x 36" high, arrangement indicated on drawings, custom fabricated stainless steel open base type with components/features/accessories as follows:
    - a. Marine roll top edges on front and each end
    - b. Three (3) 24" (front-to-back) x 30" x 14" deep sink compartments
    - c. One (1) B-0133-ADF-12-B splash-mount pre-rinse with add on swing faucet
    - d. One (1) splash mount faucet
    - e. Two (2) drainboard sections with uprights and crossbraces
    - f. 15" wide x full-length stainless steel overshelf mounted on tubular uprights and cantilever brackets 24" above counter top with knock out for pre-rinse riser
    - g. Undershelves at drainboard sections
- R. Item No. 18 Mobile Utensil Shelving Units (Two Required):
1. Metro Super Erecta (MetroSeal 3 series) or approved equal, each with components/features/accessories as follows:
    - a. Four (4) 24" wide x 48" long, polymer-coated wire shelves
    - b. Four (4) 63" long polymer-coated tubular uprights
    - c. Four (4) 5" diameter premium urethane swivel casters, two (2) with brakes
- S. Item No. 19 Baker's Table w/Spice Shelf (One Required):
1. 30" wide x 8'-0" long x 36" high, custom fabricated stainless steel open base type with components/features/accessories as follows:
    - a. Rear and left end splash
    - b. Open base for mobile ingredient bins
    - c. 12" wide x full-length overshelf mounted on tubular uprights 15" above table top
- T. Item No. 20 Mobile Ingredient Bins (Three Required):
1. Cambro No. IBS27148 or approved equal
- U. Item No. 21 40-Quart Mixer (One Required):
1. Hobart No. HL400 or approved equal with components/features/accessories as follows:
    - a. Standard 40-quart accessory package consisting of bowl, "B" beater, "D" whip, and "ED" dough hook
    - b. Standard 72" long NEMA 5-20P cord/plug assembly
- V. Item No. 22 Mixing Faucets w/Hose Threads (Two Required):
1. T&S No. B-0665-BSTP or approved equal, each with components/features/accessories as follows:
    - a. T&S No. 002970-45 stainless steel hose rack for owner-furnished garden hose
- W. Item No. 23 Mobile Pan Racks (Two Required):
1. CresCor No. 207-1820 or approved equal, each with corner bumpers

- X. Item No. 24 Ice Machine (Cuber) w/Storage Bin (One Required):
  - 1. Manitowoc No. IDT-0450A or approved equal with components/features/accessories as follows:
    - a. Water filter sized for production capacity
    - b. Manitowoc No. D570 ice storage bin
- Y. Item No. 25 Stainless Steel Flor Mop Sink (One Required):
  - 1. Advance Tabco No. 9-OP-28 or approved equal with components/features/accessories as follows:
    - a. No. K-240 faucet
    - b. No. K-242 mop hanger
    - c. No. K-244 hose and bracket
- Z. Item No. 26 Spare Number
- AA. Item No. 27 Storage Shelving Units (Three Required):
  - 1. Metro Super Erecta (MetroSeal 3 series) or approved equal, each with components/features/accessories as follows:
    - a. Five (5) 21" wide x 48" long epoxy-coated adjustable wire shelves
    - b. Four (4) 74" long epoxy-coated tubular uprights with foot levelers
- BB. Item No. 28 Double-Stacked Convection Ovens (Two Required):
  - 1. Blodgett No. DFG-100 DBL or approved equal, each with components/features/accessories as follows:
    - a. Stainless steel front, sides, top, rear enclosure panel, and 6" legs
    - b. Solid stainless-steel doors
    - c. Common gas manifold for single gas connection
- CC. Item No. 29 40-Gallon Tilting Braising Pan (One Required):
  - 1. Groen No. BPM-40GC or approved equal with components/features/accessories as follows:
    - a. Classic controls
    - b. No. N60346 hot and cold mixing faucet with 60" long hose with kettle filler and dummy wall hook (attached to side of frame)
    - c. Faucet bracket
    - d. No. 150247 pan carrier assembly
- DD. Item No. 30 Fryer/Filter System (One Required):
  - 1. Pitco No. SG14RS-2FD or approved equal with components/features/accessories as follows:
    - a. Two (2) Pitco Model No. SG-14RS 50-lb. fryers with millivolt controls
    - b. Common rear gas manifold
    - c. Casters w/brakes
    - d. Built-in filter system
- EE. Item No. 31 Griddle w/Mobile Stand (One Required):
  - 1. Southbend No. HDG-36 or approved equal with components/features/accessories as follows:
    - a. Southbend Model No. HDCS-36 stand with casters w/brakes

- b. Standard thermostatic controls

FF. Item No. 32 6-Burner Range w/Oven Base (One Required):

1. Southbend No. P36D-BBB or approved equal with components/features/accessories as follows:
  - a. 5" high flue riser
  - a. Flame failure prevention
  - b. Casters w/brakes
  - c. Electronic ignition

GG. Item No. 33 Convection Steamer w/Stand (One Required):

1. Groen No. (2)GSSP-BL-5GS or approved equal with components/features/accessories as follows:
  - a. Manufacturer-recommended water filtration system

HH. Item No. 34 Utility Distribution System (One Required):

1. System shall be a U.L. Listed, modular, island-type energy distribution and control system manufactured in accordance with the latest edition of the National Electrical Code (NEC), National Manufacturer's Association (NEMA), National Fire Protection Association (NFPA) Pamphlet Nos. 96 and 54, Uniform Plumbing Code, ASME, and Occupational Safety and Health Administration (OSHA) using only U.L. Listed Bureau of Mines, and AGA and CGA certified components.
2. System shall be 14'-0" long x 8" wide and shall be completely pre-wired and pre-plumbed to final connection points for electric/hot water/cold water/gas for the equipment shown on the drawings. HORIZONTAL CHASE OF ISLAND-TYPE SYSTEM SHALL NOT EXCEED AN OVERALL HEIGHT (INCLUDING PEAKED TOP) OF 50" ABOVE FINISHED FLOOR.
3. Fixed riser, pedestal, end caps, and raceway exterior panels shall be constructed of 16-gauge type 304 stainless steel with a No. 4 finish. Removable panels shall be constructed of 18-gauge stainless steel. A watertight barrier shall be provided between electrical and plumbing compartments. Control tower pedestals shall be secured to the building floor with stainless steel, interior flanges. Housing of the raceway shall be equipped with neoprene bumper strips.
4. Electrical compartment shall be a completely enclosed, stainless-steel housing accessible by removal of stainless-steel screws.
5. Internal electrical main feeder(s) shall be cable bus type having balanced load and phases with branch circuit locations directly behind connection plates. Cable bus shall be manufactured from 100% copper and mounted on non-conductive insulators spaced at 48" (maximum) centers and equipped with connection lugs for main service. Field joints shall be connected by attaching cables to insulated terminals. Branch circuit wiring for each electrical connection shall be phase-identified and sized in accordance with circuit breaker's rated ampacity. A 12" long, 16-gauge, stainless steel connection plate shall be provided for each electrical connection and equipped with a point-of-use circuit breaker and grounding type receptacle having a specific NEMA, polarized configuration or pre-wired, flexible, seal-tite conduit. Connection plates shall be equipped with metallic labels with permanently lettered electrical characteristics. Plates shall be spaced on 12" centers and readily interchangeable by maintenance personnel to facilitate changes, additions, and deletions of equipment. Blank plates shall be provided for future equipment. A main electrical circuit breaker and disconnect shall be mounted in the control tower.
6. Plumbing compartment shall be isolated from the electrical compartment and all piping and disconnects shall be color-coded. Provide an additional capped nipple in each section

for each plumbing service for future use. Field joints shall be secured by tightening unions.

7. Hot and cold-water piping, including individual branch pipe connections, shall be hard temper type "L" copper tubing with copper sweat type solder fittings. All water lines shall be covered with 3/8" thermal closed cell pipe insulation per ASTM-E90-C. Each branch connection shall be provided with a brass, double shut-off, quick-disconnect, and flexible hose connector consisting of brass bellows type, corrugated hose with braided stainless-steel restrainer. Hoses shall be coated with Avtec Polytec material to provide a smooth surface for cleaning.
8. Gas piping shall be black iron pipe with welded threadlets to branch connections and drip-tee in the service riser. Each branch connection shall be equipped with a quarter-turn, ball-type shut-off valve; brass quick-disconnect; 2-wall, stainless steel, flexible hose connector; and steel restraining cable. Hoses shall be coated with Avtec Polytec material to provide a smooth surface for cleaning.
9. System shall be equipped with quarter-turn shut-off valves for all main incoming services for gas and water.
10. System shall be equipped with components/features/accessories as follows:
  - a. Two (2) end risers
  - b. Two (2) floor pedestals
  - c. Power shut-off device (shunt trip breaker)
  - d. Exhaust Hood light switch, mounted on end riser panel adjacent to Item No. 11 Preparation Counter
  - e. Exhaust/Supply fan control panel with fire system interface mounted in end riser adjacent to Item No. 11 Preparation Counter
  - f. Electrical convenience receptacle on each end riser
  - g. Water quick-disconnect hose assemblies for cooking equipment
  - h. Gas quick-disconnect hose assemblies with shut-off valves for cooking equipment
  - i. Electric cord/plug assemblies for cooking equipment
11. System shall be Avtec MIDG series or approved equal to meet above requirements.
12. Refer to Contract Document drawings for utility requirements and locations thereof.
13. Shop drawings are required for approval.

