

SPECIFICATIONS FOR:

ETERNITY FULL GOSPEL FELLOWSHIP HALL
REBID
WESTLAKE, LOUISIANA

PROJECT NO. 2242B

JULY 2026

KING
ARCHITECTS, INC.

ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID

932 MULBERRY STREET
WESTLAKE, LOUISIANA 70669

KAI Project No. 2242B

Project Manual

JULY 2026

KING ARCHITECTS, INC

SECTION 00 01 07

PROJECT NAME AND ADDRESS:

ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID
932 MULBERRY STREET
WESTLAKE, LOUISIANA 70669

PROJECT NUMBER:

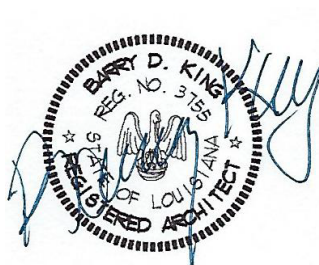
2242B

DATE OF DRAWINGS AND SPECIFICATIONS

JULY 2026

We hereby certify these plans and specifications were prepared by us or under our direct personal supervision and that we are duly licensed professionals in our specific scope of licensure under the laws of the State of Louisiana.

ARCHITECT



King Architects, Inc
1312 Sampson Street
Westlake, Louisiana 70669
Barry D. King, AIA
337.494.0806
raegan@kingarchitects.net

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ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID
WESTLAKE, LOUISIANA
KAI PROJECT NO: 2242B

TABLE OF CONTENTS

DIVISION 00	BIDDING & CONTRACT REQUIREMENTS	PAGES
00 01 01	PROJECT TITLE PAGE.....	00 01 01 1-1
00 01 07	SEALS PAGE.....	00 01 07 1-2
00 01 10	TABLE OF CONTENTS.....	00 01 10 1-4
00 01 15	LIST OF DRAWINGS.....	00 01 15 1-1
00 11 13	ADVERTISEMENT FOR BIDS.....	00 11 13 1-2
00 11 16	INVITATION TO BID.....	00 11 16 1-1
00 21 13	INSTRUCTIONS TO BIDDERS.....	00 21 13 1-8
00 24 13	SCOPE OF WORK.....	00 24 13 1-1
00 25 13	PRE-BID MEETING.....	00 25 13 1-2
00 41 13	LOUISIANA PUBLIC WORK BID FORM.....	00 41 13 1-1
00 43 13	BID BOND.....	00 43 13 1-1
00 43 21	ALLOWANCE FORM.....	00 43 21 1-1
00 43 25	SUBSTITUTION REQUEST FORM (DURING PROCUREMENT).....	00 43 25 1-4
00 43 26	PROPOSED SUBCONTRACTORS LISTING FORM.....	00 43 36 1-1
00 45 19	NON-COLLUSION AFFIDAVIT OF PRIME BIDDER.....	00 45 19 1-1
00 45 19.13	AFFIDAVIT (R.S. 38:2224 2190 2290-2296).....	00 45 19.13 1-2
00 45 19.16	ATTESTATION FORM.....	00 45 19.16 1-2
00 45 19.19	VERIFICATION OF EMPLOYEES AFFIDAVIT.....	00 45 19.19 1-1
00 45 43	RESOLUTION FORM.....	00 45 43 1-1
00 45 63	ROOFING MANUFACTURER GUARANTEE.....	00 45 63 1-1
00 45 63.13	APPROVED APPLICATOR LETTER.....	00 45 63.13 1-1
00 51 00	NOTICE OF AWARD FORM.....	00 51 00 1-1
00 52 00	CONTRACT BETWEEN OWNER & CONTRACTOR AND PERFORMANCE AND PAYMENT BOND.....	00 52 00 1-15
00 55 00	NOTICE TO PROCEED FORM.....	00 55 00 1-1
00 62 11	SUBMITTAL TRANSMITTAL FORM.....	00 62 11 1-1
00 62 76	APPLICATION FOR PAYMENT FORM AIA G702 & G703-1992.....	
00 62 76.13	SALES TAX EXEMPTION CERTIFICATE (LDR FORM R-1020).....	00 62 76.13 1-1
00 63 13	REQUEST FOR INFORMATION (RFI) FORM.....	00 63 13 1-1
00 63 57	CHANGE ORDER REQUEST FORM.....	00 63 57 1-1
00 63 63	CHANGE ORDER FORM.....	00 63 63 1-1
00 65 19	RECOMMENDATION OF ACCEPTANCE.....	00 65 19 1-1
00 65 83	BENEFICIAL OCCUPANCY.....	00 65 83 1-1
00 72 13	GENERAL CONDITIONS (A201-2017).....	00 72 13 1-40
00 73 00	SUPPLEMENTARY CONDITIONS.....	00 73 00 1-10
00 80 00	FEDERAL CONTRACT CLAUSES.....	00 80 00 1-10
DIVISION 01	GENERAL REQUIREMENTS	
01 10 00	SUMMARY OF WORK.....	01 10 00 1-3
01 21 00	ALLOWANCES.....	01 21 00 1-3
01 25 00	SUBSTITUTION PROCEDURES.....	01 25 13 1-4
01 26 00	CONTRACT MODIFICATION PROCEDURES.....	01 26 00 1-2
01 29 00	PAYMENT PROCEDURES.....	01 29 00 1-3
01 31 00	PROJECT MANAGEMENT AND COORDINATION.....	01 31 00 1-6
01 32 16	CONSTRUCTION SCHEDULING.....	01 32 16 1-10
01 33 00	SUBMITTAL PROCEDURES.....	01 33 00 1-7
01 41 26	PERMIT REQUIREMENTS.....	01 41 26 1-1
01 42 00	REFERENCES.....	01 42 00 1-5
01 42 16	DEFINITIONS & STANDARDS.....	01 42 16 1-1
01 45 00	QUALITY CONTROL.....	01 45 00 1-2
01 45 13	PROCEDURES AND CONTROLS.....	01 45 13 1-2
01 50 00	TEMPORARY FACILITIES AND CONTROLS.....	01 50 00 1-7
01 56 26	TEMPORARY FENCING.....	