II. Item No. 35 Exhaust Hood (One Required):

1. Size: 10'-0" wide (including framing section, plus make-up air plenums) x 14'-0" long x 30" high
2. Construction Features: UL 710 Listed (without fire dampers in exhaust collars), constructed of all-welded 18-gauge type 304 no. 4 finish stainless steel on all surfaces with all exterior joints and seams continuously welded liquid tight, ground smooth and polished to a no. 4 finish to conform to the latest edition of NFPA 96. Exterior front and end panels shall include double panes with integral "v" bracing or 16-gauge double panes to strengthen flat surfaces. Hood shall include 3" wide barrier between rear of hood and building wall. UL Listed stainless steel baffle filters extending the entire length of the hood. Grease trough shall be concealed type (fully-enclosed) sloped to one (1) end and equipped with a removable stainless-steel grease cup.
3. Components/Features/Accessories:
  - a. 10" wide framing section between hood sections for risers of Utility Distribution System
  - b. 14" wide x full-length x 8" high, stainless steel air curtain type double wall insulated make-up air plenum with air balancing dampers, baffles, and duct collars to ensure even air distribution along entire length of plenum

- c. Heat sensors for activation of exhaust fan whenever cooking operations occur in accordance with paragraph 507.2.1.1 of 2006 International Mechanical Code
- d. Ten (10) UL-listed Component Hardware No. LED-L80-20DN recessed-type LED light fixtures with bulbs pre-wired in rigid conduit on top of hood to a junction box on each section of hood
- e. Exhaust/supply fan control panel with fire system interface and light switch mounted on Item No. 34 Utility Distribution System
- 4. Refer to Contract Document drawings for CFM requirements and duct sizes
- 5. Exhaust Hood shall be Avtec AFWO-PBB series or approved equal to meet above requirements
- 6. Shop drawings required for approval.

JJ. Item No. 36 Fire Suppression System (One Required):

- 1. System shall be designed to automatically suppress fire by spraying the exhaust hood plenum area, filters, exhaust ducts, and cooking surfaces with a predetermined flow rate of low pH liquid fire suppressant in compliance with the latest editions of NFPA 17A, NFPA 96, and Authority having Jurisdiction. System shall be Ansul R-102 pre-engineered wet chemical type or approved equivalent in compliance with UL Standard 300. System shall include components/features/accessories installed by a manufacturer certified installer as follows:
  - a. Stainless steel nozzles and piping within Exhaust Hood
  - b. Regulated release assembly which contains a release mechanism and agent tank within a stainless-steel enclosed cabinet mounted on building wall where indicated on drawings
  - c. Remote manual release station located on egress of cooking area
  - d. Mechanical (cable-operated) gas shut-off valve (verify size) for installation on incoming gas line
  - e. Submittal data and review fee by Fire Marshal's Office or Authority having Jurisdiction
  - f. Shop drawing of nozzle layout and finishes required for Design Team review and approval
- 2. This Contractor shall furnish and install a Class K portable fire extinguisher with wall bracket in kitchen in accordance with NFPA 10 and State Fire Marshal requirements.

KK. Item No. 37 Stainless Steel Floor Trough (One Required):

- 1. 19-1/2" wide x 36" long, custom-fabricated all-welded 14-gauge type 302/304 stainless steel in accordance with drawings. Trough shall be equipped with 5-1/2" diameter x 3-1/4" deep sump bowl with 3" long pipe sleeve sized to accommodate drain pipe (installed within sleeve) by plumbing contractor. Sump bowls shall be equipped with removable perforated stainless steel strainer baskets with perforated covers.
- 2. Troughs shall be equipped with 15-1/4" wide x 31-3/4" long x 1" thick McNichols No. MS-M-150-MINI-GRID (dark gray color) or IMC Teddy equal fire retardant removable molded fiberglass grates (9/32" thick bars on 3/4" x 3/4" spacings) with grit surface (one side only). Each grate shall be cut with a bar on all outside edges for a banded finished edge appearance. Grates shall be furnished by trough fabricator for fitting coordination purposes.
- 3. Shop drawings required for approval.

LL. Item No. 38 Work Tables (Three Required):

- 1. 30" wide x 7'-0" long x 36" high, custom fabricated stainless steel open base type, each with components/features/accessories as follows:

- a. Undershelf

MM. Item No. 39 Work Table w/Overhead Pot Rack (One Required):

- 1. 30" wide x 7'-0" long x 36" high, custom fabricated stainless steel open base type with components/features/accessories as follows:
  - a. 78" long 2-bar table-mount overhead pot rack
  - b. Undershelf

NN. Item No. 40 Spare Number

OO. Item No. 41 Pass-Thru Refrigerator (One Required):

- 1. Traulsen Model No. RHT232NPUT-HHS or approved equal with components/features/accessories as follows:
  - a. Half-height stainless steel doors
  - b. Twenty (20) stainless steel stationary (welded) universal pan slides on 6" centers

PP. Item No. 42 Pass-Thru Warmer (One Required):

- 1. Traulsen No. RHF232WP-HHS or approved equal with components/features/accessories as follows:
  - a. Half-height stainless steel doors
  - b. Twenty (20) sets stainless steel stationary (welded) universal pan slides on 6" centers
  - c. 10' long NEMA 14-20P cord/plug assembly

QQ. Item No. 43 Serving Counter (One Required):

- 1. 32" wide (plus countertop extension) x 14'-2" long (verify) x 36" high, length and arrangement indicated on drawings, custom fabricated stainless steel enclosed base with components/features/accessories as follows:
  - a. 9" wide (verify) x 13'-4" long (verify) countertop extension at pass-thru wall opening
  - b. Provisions for drop-in food units (item nos. 44 & 45)
  - c. Provisions for food guard (item no. 46)
  - d. 12" high (verify) apron for controls of drop-in food units on operator side
  - e. Rear cutouts at locations of building wall electrical receptacles (field verify locations)
  - f. Bottom shelf with cut-out for access to floor drain (field verify location)
  - g. Shop drawing required for approval

RR. Item No. 44 Drop-In 3-Pan Refrigerated Cold Food Unit (One Required):

- 1. LTI No. DI-TA454-20-03 or approved equal

SS. Item No. 45 Drop-In 5-Well Hot Food Unit (One Required):

- 1. LTI No. DI-TW-DW-20-05 or approved equal

TT. Item No. 46 Food Guard (One Required):

- 1. PMG No. TM2N-A or approved equal, 10'-8" long (including end panels), arrangement as indicated on drawings, with components/features/accessories as follows:
  - a. 3/8" thick tempered glass
  - b. NSF-compliant end panels
  - c. No. 644/1 countertop surface mounts (narrow type)
  - d. Shop drawings required for approval

UU. Item No. 47 Roll-Down Counter Door w/Integral Frame (One Required):

1. Cookson No. ESC20 series (less sill) to fit 13'-4" long (verify) x 42" high (verify) wall opening with components/features/accessories as follows:
  - a. Stainless steel frame and door guide
  - b. Stainless steel hood
  - c. Stainless steel curtain
  - d. Motor
  - e. Stationary security grille consisting of 5-16" diameter stainless steel rods on 2" centers within a stainless-steel frame on dining room side, mounted to wall over counter door frame in accordance with drawings. Security grille shall terminate 8" above counter top for passing trays underneath.
  - f. Shop drawing required for approval

VV. Item No. 48 Roll-Down Counter Door w/Integral Frame (One Required):

1. Cookson No. ESC20 series (less sill) to fit 4'-0" long (verify) x 43" high (verify) wall opening with components/features/accessories as follows:
  - a. Stainless steel frame and door guide
  - b. Stainless steel hood
  - c. Stainless steel curtain
  - d. Stationary security grille, same type and features as Item No. 47
  - e. Shop drawing required for approval

WW. Item No. 49 Soiled Dishtable w/Window Sill (One Required):

1. 30" wide x 34" high x length and arrangement indicated on drawings, custom fabricated stainless steel open base type with components/features/accessories as follows:
  - a. 14-gauge stainless steel window sill to fit pass-thru wall opening
  - b. 20" x 20" x 6" deep pre-rinse sink with disposer sink adaptor and removable rack guide
  - c. Stainless steel bracket for disposer control panel (item no. 50)
  - d. T&S Brass No. B-0133/B-0109 pre-rinse spray assembly

XX. Item No. 50 Disposer (One Required):

1. Salvajor No. 300-SA-6-ARSS-LD or approved equal with components/features/accessories as follows:
  - a. 6-1/2" sink adapter
  - b. Disposer control panel

YY. Item No. 51 Ventless Dishwasher (One Required):

1. Hobart No. AM16VL-ADV-2 or approved equal with components/features/accessories as follows:
  - a. Sense-A-Temp integrally-mounted electric booster heater
  - b. Single-point electric connection for motor, controls, tank heat, and booster heater
  - c. Manufacturer-recommended in-line water filter
  - d. Water hammer arrestor kit w/pressure regulator
  - e. Drain water tempering kit
  - f. Factory installed rapid fill kit

LL. Item No. 52 Clean Dishtable (One Required):

1. 30" wide x 7'-0" long (verify) x 34" high, custom fabricated stainless steel open base type with components/features/accessories as follows:

- a. 6'-6" long undershelf

MM. Item No. 53 Ice Machine (Cuber) w/Storage Bin (One Required):

- 1. Manitowoc No. IDT-0450A or approved equal with components/features/accessories as follows:
  - a. Water filter sized for production capacity
  - b. Manitowoc No. D570 ice storage bin

NN. Item No. 54 Hand Sink – By Division 22 (Plumbing)

OO. Item No. 55 Refrigerator – By Other Divisions (See Architectural Drawings)

PP. Item No. 56 Service Counter – By Other Divisions (See Architectural Drawings)

## **PART 3 EXECUTION**

### **3.01 ERECTION**

- A. Equipment specified herein shall be erected and set in place at location as indicated on Drawings. Equipment shall be fabricated so that it can be handled through finished openings or arrangements otherwise made with General Contractor. Equipment specified shall be located on floors as indicated on Drawings. A competent foreman shall be provided as supervisor of erections and installations.

### **3.02 ADJUSTMENT OF EQUIPMENT**

- A. Contractor shall adjust all equipment after erection and installation to satisfaction of Owner.
- B. Contractor shall confirm in writing that all equipment is operational and in working condition prior to demonstration.

### **3.03 CLEANING OF EQUIPMENT**

- A. Clean up all debris caused by workmen immediately upon completion of Work in the area, and clean equipment after all others have completed their Work in the area.

### **3.04 DEMONSTRATION OF EQUIPMENT**

- A. Upon acceptance by Owner, provide full instructions to Owner's designated representative on proper methods of care, operation, and maintenance of equipment.
- B. Three (3) operating instructions, warranty cards/certificates, and parts manuals on equipment in loose leaf hard cover binders shall be presented to Architect at this time. Operation and maintenance manuals shall be organized for easy reference by maintenance personnel, including index tabs of equipment item numbers.



**END OF SECTION**

## SECTION 11 6623 - GYMNASIUM EQUIPMENT

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Basketball backboards, goals, and support framing.

#### 1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete floor slab to receive floor sleeves and anchors.
- B. Section 05 1200 - Structural Steel Framing: Structural members supporting basketball systems.
- C. Section 05 5000 - Metal Fabrications: Secondary structural members supporting gymnasium equipment.

#### 1.03 REFERENCE STANDARDS

- A. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Errata (2026).

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Large Components: Ensure that large components can be moved into final position without damage to other construction.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: Provide manufacturer's data showing configuration, sizes, materials, finishes, hardware, and accessories; include:
  - 1. Structural steel welder certifications.
  - 2. Manufacturer's installation instructions.
- C. Shop Drawings: For custom fabricated equipment indicate, in large scale detail, construction methods; method of attachment or installation; type and gage of metal, hardware, and fittings; plan front elevation; elevations and dimensions; minimum one cross section; utility requirements as to types, sizes, and locations.
- D. Erection Drawings: Detailed dimensional requirements for proper location of equipment.
- E. Operating and maintenance data, for each operating equipment item.
- F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

#### 1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified with minimum three years of experience.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project site in manufacturer's original packaging with factory original labels attached.
- B. Store products indoors and elevated above floor; prevent warping, twisting, or sagging.
- C. Store products in accordance with manufacturer's instructions; protect from extremes of weather, temperature, moisture, and other damage.

#### 1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

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- B. Indoor Basketball Goal: Provide ten year manufacturer warranty for repair and replacement of components of gymnasium equipment that fail in materials or workmanship within specified warranty period including but not limited to the following:
  - 1. Basketball backboard failures including glass breakage.
  - 2. Faulty operation of basketball backstops.
  - 3. Backboard: Limited Lifetime Warranty
- C. Outdoor Basketball Goal: Provide Lifetime Warranty.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Gymnasium Equipment:
  - 1. Draper, Inc: [www.draperinc.com/#sle](http://www.draperinc.com/#sle).
  - 2. Porter Athletic Equipment Company: [www.porterathletic.com/#sle](http://www.porterathletic.com/#sle).
  - 3. Jaypro Sports Construction Group.
  - 4. Or prior approved equal.

### **2.02 GENERAL REQUIREMENTS**

- A. See drawings for sizes and locations, unless noted otherwise.
- B. Provide mounting plates, brackets, and anchors of sufficient size and strength to securely attach equipment to building structure; comply with requirements of contract documents.
- C. Hardware: Heavy duty steel hardware, as recommended by manufacturer.
- D. Electrical Wiring and Components: Comply with NFPA 70; provide UL-listed equipment.
- E. Structural Steel Fabrications: Welded in accordance with AWS D1.1/D1.1M, using certified welders.

### **2.03 OVERHEAD BASKETBALL GOAL SYSTEM**

- A. Basketball System: Backstop assembly, backboard, and goal.
- B. Ceiling-Suspended Backstop Assemblies: Capable of mounting both rectangular and fan-shaped backboards.
  - 1. Framing: Center strut; forward folding framing.
  - 2. Folding Control System: Electric hoist that folds backstop with 115 volt actuator, integral limit switches that provide automatic shut-off in both positions, and safety catch with automatic reset. Provide operating machine of size and capacity recommended by manufacturer for equipment specified, electric motor with factory pre-wired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.
    - a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
    - b. Operator Type: Cable drum with grooved drum and cable tension device to automatically take up cable slack and retain cable in grooves.
    - c. Operator Mounting: Wall-mounted board.
    - d. Motor Electrical Characteristics:
      - 1) Voltage: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.
      - 2) Horsepower: 3/4 hp.
      - 3) Phase: Single.
    - e. Remote-Control Station(s): NEMA ICS 6, Type 1 enclosure for recessed or flush mounting and momentary-contact, three-position, switch-operated control with up, down, and off functions.
      - 1) Key Switch Control Stations: One switch.
      - 2) Keys: Provide two keys per station.

- f. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop basketball equipment at fully retracted and fully lowered positions.
  3. Backstop Safety Device: Designed to limit free fall if support cable, chains, pulleys, fittings, winch, or related components fail; with mechanical automatic reset; 6000 lb load capacity, one per folding backstop.
  4. Height Adjuster: Raises or lowers assembly by 2 feet to adjust goal height.
    - a. Height Control System: Manual winch.
  5. Framing Color: As selected from manufacturer's standard selection.
  6. Manufacturers:
    - a. Basis of Design: Draper, Inc; EZ Fold Ceiling Suspended Forward-Folding: [www.draperinc.com](http://www.draperinc.com).
    - b. IPI by Bison, Inc; IP1360FF Forward Fold, Front Braced: [www.ipibybison.com/#sle](http://www.ipibybison.com/#sle).
    - c. Or prior approved equal.
- C. Backboards: Steel, rectangular shaped.
  1. Dimensions: 72 inches high by 42 inches wide
  2. Construction: Single piece of 12 gauge steel reinforced with four 12 gauge horizontal channel sections, and one heavy 10 gauge vertical channel. The backboard face shall have a 1 1/2" deep flange. All reinforced sections are welded to the main outer shell and to each other to make a single vibration free unit.
  3. Goal mounting assembly: Mounting keyhole type slots are positioned in center of horizontal reinforced channels located on 20" vertical and 35" horizontal centers.
  4. Equip frame and goal mounted assembly with neoprene shock absorbing cushions.
  5. Finish: Gloss white powder coat and silk-screened orange perimeter and targe area markings.
  6. Goal mounting holes are 5" horizontal and 5" vertical
  7. Manufacturers:
    - a. Basis of Design: Draper Model EZ Fold 503167 Rectangular Steel Basketball Backboard.
- D. Goal Mounting Assembly: Compatible with goal, backboard, and support framing; with hole pattern 5 inches o.c. horizontally and vertically 5 inches o.c. horizontally, or as manufacturer's standard.
  1. Direct Mount: Designed for mounting goal directly and independently to center mast of backboard support framing so no force, transmitted by ring, is directly applied to backboard, and rigidity and stability of goal are maximized.
- E. Goals: Steel rim, mounted to backboard, with attached nylon anti-whip net; complete with mounting hardware. Breakaway goal with standard no-tie net attachment and designed to withstand shock loads from player slam dunking or hanging on rim. Rim shall deflect down when 230 pound static load is applied and return to playing position when load is removed.
  1. Net Attachment Device: No-tie looks for attaching net to rim without tying..
  2. Breakaway mechanism, adjustable from 160 pounds to 230 pounds.
  3. Field Adjustment: Provide rim that is field-adjustable for rebound elasticity without being removed from the backboard.
  4. Mount: Rear.
  5. Ring: Fabricated from 5/8" diameter steel rod formed into 18 inch ring. Rigidly brace with die cut steel braces welded to rim.
  6. Mounting plate: Heavy duty plate bracket with mounting holes and designed to position inside of ring 6" from backboard.
  7. Mounting hardware: Zinc plated.
  8. Finish: Polyester powder coat finish.
  9. Basis of Design Product: Model 503576 manufactured by Draper.
- F. Basketball Nets: 12-loop-mesh net, between 15 and 18 inches (380 to 460 mm) long, sized to fit rim diameter, and as follows:
  1. Cord: Made from white nylon.