01 57 19	TEMPORARY ENVIRONMENTAL CONTROLS.....	01 57 19	1-6
01 58 13	TEMPORARY PROJECT SIGNAGE.....	01 58 13	1-2
01 60 00	PRODUCT REQUIREMENTS.....	01 60 00	1-3
01 73 00	EXECUTION.....	01 73 00	1-7
01 73 29	CUTTING AND PATCHING.....	01 73 29	1-1
01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.....	01 74 19	1-7
01 77 00	CLOSEOUT PROCEDURES.....	01 77 00	1-4
01 78 39	PROJECT RECORD DOCUMENTS.....	01 78 39	1-2
DIVISION 02	EXISTING CONDITIONS		
NOT USED			
DIVISION 03	CONCRETE		
03 00 00	CONCRETE WORK.....	03 00 00	1-1
03 10 00	CONCRETE FORMWORK.....	03 10 00	1-4
03 20 00	CONCRETE REINFORCING.....		
03 30 00	CAST-IN-PLACE CONCRETE.....	03 20 00	1-12
03 35 00	CONCRETE FINISHES.....	03 35 00	1-8
DIVISION 04	MASONRY		
04 05 13	MASONRY MORTARING.....	04 05 13	1-2
04 21 13	BRICK MASONRY.....	04 21 13	1-8
DIVISION 05	METALS		
NOT USED			
DIVISION 06	WOOD, PLASTICS & COMPOSITES		
06 10 00	ROUGH CARPENTRY.....	06 10 00	1-4
06 17 53	PRE-FABRICATED PLYWOOD WEB JOISTS.....	06 17 53	1-3
06 20 00	FINISH CARPENTRY.....	06 20 00	1-3
DIVISION 07	THERMAL AND MOISTURE PROTECTION		
07 14 16	WATERPROOFING.....	07 14 16	1-1
07 19 23	SILOXANE WATER REPELLENTS.....	07 19 23	1-4
07 21 00	THERMAL INSULATION.....	07 21 00	1-4
07 25 00	WEATHER BARRIER.....	07 25 00	1-6
07 31 13	ARCHITECTURAL ASPHALT SHINGLES.....	07 31 13	1-3
07 42 93.16	VINYL SOFFIT.....	07 42 93.16	1-4
07 60 00	FLASHING AND SHEET METAL.....		
07 71 23	GUTTERS AND DOWNSPOUTS.....	07 71 23	1-4
07 72 00	ROOF ACCESSORIES.....	07 72 00	1-1
DIVISION 08	OPENINGS		
08 11 13	HOLLOW METAL DOORS AND FRAMES.....	08 11 13	1-4
08 14 00	WOOD DOORS.....	08 14 00	1-4
08 41 13	ALUMINUM FRAMED ENTRANCES AND STOREFRONTS.....	08 41 13	1-5
DIVISION 09	FINISHES		
09 21 16	GYPSUM BOARD ASSEMBLIES.....	09 21 16	1-5
09 65 13.13	RESILIENT WALL BASE.....	09 65 13.13	1-6
09 68 13	TILE CARPETING (INTERFACE: THE STANDARD).....	09 68 13	1-6
09 78 26.13	FIBERGLASS REINFORCED PLASTIC PANELS.....	09 78 26.13	1-3
09 91 00	PAINTING.....	09 91 00	1-8