2. Competition Cord: Anti-whip, made from white nylon cord not less than 120-gm thread and not more than 144-gm thread.

## **2.04 OUTDOOR BASKETBALL GOAL**

- A. Basketball System: Backstop assembly, pole, backboard, and goal.
- B. Basis of Design: Draper 5065XY 5 9/16" OD Gooseneck Post with 6' Extension
- C. Materials: Structural steel tubing: Steel, mechanical, round tubing conforming to ASTM A513 with galvanized zinc coating conforming to ASTM A653, Designation G90.
  1. Minimum coating weight:
    - a. Total both sides 0.90 ounces per square foot
    - b. One side: 0.45 ounces per square foot per side
  2. Aluminum casting: ASTM B85
- D. Type: Gooseneck style with single, galvanized steel post extending backboard into court.
- E. Backboard: 72" x 42" Rectangular, Steel Backboard.
  1. Basis of Design: Draper Model 503167
  2. Construction: Single piece of 12 gauge steel reinforced shell with 1-½" deep flange and four 12 gauge horizontal channel sections and one heavy 10 gauge vertical channel. Channels are welded to outer shell and to each other to make a single vibration free unit. Key-hole slots are positioned in horizontal channels to standard fan-shaped (20" x 35") mounting. Backboard has factory drilled holes at 5" x 5" centers for goal mounting.
  3. Finish: White powder coat finish with orange border and target lines.
- F. Rim shall be flexible to absorb stress of player contact. Breakaway goal designed to withstand shock loads from player slam dunking or hanging on rim and weather. Rim shall deflect down when load is applied and return to playing position when load is removed. Factory set proper flex and rebound requirements. Shall be institutional quality with 5/8" diameter ring. Ring opening diameter shall be the standard 18" I.D.
  1. Basis of Design: Draper Model 503079 Outdoor Breakaway Goal with Nylon Net
  2. Finish: Orange powder coat.
  3. Net: Heavy duty nylon net, white braided nylon anti whip net with top half made of heavy braided materials to prevent net from whipping up on rim.
  4. Mounting plate: Heavy duty steel plate bracket with mounting holes and designed to position inside of ring 6" from backboard.
  5. Mounting hardware: Zinc plated.
- G. Accessories:
  1. Provide backstop with all hardware required for complete, functional, rigid assembly and installation. Provide tamper proof hardware.

## **PART 3 EXECUTION**

### **3.01 COORDINATION**

- A. Coordinate provision of basketball backstops with construction of wall framing supporting basketball backstop to ensure proper support and method of attachment.
- B. Coordinate support of backstops to ensure proper distribution of loads and adequacy of attachment points. Provide additional structural framing members as required.

### **3.02 EXAMINATION**

- A. Take field measurements to ensure proper fitting of work. If taking field measurements before fabrication will delay work, allow for adjustments within recommended tolerances.
- B. Inspect areas and conditions before installation, and notify Architect in writing of unsatisfactory or detrimental conditions.
- C. Do not proceed with this work until conditions have been corrected; commencing installation constitutes acceptance of work site conditions.

### **3.03 INSTALLATION**

- A. Install in accordance with contract documents and manufacturer's instructions.
- B. For Outdoor Basketball Goal, excavate post foundation with minimum diameter and depth as shown on manufacturer's installation instructions or as required by local conditions or code requirements. See posts in concrete embedment as shown on manufacturer's installation instructions. Slope top of foundation for drainage. Verify that post is correctly positioned and plumb vertically. Where concrete slab is cast around backstop post, provide compressible joint material to provide bond breaker. Allow concrete to cure 24 hours minimum.
- C. Install equipment rigid, straight, plumb, and level.
- D. Secure equipment with manufacturer's recommended anchoring devices.
- E. Separate dissimilar metals to prevent electrolytic corrosion.

### **3.04 ADJUSTING**

- A. Verify proper placement of equipment.
- B. Verify proper placement of equipment anchors and sleeves, and use actual movable equipment to be anchored if available.

### **3.05 CLEANING**

- A. Remove masking or protective covering from finished surfaces.
- B. Clean equipment in accordance with manufacturer's recommendations.

### **3.06 PROTECTION**

- A. Protect installed products until Date of Substantial Completion.
- B. Replace damaged products before Date of Substantial Completion.

**END OF SECTION**

## SECTION 12 2400 - ROLLER WINDOW SHADES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Window shades and accessories, in Administration and Medical Administration areas only.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.
- B. Section 09 2116 - Gypsum Board Assemblies: Substrate for window shade systems.
- C. Section 09 5100 - Acoustical Ceilings: Shade Pockets, pocket closures and accessories.

#### 1.03 REFERENCE STANDARDS

- A. ASTM D4674 - Standard Practice for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Office Environments; 2002a (Reapproved 2010).
- B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequencing:
  - 1. Do not fabricate shades until field dimensions for each opening have been taken.
  - 2. Do not install shades until final surface finishes and painting are complete.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures, for submittal process.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
- C. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, and mounting dimension requirements for each product and condition.
- D. Certificates: Manufacturer's documentation that line voltage components are UL listed or UL recognized.
- E. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.
- F. Selection Samples: Include fabric samples in full range of available colors and patterns.
- G. Verification Samples: Minimum size 6 inches square, representing actual materials, color and pattern.
- H. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- I. Project Record Documents: Record actual locations of control systems and show interconnecting wiring.
- J. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.
- K. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

#### 1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of this type with minimum five years of documented experience.
  - 1. Factory training and demonstrated experience.

### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
- B. Handle and store shades in accordance with manufacturer's recommendations.

### 1.08 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

### 1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's warranty from Date of Substantial Completion, covering the following:
  - 1. Shade Hardware: One year.
  - 2. Fabric: One year.
  - 3. Aluminum and Steel Coatings: One year.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Manually Operated Roller Shades:
  - 1. Draper, Inc; Clutch Operated FlexShade: [www.draperinc.com/#sle](http://www.draperinc.com/#sle).
  - 2. Hunter Douglas Architectural; RB500 Manual Roller Shades: [www.hunterdouglasarchitectural.com/#sle](http://www.hunterdouglasarchitectural.com/#sle).
  - 3. **Basis of Design:** SWFcontract, a division of Springs Window Fashions, LLC.: [www.swfcontract.com](http://www.swfcontract.com).
  - 4. Or prior approved equal.
- B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

### 2.02 WINDOW SHADE APPLICATIONS

- A. Shades: Black-out shades with second translucent shade at openness factor indicated in Conference Room, Translucent shades at openness factor indicated at all other locations indicated.
- B. Refer to plans for shade types and locations.
  - 1. Color: As indicated in Finish Key, or as selected by Architect from manufacturer's full range of colors.
  - 2. Mounting: Inside (between jambs).
  - 3. Operation: Manual.

### 2.03 MANUALLY OPERATED SHADES WITH TWO ROLLERS

- A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
  - 1. Bead Chains: Nickel-plated metal.
    - a. Loop Length: Extend to within 36 inches above finished floor.
    - b. Limit Stops: Provide upper and lower ball stops.
    - c. Chain-Retainer Type: Chain tensioner, sill-mounted or mounted on vertical window mullion, as applicable.
  - 2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.
    - a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criteria are more stringent.
- B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.



1. Roller Drive-End Location: Right side of inside face of shade, unless otherwise indicated on Drawings.
  2. Direction of Shadeband Roll: Regular, from back of roller.
  3. Shadeband-to-Roller Attachment: Removable spline fitting integral channel in tube.
  4. Provide one Roller for light-filtering fabric and one Roller for blackout shade fabric.
- C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- D. Shadebands:
1. Shadeband Material: Light-filtering fabric.
  2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
    - a. Type: Enclosed in sealed pocket of shadeband material.
    - b. At Blackout Shades: Provide a slot in bottom bar with wool-pile light seal.
- E. Installation Accessories:
1. Wall-Mount Angle Support Angles: Manufacturer's standard design for support of concealed roller window shade operating mechanism to be installed above finish ceiling as indicated on the Drawings.

## **2.04 SHADEBAND MATERIALS**

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
1. Source: Roller-shade manufacturer.
  2. Type: PVC-coated polyester, unless otherwise indicated in the Drawing "FINISH KEY."
  3. Weave: Basketweave, unless otherwise indicated in the Drawing "FINISH KEY."
  4. Roll Width: Maximum available by manufacturer, but not less than 84 inches.
  5. Openness Factor: 1 percent, unless otherwise indicated in the Drawing "FINISH KEY."
  6. Colors: As indicated in the Drawing "FINISH KEY."

## **2.05 ROLLER SHADES**

- A. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hem bars, hardware and accessories.
1. Drop: Regular roll.
  2. Size: As verified in the field to fit window openings as indicated in the Drawings..
- B. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
1. Blackout Shades: Block virtually all the light; Openness Factor equal to zero (0).
  2. Flammability: Pass NFPA 701 large and small tests.
- C. Roller Tubes: As required for type of operation.
1. Size: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
  2. Fabric Attachment: Utilize double sided adhesive tape.
  3. Finish: From manufacturer's full range..
- D. Hem bars: Designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
1. Blackout Shades: Provide a slot in bottom bar with wool-pile light seal.
- E. Manual Operation for Interior Shades: Clutch operated continuous loop; beaded ball chain.

## **2.06 ACCESSORIES**

- A. Fascias: Size as required to conceal shade mounting.
1. Style: As selected by Architect from shade manufacturer's full selection.
  2. Material and Color: To match aluminum storefront system finish.

- B. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.
- C. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

## **2.07 FABRICATION**

- A. Field measure finished openings prior to ordering or fabrication.
- B. Fabricate shades to fit openings within specified tolerances.
  - 1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.
  - 2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.
- C. Dimensional Tolerances: As recommended in writing by manufacturer.
- D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine finished openings for deficiencies that may preclude satisfactory installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Start of installation shall be considered acceptance of substrates.

### **3.02 PREPARATION**

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- B. Coordinate with window installation and placement of concealed blocking to support shades.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
- B. Installation Tolerances:
  - 1. Maximum Offset From Level: 1/16 inch.
- C. Replace shades that exceed specified dimensional tolerances at no extra cost to Owner.
- D. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

### **3.04 CLEANING**

- A. Clean soiled shades and exposed components as recommended by manufacturer.
- B. Replace shades that cannot be cleaned to "like new" condition.

### **3.05 CLOSEOUT ACTIVITIES**

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. See Section 01 7900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.
- D. Training: Train Owner's personnel on operation and maintenance of system.
  - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
  - 2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

### **3.06 PROTECTION**

- A. Protect installed products from subsequent construction operations.

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B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

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## SECTION 12 2400 - ROLLER WINDOW SHADES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Window shades and accessories, in Administration and Medical Administration areas only.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.
- B. Section 09 2116 - Gypsum Board Assemblies: Substrate for window shade systems.
- C. Section 09 5100 - Acoustical Ceilings: Shade Pockets, pocket closures and accessories.

#### 1.03 REFERENCE STANDARDS

- A. ASTM D4674 - Standard Practice for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Office Environments; 2002a (Reapproved 2010).
- B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequencing:
  - 1. Do not fabricate shades until field dimensions for each opening have been taken.
  - 2. Do not install shades until final surface finishes and painting are complete.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures, for submittal process.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
- C. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, and mounting dimension requirements for each product and condition.
- D. Certificates: Manufacturer's documentation that line voltage components are UL listed or UL recognized.
- E. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.
- F. Selection Samples: Include fabric samples in full range of available colors and patterns.
- G. Verification Samples: Minimum size 6 inches square, representing actual materials, color and pattern.
- H. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- I. Project Record Documents: Record actual locations of control systems and show interconnecting wiring.
- J. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.
- K. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

#### 1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of this type with minimum five years of documented experience.
  - 1. Factory training and demonstrated experience.

### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
- B. Handle and store shades in accordance with manufacturer's recommendations.

### 1.08 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

### 1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's warranty from Date of Substantial Completion, covering the following:
  - 1. Shade Hardware: One year.
  - 2. Fabric: One year.
  - 3. Aluminum and Steel Coatings: One year.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Manually Operated Roller Shades:
  - 1. Draper, Inc; Clutch Operated FlexShade: [www.draperinc.com/#sle](http://www.draperinc.com/#sle).
  - 2. Hunter Douglas Architectural; RB500 Manual Roller Shades: [www.hunterdouglasarchitectural.com/#sle](http://www.hunterdouglasarchitectural.com/#sle).
  - 3. **Basis of Design:** SWFcontract, a division of Springs Window Fashions, LLC.: [www.swfcontract.com](http://www.swfcontract.com).
  - 4. Or prior approved equal.
- B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

### 2.02 WINDOW SHADE APPLICATIONS

- A. Shades: Black-out shades with second translucent shade at openness factor indicated in Conference Room, Translucent shades at openness factor indicated at all other locations indicated.
- B. Refer to plans for shade types and locations.
  - 1. Color: As indicated in Finish Key, or as selected by Architect from manufacturer's full range of colors.
  - 2. Mounting: Inside (between jambs).
  - 3. Operation: Manual.

### 2.03 MANUALLY OPERATED SHADES WITH TWO ROLLERS

- A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
  - 1. Bead Chains: Nickel-plated metal.
    - a. Loop Length: Extend to within 36 inches above finished floor.
    - b. Limit Stops: Provide upper and lower ball stops.
    - c. Chain-Retainer Type: Chain tensioner, sill-mounted or mounted on vertical window mullion, as applicable.
  - 2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.
    - a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criteria are more stringent.
- B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right side of inside face of shade, unless otherwise indicated on Drawings.
  2. Direction of Shadeband Roll: Regular, from back of roller.
  3. Shadeband-to-Roller Attachment: Removable spline fitting integral channel in tube.
  4. Provide one Roller for light-filtering fabric and one Roller for blackout shade fabric.
- C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- D. Shadebands:
1. Shadeband Material: Light-filtering fabric.
  2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
    - a. Type: Enclosed in sealed pocket of shadeband material.
    - b. At Blackout Shades: Provide a slot in bottom bar with wool-pile light seal.
- E. Installation Accessories:
1. Wall-Mount Angle Support Angles: Manufacturer's standard design for support of concealed roller window shade operating mechanism to be installed above finish ceiling as indicated on the Drawings.

## 2.04 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
1. Source: Roller-shade manufacturer.
  2. Type: PVC-coated polyester, unless otherwise indicated in the Drawing "FINISH KEY."
  3. Weave: Basketweave, unless otherwise indicated in the Drawing "FINISH KEY."
  4. Roll Width: Maximum available by manufacturer, but not less than 84 inches.
  5. Openness Factor: 1 percent, unless otherwise indicated in the Drawing "FINISH KEY."
  6. Colors: As indicated in the Drawing "FINISH KEY."

## 2.05 ROLLER SHADES

- A. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hem bars, hardware and accessories.
1. Drop: Regular roll.
  2. Size: As verified in the field to fit window openings as indicated in the Drawings..
- B. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
1. Blackout Shades: Block virtually all the light; Openness Factor equal to zero (0).
  2. Flammability: Pass NFPA 701 large and small tests.
- C. Roller Tubes: As required for type of operation.
1. Size: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
  2. Fabric Attachment: Utilize double sided adhesive tape.
  3. Finish: From manufacturer's full range..
- D. Hem bars: Designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
1. Blackout Shades: Provide a slot in bottom bar with wool-pile light seal.
- E. Manual Operation for Interior Shades: Clutch operated continuous loop; beaded ball chain.

## 2.06 ACCESSORIES

- A. Fascias: Size as required to conceal shade mounting.
1. Style: As selected by Architect from shade manufacturer's full selection.
  2. Material and Color: To match aluminum storefront system finish.

- B. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.
- C. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

## **2.07 FABRICATION**

- A. Field measure finished openings prior to ordering or fabrication.
- B. Fabricate shades to fit openings within specified tolerances.
  - 1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.
  - 2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.
- C. Dimensional Tolerances: As recommended in writing by manufacturer.
- D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine finished openings for deficiencies that may preclude satisfactory installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Start of installation shall be considered acceptance of substrates.

### **3.02 PREPARATION**

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- B. Coordinate with window installation and placement of concealed blocking to support shades.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
- B. Installation Tolerances:
  - 1. Maximum Offset From Level: 1/16 inch.
- C. Replace shades that exceed specified dimensional tolerances at no extra cost to Owner.
- D. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

### **3.04 CLEANING**

- A. Clean soiled shades and exposed components as recommended by manufacturer.
- B. Replace shades that cannot be cleaned to "like new" condition.

### **3.05 CLOSEOUT ACTIVITIES**

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. See Section 01 7900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.
- D. Training: Train Owner's personnel on operation and maintenance of system.
  - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
  - 2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

### **3.06 PROTECTION**

- A. Protect installed products from subsequent construction operations.

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B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

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## SECTION 12 3600 - SIMULATED STONE COUNTERTOPS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.
- B. Solid-surface window sills.

#### 1.02 RELATED REQUIREMENTS

- A. Section 06 4100 - Architectural Wood Casework.
- B. Section 09 2116 - Gypsum Board Assemblies - Non-structural metal framing.

#### 1.03 REFERENCE STANDARDS

- A. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- B. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- C. PS 1 - Structural Plywood; 2023.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures, for submittal process.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.
- D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- F. Installation Instructions: Manufacturer's installation instructions and recommendations.
- G. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

#### 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### 1.07 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

### PART 2 PRODUCTS

#### 2.01 COUNTERTOPS

- A. Solid Surfacing Materials: Solid surfacing sheet or plastic resin casting over continuous substrate. To be used for countertops and wall applications as indicated in Drawings.
  - 1. Flat Sheet Thickness: 1/2 inch; locations as indicated on drawings.
  - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and

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capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.