DIVISION 10	SPECIALTIES		
10 21 13.19	SOLID PLASTIC TOILET COMPARTMENTS.....	10 21 13.19	1-4
10 28 13.13	COMMERCIAL TOILET ACCESSORIES.....	10 28 13.13	1-3
10 44 16.13	PORTABLE FIRE EXTINGUISHERS.....	10 44 16.13	1-2
DIVISION 11	EQUIPMENT		
NOT USED			
DIVISION 12	FURNISHINGS		
12 36 61.16	SOLID SURFACING COUNTERTOPS.....	12 36 61.16	1-5
DIVISION 13	SPECIAL CONSTRUCTION		
NOT USED			
DIVISION 14	CONVEYING EQUIPMENT		
NOT USED			
DIVISION 21	FIRE SUPPRESSION		
NOT USED			
DIVISION 22	PLUMBING		
22 05 00	GENERAL PROVISIONS FOR PLUMBING.....	22 05 00	1-16
22 05 03	BASIC MATERIALS AND METHODS FOR PLUMBING.....	22 05 03	1-9
22 07 00	PLUMBING INSULATION.....	22 07 00	1-2
22 10 00	PLUMBING.....	22 10 00	1-3
22 11 00	WATER SUPPLY.....	22 11 00	1-2
22 13 00	WASTE WATER DISPOSAL.....	22 13 00	1-1
DIVISION 23	HVAC		
23 00 00	HEATING, VENTILATION AND AIR CONDITIONING.....	23 00 00	1-3
23 01 00	MECHANICAL GENERAL PROVISIONS.....	23 01 00	1-6
23 03 00	BASIC HVAC MATERIALS AND METHODS.....	23 03 00	1-6
23 05 00	GENERAL PROVISION FOR HVAC.....	23 05 00	1-13
23 05 03	BASIC MATERIALS AND METHODS FOR HVAC.....	23 05 03	1-4
23 05 29	HANGERS AND SUPPORTS.....	23 05 29	1-7
23 05 53	HVAC IDENTIFICATION.....	23 05 53	1-2
23 05 93	TESTING, ADJUSTING AND BALANCING FOR HVAC.....	23 05 93	1-7
23 07 00	MECHANICAL INSULATION.....	23 07 00	1-2
23 07 13	DUCT INSULATION.....	23 07 13	1-3
23 07 16	EQUIPMENT INSULATION.....	23 07 16	1-3
23 09 00	TEMPERATURE CONTROLS FOR HVAC.....	23 09 00	1-5
23 30 00	AIR DISTRIBUTION FOR HVAC.....	23 30 00	1-3
23 70 00	AIR CONDITIONING FOR HVAC.....	23 70 00	1-5
DIVISION 25	INTEGRATED AUTOMATION		
NOT USED			
DIVISION 26	ELECTRICAL		
26 00 01	ELECTRICAL GENERAL PROVISIONS.....	26 00 01	1-4
26 05 01	BASIC ELECTRICAL MATERIALS AND METHODS.....	26 05 01	1-2
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.....	26 05 19	1-4
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.....	26 05 26	1-5
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS.....	26 05 29	1-3
26 05 33	RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.....	26 05 33	1-8
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEMS.....	26 05 53	1-5
26 05 83	WIRING METHOD.....	26 05 83	1-4