- a. Manufacturers:
  - 1) Dupont; Corian: [www.corian.com](http://www.corian.com).
  - 2) **Basis of Design:** LG Hausys America, Inc; HI-MACS 12mm : [www.lghausysusa.com/#sle](http://www.lghausysusa.com/#sle).
  - 3) Livingstone by US Surfaces: [www.livingstonesurfaces.com](http://www.livingstonesurfaces.com).
  - 4) Staron Solid Surfaces: [www.staron.com](http://www.staron.com).
  - 5) Or prior approved equal.
- b. Color and Pattern: As indicated on drawings.
3. Other Components Thickness: 1/2 inch, minimum.
4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high, unless otherwise indicated.

## 2.02 MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Joint Sealant: Mildew-resistant silicone sealant, clear, unless indicated otherwise.

## 2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
  1. Join lengths of tops using best method recommended by manufacturer.
  2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
  3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
  1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
  2. Height: 4 inches, unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

### 3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.03 INSTALLATION

- A. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Pre-drill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with

|                                      |             |                             |
|--------------------------------------|-------------|-----------------------------|
| 571506 / New Jetson Center for Youth | 12 3600 - 2 | Simulated Stone Countertops |
|--------------------------------------|-------------|-----------------------------|

manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

1. Install backsplashes and endsplashes to comply with manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
  2. Seal edges of cutouts in particleboard subtops by saturating with varnish.
- B. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- C. Seal joint between back/end splashes and vertical surfaces.

#### **3.04 TOLERANCES**

- A. Variation From Horizontal: 1/8 inch in 8 feet, maximum.
- B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C. Field Joints: 1/8 inch wide, maximum.

#### **3.05 CLEANING**

- A. Clean countertops surfaces thoroughly.

#### **3.06 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

## SECTION 13 3419 - METAL BUILDING SYSTEMS

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. Section Includes:
  - 1. Structural-steel framing.
  - 2. Metal roof panels.
  - 3. Metal wall panels.
  - 4. Thermal insulation.
  - 5. Accessories.

#### 1.03 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications.
- B. Section 07 2000 - Thermal Insulation: Board insulation at exterior wall behind metal panel finish.
- C. Section 07 9200 - Joint Sealants: Sealing joints between accessory components and wall system.
- D. Section 08 1113 - Hollow Metal Doors and Frames.
- E. Section 08 3323 - Overhead Coiling Doors, for coiling doors in metal building systems.

#### 1.04 REFERENCE STANDARDS

- A. AISC 360 - Specification for Structural Steel Buildings; 2022.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- E. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2014.
- F. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric); 2014.
- G. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength; 2014a.
- H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.
- I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.
- J. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2014.
- K. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2021, with Editorial Revision.
- L. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- M. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2025a.

- N. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2020.
- O. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.
- P. ASTM C991 - Standard Specification for Flexible Fibrous Glass Insulation for Metal Buildings; 2023.
- Q. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2017.
- R. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.
- S. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.
- T. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2025a.
- U. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Errata (2026).
- V. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2024.
- W. MBMA (MBSM) - Metal Building Systems Manual; 2019.
- X. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.
- Y. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.
- Z. For structural steel members, comply with AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings".
- AA. For light gauge steel members, comply with AISI "Specification for the Design of Cold-Formed Steel Structural Members."

#### **1.05 DEFINITIONS**

- A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

#### **1.06 COORDINATION**

- A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete".
- B. Coordinate installation of roof curbs, equipment supports and roof penetrations, which are specified in Section 077200 "Roof Accessories".
- C. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

#### **1.07 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to metal building systems including, but not limited to, the following:
    - a. Condition of foundations and other preparatory work performed by other trades.
    - b. Structural load limitations.
    - c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
    - d. Required tests, inspections, and certifications.

- e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.
- 2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:
  - a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
  - b. Structural limitations of purlins and rafters during and after roofing.
  - c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
  - d. Temporary protection requirements for metal roof panel assembly during and after installation.
  - e. Roof observation and repair after metal panel installation.
- 3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
  - a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
  - b. Structural limitations of girts and columns during and after wall panel installation.
  - c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
  - d. Temporary protection requirements for metal wall panel assembly during and after installation.
  - e. Wall observation and repair after metal wall panel installation.

#### 1.08 ACTION SUBMITTALS

- A. See Section 01 3000 - Submittal Procedures.
- B. Product Data: For each type of metal building system component.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
    - a. Metal roof panels.
    - b. Metal wall panels.
    - c. Thermal insulation and vapor-retarder facings.
- C. Shop Drawings: All shop drawings shall be stamped and signed by a qualified Professional Structural Engineer, licensed in the State in which the project is located. Indicate components by others. Include full building plan, elevations, sections, details and the following:
  - 1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.
  - 2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
  - 3. Metal Roof and Wall Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
    - a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
    - b. Refer to Division 7 for board continuous insulation specification. Contractor to coordinate submittal efforts between suppliers, should they not be from the same manufacturer.
  - 4. Accessory Drawings: Include details of the following items, at a scale not less than 1-1/2 inches per 12 inches.
    - a. Flashing and trim.
    - b. Gutters and downspouts.

- D. Samples: Submit two samples of precoated metal panels for each color selected, 4" by 4" inch in size illustrating color and texture of finish.
- E. Delegated-Design Submittal: For metal building systems.
  - 1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation and licensed in the State in which the project is located.
- F. Insulation Submittal: Include manufacturer's product brochures; component specifications, samples of the painted support strapping, and samples of the reinforced polyethylene vapor retarder fabric, including a sample of the triple extrusion welded seam; specific detailed drawings from the manufacturer for the project showing purlin spacings, support strap locations and spacings, fastening points, liner system fabric sizes and locations, insulation widths and thicknesses, sizes and locations and detailed installation instructions for quality assurance and OSHA compliance.
- G. Manufacturer's Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472.
  - 1. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.

#### 1.09 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For erector and manufacturer.
- B. Welding certificates.
- C. Letter of Design Certification: Signed and sealed by a qualified professional Civil Engineer, licensed in the the State in which the project is located. Include the following:
  - 1. Name and location of Project.
  - 2. Order number.
  - 3. Name of manufacturer.
  - 4. Name of Contractor.
  - 5. Building dimensions including width, length, height and roof slope.
  - 6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
  - 7. Governing building code and year of edition.
  - 8. Design Loads: Include list of all design criteria: dead load; roof live load; floor live load; collateral loads; roof snow load; deflection and drift limits; wind loads/speeds (for both strength and serviceability design states); exposure risk categories, seismic design parameters or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
  - 9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
  - 10. Building-Use Category: Indicate category of building use and its effect on load importance factors.
- D. Erector Certificates: For qualified erector, from manufacturer.
- E. Material Test Reports: For each of the following products.
  - 1. Structural steel including chemical and physical properties.
  - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  - 3. Tension-control, high-strength, bolt-nut-washer assemblies.
  - 4. Shop primers.
  - 5. Non-shrink grout.
- F. Source quality-control reports.
- G. Field quality-control reports.

- H. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.
- I. Sample Warranties: For special warranties.

#### **1.10 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For metal panel finishes to include in maintenance manuals.

#### **1.11 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A qualified manufacturer.
  - 1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
  - 2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.
- B. Perform work in accordance with AISC 360 – Specification for Structural Steel Buildings.
  - 1. Maintain one copy on site.
- C. Perform welding in accordance with AWS D1.1.
- D. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience. Provide MBMA certification that pre-engineered metal building meets specified requirements.
- E. Erector Qualifications: Company specializing in performing the work of this section with minimum five (5) years experience. Erector is to be certified by metal building system manufacturer as qualified for erection of manufacturer's products.
- F. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.3, "Structural Welding Code - Sheet Steel."
- G. Land Surveyor Qualifications: A professional land surveyor who practices in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.
- H. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.
- I. Insulation Quality Assurance:
  - 1. Post the detailed training instructions, project specific safety drawings, and plans for OSHA compliance using the product.
  - 2. Installation shall proceed with care to assure proper sealing of the liner system fabric.
  - 3. Insulation shall be placed on (roof) or behind (walls) the liner system fabric in the full-specified thickness without voids and with minimal compression of top layer (if applicable in roofs).
  - 4. Purlins, girts and insulation must be completely isolated from the inside conditioned air with an effective vapor retarder. Taping or stapling of vapor retarder lap joints is not acceptable. Sealing field joints with a permanent vapor retarder lap sealant is required. Field seams, if any, shall be made on a structural member and mechanically attached with a steel strap and fasteners along its full length.
  - 5. All exposed parts of the liner system shall be Class A material and have flame spread of 25 or less based on ASTM E84 standards.
  - 6. Vapor retarder fabric shall be white or colored woven coated fabric and triple extrusion-welded seams fabricated in one piece, to fit not less than the full bay length by the width of the building.
  - 7. Buildings more than 100' wide may have field seams on the bottom of a purlin but no less than 50' apart. Any field seams must be sealed with vapor retarder lap sealant. Wall bay minimum fabric size shall be not less than one entire wall bay or end wall column space



from the ceiling to the floor. Perimeter edges of the vapor retarder fabric shall be trimmed and sealed to the adjoining steel or fabric with vapor retarder lap sealant. All edges of liner system fabric, including field seams, shall be mechanically fastened with steel retaining straps the full perimeter. In the event that the crew is not experienced in the installation procedures, video taped or on-site installation training shall be requested by the Manufacturer to assure proper installation procedures.

#### 1.12 DESIGN REQUIREMENTS

- A. Design members to withstand dead load, roof live load, floor live load, collateral loads, roof snow load, deflection, design loads due to pressure and suction of wind calculated in accordance with applicable code and seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
- B. See Structural Drawings for loading criteria.
- C. Design members as indicated on structural and architectural drawings. The design code is 2021 International Building Code. See structural drawings for seismic design information and mechanical drawings for piping and other equipment or appurtenance support requirements. The reference standards shall be as indicated and the design engineer shall use the latest accepted versions if they are available.
- D. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
- E. Exterior wall and roof system shall withstand imposed loads with maximum allowable deflection as indicated on contract drawings.
- F. All metal building rigid frames, portal frames, and x-bracing shall be designed for maximum lateral drift in terms of the building eave height (H) of  $H/300$ .
- G. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- H. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects when subject to exterior temperature range of 120 F plus effect of solar gain.
- I. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

#### 1.13 DELIVERY, STORAGE AND HANDLING

- A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Protect foam-plastic insulation as follows:
  - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
  - 3. Complete installation and concealment of foam-plastic materials as rapidly as possible in each area of construction.

#### 1.14 FIELD CONDITIONS

- A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

#### 1.15 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: Twenty (20) years from date of Substantial Completion.
- C. Special Weathertightness Warranty for Standing Seam Metal Roof Panels: Manufacturer's standard form in which manufacturer agrees to repair or replace standing seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.
  - 1. Warranty Period: Twenty (20) years from date of Substantial Completion.
- D. Insulation Warranty: Manufacturer's Standard Ten (10) year warranty.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Metal Buildings Systems:
  - 1. Gulf States, a Nucor Company; [www.gulfstatesmanufacturers.com](http://www.gulfstatesmanufacturers.com)
  - 2. Alliance Steel; Brad Wigley (405) 745-7500: [www.allianceokc.com](http://www.allianceokc.com).
  - 3. Ceco Building Systems: [www.cecobuildings.com/#sle](http://www.cecobuildings.com/#sle).
  - 4. Inland Building Systems: [www.inlandbuildings.com](http://www.inlandbuildings.com).
  - 5. Nucor Building Systems; Marc McIntyre, (337) 281-1926: [www.nucorbuildingsystems.com](http://www.nucorbuildingsystems.com).
  - 6. United Structures of America; Dennis Parrino, (225) 394-5085: [www.usabldg.com](http://www.usabldg.com)
  - 7. Or prior approved equal.

#### 2.02 ASSEMBLIES

- A. Single span rigid frame.
- B. Bay Spacing: As indicated on Drawings.
- C. Primary Framing: Rigid frame of rafter beams and columns, braced end frames and end wall columns, and wind bracing.
- D. Secondary Framing: Purlins, Girts, Eave struts, Flange bracing, and Clips, and other items detailed.
- E. Wall System: Preformed metal panels of varying profiles as indicated profile, with sub-girt framing/anchorage assembly and insulation, and accessory components. Wall panels are to be installed both horizontally and vertically, as indicated in Drawings.
- F. Roof System: Standing seam metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly and insulation, and accessory components.
- G. Roof Slope: 3 inches in 12 inches.

#### 2.03 PERFORMANCE REQUIREMENTS

- A. Installed Thermal Resistance of Wall System: R-value of 13 + 6.5 ci.
- B. Installed Thermal Resistance of Roof System: R-value of 19 + 11LS.

- C. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- D. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of \_\_\_\_ degrees F.

#### **2.04 MATERIALS - FRAMING**

- A. Structural Steel Members: ASTM A572/A572M, Grade 50 or 55, or ASTM A 992, Grade 50.
- B. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B cold-formed, (Fy = 46 ksi), structural tubing.
- C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.
- D. Anchor Bolts: ASTM F1554, Grade 36, Class 1A, with no preference for protective coating.
- E. Hot Rolled Mill Shapes: A36, Grade 36.
- F. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1; galvanized to ASTM A153/A153M.
- G. Welding Materials: Perform in accordance with AWS D1.1/D1.1M.
- H. Primer: FS TT-P-664 or SSCP Paint 15.
- I. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
  - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

#### **2.05 MATERIALS - WALLS AND ROOF**

- A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, Designation SS (structural steel), Grade 33 (230), with G90/Z275 coating.
- B. Insulation: Batt glass fiber type, faced with WMP-VR Polypropylene with 6 inch tab one side, ASTM E 84 flame spread index of 25 or less, friction fit. In accordance with IBC & IECC, provide and install continuous insulation at building envelope.
  - 1. Wall Insulation: R-20 minimum - Double layer: R-13 + R-6.5 ci (continuous insulation)
  - 2. Roof Insulation: R-30 minimum - Double layer: R-19 + R-11 LS (linear system)
- C. Joint Seal Gaskets: Manufacturer's standard type.
- D. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M, finish to match adjacent surfaces when exterior exposed.
- E. Bituminous Paint: Asphaltic type.
- F. Roof Curbs: Insulated metal same as roofing, 1-1/2 inch thick, designed for imposed equipment loads, anchor fasteners to equipment, counterflashed to metal roof system and fully welded. Curbs to be approved for use with metal building supplier roof system.
- G. Trim, Closure Pieces, Caps, Flashings, Gutters, Downspouts, Rain Water Diverter, Fascias, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

#### **2.06 COMPONENTS**

- A. Doors and Frames: See Section 08 1113.
- B. Overhead Doors: Specified in Section 08 3323.
- C. Overhead Door Frame: Formed steel sections braced to building frame; see Section 05 5000.
- D. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

#### **2.07 FABRICATION - FRAMING**

- A. Fabricate members in accordance with AISC 360 for plate, bar, tube, or rolled structural shapes.
- B. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.

- C. Zee Purlins:
  - 1. Fabricate purlins from cold-formed "Z" sections with stiffened flanges. Size flange stiffeners to comply with the requirements of the latest edition of AISI. Connection bolts will install through the webs, not the flanges.
- D. Bracing:
  - 1. Diagonal Bracing:
    - a. Diagonal bracing in the roof and sidewalls may be used to resist longitudinal loads (wind, crane, etc.).
    - b. Diagonal bracing shall be furnished to length and equipped with hillside washers and nuts at each end. It may consist of rods threaded each end or galvanized cable with suitable threaded end anchors. If load requirements so dictate, bracing may be of structural angle and/or pipe, bolted in place.
  - 2. Special Bracing: When diagonal bracing is not permitted in the sidewall, a rigid frame type portal shall be used.
  - 3. Flange Braces: The compression flange of all primary framing must be braced laterally with angles connecting to the bottoms chords of purlins or to the webs of girts so that the flange compressive stress is within allowable limits for any combination of loading.
  - 4. Bridging:
    - a. Laterally bridge the top and bottom chords of the open-web bar joists as required by design thereof and specified on the building erection drawings.
  - 5. Non-Destructive Testing (NDT) - NDT shall be performed and documented as required by the governing building code for this project.
- E. Additional framing and furring members: Provide additional framing and furring members as necessary for attachment of exterior metal panel system and continuous insulation system.
  - 1. Horizontal Girts shall be spaced no more than 4'-0" o.c. vertically to allow for installation of the continuous insulation system.

## 2.08 FABRICATION - WALL AND ROOF PANELS

- A. Metal Wall Panels (**MP-1**): Minimum 24-gage metal thickness, profile indicated, PBR panel with continuous gaskets, double protection metal closer in front of Neoprene or EPDM closure. **Basis of Design: Alliance Steel Building System - R-Panel**
  - 1. Material: Minimum 24-gauge metal thickness, zinc-coated (galvanized).
    - a. Exterior Finish: Fluoropolymer
    - b. Color: As selected by Architect from manufacturer's full range.
  - 2. Major-Rib Spacing: 16 inches o.c.
  - 3. Panel Coverage: 36 inches.
  - 4. Panel Height: 1 1/4 inch.
- B. Metal Roofing Panels: Standing Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels. Basis of Design: Alliance Steel Building System - ALOK-16 Panel
  - 1. Material: Minimum 24-gauge metal thickness, zinc-coated (galvanized).
    - a. Exterior Finish: Fluoropolymer
    - b. Color: As selected by Architect from manufacturer's full range.
  - 2. Clips: **Basis of Design: Alliance A Lok Clip**, to be installed with thermal blocks at purlin locations, as indicated in Drawings.
  - 3. Joint Type: Mechanically seamed, folded according to manufacturer's standard.
  - 4. Panel Coverage: 16 inches.
  - 5. Panel Height: 2 inches
  - 6. Uplift Rating: UL 90
- C. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.

- D. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles. Back brace mitered internal corners with 0.050 inch thick sheet.
- E. Flashings, Closure Pieces, Fascia and Infills: Same material and finish as adjacent material, profile to suit system.
- F. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

## 2.09 FINISHES

- A. Framing Members: Clean, prepare, and shop prime. Do not prime surfaces to be field welded.

## 2.10 THERMAL INSULATION

- A. Manufacturers:
  - 1. Basis of Design: Thermal Design, Inc; Simple Saver Insulation System: [www.thermaldesign.com](http://www.thermaldesign.com).
  - 2. Or Approved Equal.
- B. A thermal break shall be applied where there is no existing thermal break between metal panel and metal structure. The thermal break shall be 3/8" Snap-R® thermal block.
- C. Wall R-Value: Minimum of R-13 + R-6.5 ci.
- D. Roof R-Value: Minimum of R-19 + R-11 LS
- E. Fabric: Woven reinforced high-density polyethylene yarns coated on both sides with a continuous white or colored polyethylene film.
  - 1. Basis of Design: Syseal
  - 2. Color: As selected by Architect.
  - 3. The fabric shall comply with UL/ULC 723 or ASTM E84, and be Class A compliant with a low flame spread index of 25 or less based on ASTM E84 test standards. This material shall be manufactured in large custom pieces by extrusion welding from roll goods. Pieces shall be fabricated to substantially fit the large defined building areas with minimum practical sealing to be done on job site. Fabric shall be folded to allow for rapid pull-out on the strap support system. The fabric shall be certified for fall protection by the manufacturer.
  - 4. Perm Rating: < 0.02 grains per hour per square foot based on ASTM E96
  - 5. Wall insulation shall not require vapor retarder as the continuous insulation on the exterior face of the wall assembly will incorporate the vapor retarder.
- F. Insulation: Fiberglass blanket or batt insulation meeting ASTM C991 Type 1, ASTM E136 and ASTM E84 or other insulation form as may be recommended and submitted by the system manufacturer and approved by the architect during submittals.
- G. Accessories:
  - 1. Steel Straps
    - a. Basis of Design: UVMAX Steel Strap
    - b. 100 KSI minimum yield high tensile strength steel, galvanized, primed and then painted the specified color on the exposed side with a clear coat primer on the unexposed side.
    - c. Minimum size shall be 0.02" x 1" x continuous length.
    - d. Strap Color: As selected by Architect from Manufacturer's full range.
  - 2. Fasteners:
    - a. #12 x 3/4", plated self-drilling screws with sealing washers painted to match the specified color for fastening to light gauge steel (up to 12 GA purlins) or #12 x 1 1/4" plated self-drilling screws with sealing washers, painted to match the specified color for heavier gauge steel (up to 3/8" purlins/bar joist).
    - b. Special fasteners for wood concrete and other structure types shall be provided by manufacturer.

- c. Always install two (2) fasteners in the end of each strap for safety and to withstand installation stress, and one (1) fastener at all other designated fastening points.
- 3. Insulation Hangers:
  - a. Basis of Design: Fast-R™ preformed, rigid insulation hangers for supporting insulation between wall girts or roof purlins in roof pitches over 4:12. Coiled hangers are not allowed.
- 4. Sealants:
  - a. Basis of Design: Simple Saver System G524 high Tack Sealant for sealing vapor retarder laps and/or Simple Saver System G220 Pressure Sensitive Sealant™ and/or Syseal Sticky Tape (double-sided bonding tape) 3/4" wide by 1/32" thick extruded vapor retarder sealant from Thermal Design.

## 2.11 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
  - 1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
  - 1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels. Double closures required. Metal on outside, Neoprene or Epdm rubber on inside.
  - 2. Clips: Manufacturer's standard, formed from stainless-steel sheet, designed to withstand negative-load requirements.
  - 3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from stainless-steel sheet or nylon-coated aluminum sheet.
  - 4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  - 5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.
  - 1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
  - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.
  - 1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.

2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- E. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.
- F. Materials:
1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
    - a. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
    - b. Fasteners for Metal Wall Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with EPDM sealing washers bearing on weather side of metal panels.
    - c. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
    - d. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
  2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
  3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
  4. Metal Panel Sealants:
    - a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.

## 2.12 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
  2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
1. Make shop connections by welding or by using high-strength bolts.
  2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
  3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
  4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.
  5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required

for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

### **2.13 SOURCE QUALITY CONTROL**

- A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.
  1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.
    - a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.
  1. Engage land surveyor to perform surveying.
- C. Proceed with erection only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

### **3.03 ERECTION OF STRUCTURAL FRAMING**

- A. Erect metal building system according to manufacturer's written instructions and drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
  1. Set plates for structural members on wedges, shims, or setting nuts as required.
  2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
  3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  1. Level and plumb individual members of structure.



2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.
    - a. Joint Type: Snug tightened or pretensioned as required by manufacturer.
- G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
  2. Locate and space wall girts to suit openings such as doors and windows.
  3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.
- H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
1. Tighten rod and cable bracing to avoid sag.
  2. Locate interior end-bay bracing only where indicated.
- I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

### **3.04 METAL PANEL INSTALLATION, GENERAL**

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.
1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.
- D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
    - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
  2. Install metal panels perpendicular to structural supports unless otherwise indicated.
  3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
  4. Locate and space fastenings in uniform vertical and horizontal alignment.
  5. Locate metal panel splices over structural supports with end laps in alignment.
  6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

- E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
  - 1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
- F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.
  - 1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
  - 2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

### **3.05 METAL ROOF PANEL INSTALLATION**

- A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
  - 1. Install ridge, and hip caps as metal roof panel work proceeds.
  - 2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.
- B. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.
  - 1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
  - 2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
  - 3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
  - 4. At metal panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
  - 5. At metal panel splices, a 0.060" galvanized steel back-up plate with alignment tabs shall be installed and sealed with precut tape mastic and butyl tube caulk.
- C. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

### **3.06 METAL WALL PANEL INSTALLATION**

- A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
  - 2. Shim or otherwise plumb substrates receiving metal wall panels.
  - 3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
  - 4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
  - 5. All sidelaps shall be field caulked and engaged fully into the previous panel.

6. All panels shall be secured to the secondary structure with a clip and two fasteners at each support location.
  7. All wall panels shall be fabricated in one piece provided the length does not exceed practical limits for shipment or construction.
  8. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
  9. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
  10. Install screw fasteners in predrilled holes.
  11. Install flashing and trim as metal wall panel work proceeds.
  12. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
  13. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
  14. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.
- C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m), noncumulative; level, plumb, and on location lines; and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

### 3.07 THERMAL INSULATION SYSTEM INSTALLATION

- A. Roof System:
1. Cut to length and install painted steel straps in the pattern and spacings as shown on the project shop drawings.
  2. The straps are installed in tension and span immediately below the bottom plane of the purlins.
  3. Position the pre-folded vapor retarder liner system fabric on the strap platform along one eave purlin. Clamp the two bottom corners squarely at the eave and centered on the bay. Pull the other end of the pleat-folded fabric across the building width on the strap platform but below the purlins, pausing only at the ridge to fasten the straps and fabric into position where the plane of the roof changes. Once positioned, the remaining fasteners are installed from the bottom side at each purlin/strap intersection and the edges are sealed and trimmed along the rafters. A similar method can be used starting at the ridge purlin space and pulling the fabric to each eave.
  4. Insulation is unpacked and placed on the vapor retarder liner system. Shake insulation to the specified thickness and install parallel, between purlins. In multi-layer systems, the upper most layer of insulation is placed over and perpendicular to the purlins as the roof sheeting is applied. It is important that the insulation cavity be filled or the cavities be ventilated to minimize the probability of condensation.
- B. Wall System:
1. Sheet the building with just the thermal break (if specified) applied to the exterior of the girts.
  2. Insulation is cut to the required lengths to fit vertically between the girts and installed in the girt spaces and impaled on insulation hangers. Fluff the insulation to the specified thickness, making sure there are no gaps or voids. Insulate the complete wall section. Apply the wall vapor retarder fabric by clamping it into position over the eave strap. Once in position, the fasteners are installed through the wall straps, eave strap and into each roof strap, permanently clamping the wall fabric between them. Seal the wall fabric and to the roof fabric and to the base angle, or base cee channel as well as the column flanges. Additional straps are installed along the base angle and each column to retain the system permanently in place.

3. Detailed installation instructions are to be sent along with the project drawings specific for the project and included with the materials in each shipment. Pertinent information is included on the drawings for each project. Review all information and instructions prior to commencement.

### **3.08 ACCESSORY INSTALLATION**

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
  1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
  2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
  3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
  1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
  2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- C. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

### **3.09 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspections and to submit reports.
- B. Product will be considered defective if it does not pass tests and inspections.

### **3.10 CLEANING AND PROTECTION**

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.
- B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.
  1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
  2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.
- D. Touchup Painting: Cleaning and touchup painting are specified in Section 099000 "Painting and Coating".

### **3.11 TOLERANCES**

- A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.

**END OF SECTION**

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