26 09 23	LIGHTING CONTROL DEVICES.....	26 09 23	1-4
26 24 16	PANELBOARDS.....	26 22 00	1-4
26 27 00	DISTRIBUTION EQUIPMENT.....	26 24 16	1-5
26 27 26	WIRING DEVICES.....	26 27 26	1-6
26 51 00	INTERIOR LIGHTING.....	26 51 00	1-4
26 51 19	LED INTERIOR LIGHTING.....	26 51 19	1-6
26 52 13	EMERGENCY AND EXIT LIGHTING.....	26 52 13	1-7

DIVISION 27 COMMUNICATIONS

NOT USED

DIVISION 28 ELECTRONIC SAFETY AND SECURITY

NOT USED

DIVISION 31 EARTHWORK

31 00 00	EARTHWORK.....	31 00 00	1-6
31 10 00	SITE CLEARING.....	31 10 00	1-3
31 31 16	TERMITE CONTROL.....	31 31 19	1-2

DIVISION 32 EXTERIOR IMPROVEMENTS

32 13 13	CONCRETE PAVING AND RELATED ITEMS.....	32 13 13	1-3
32 16 00	CURBS, GUTTERS, SIDEWALKS, AND DRIVEWAYS.....	32 16 00	1-5
32 92 13	HYDROMULCH.....	32 92 13	1-3

DIVISION 33 UTILITIES

33 10 00	WATER DISTRIBUTION.....	33 10 00	1-6
33 30 00	SANITARY SEWERAGE.....	33 30 00	1-6

DIVISION 34 TRANSPORTATION

NOT USED

DIVISION 35 WATERWAY AND MARINE CONSTRUCTION

NOT USED

END OF TABLE OF CONTENTS

LIST OF DRAWINGS

G-100	COVER SHEET
S-100	FOUNDATION PLAN
A-100	SITE PLAN
A-101	ENLARGED SITE PLAN
A-200	FLOOR PLAN
A-201	INTERIOR SECTIONS & DETAILS
A-300	EXTERIOR ELEVATIONS
A-500	WALL SECTION & DETAILS
A-501	BUILD SECTION & DETAILS
P-100	PLUMBING PLAN & DETAILS
P-101	PLUMBING SCHEDULE
M-100	MECHANICAL PLAN & DETAILS
E-100	ELECTRICAL LIGHTING PLAN & DETAILS
E-200	ELECTRICAL POWER PLAN & DETAILS

ADVERTISEMENT FOR BID

ETERNITY FULL GOSPEL FELLOWSHIP does hereby advertise for sealed bids and will open same on: **THURSDAY, AUGUST 13TH, 2026 at 2:00 P.M.** at King Architects, Inc, 1312 Sampson Street, Westlake, LA 70669 for:

ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID

Bona fide bidders may obtain a digital copy of the proposed contract documents in PDF format, including plans and specifications, from King Architects, Inc. at office@kingarchitects.net. Or complete physical, paper documents may be obtained upon deposit of \$200.00 for each set of documents at 1312 Sampson St., Westlake, LA 70669. Deposit is fully refundable for the first set of documents to all bona fide prime* bidders upon return of the documents in good condition no later than ten (10) days after receipt of bids.

Prime bidders are defined as licensed General Contractor bidding this job as such.

Preference is given to materials, supplies, and provisions that are produced manufactured, or grown in Louisiana, quality being equal to articles offered by competitors outside the State.

A **Mandatory Pre-Bid Conference** for general contractors with the Project Architect will be held at the project site on **TUESDAY, JULY 28TH, 2026, at 10:00 A.M.** Bidders must be present the entire meeting in order to bid.

All bids must be accompanied by bid security equal to five percent (5%) of the sum of the base bid and all alternates, and must be in the form of a certified check or cashier's check drawn on a bank insured by the FDIC, or the Bid Bond Form contained in the bidding documents, which shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent (10%) of policyholders' surplus as shown in the A.M. Best's Key Rating Guide or by an insurance company in good standing licensed to write bid bonds which is either domiciled in Louisiana or owned by Louisiana residents, all in accordance with LSA-R.S. 38:2218. No Bid Bond indicating an obligation of less than five percent (5%) by any method is acceptable.

The successful bidder shall be required to furnish a Performance and Payment Bond written by a company licensed to do business in Louisiana, in an amount equal to 100% of the Contract amount, written by a surety company licensed to do business in Louisiana with an A.M. Best Rating of "A-" or better, all in accordance with LS R.S. 38:2219. The bond shall be countersigned by a person who is under contract with the surety company or bond issuer as an insurance agent in this State, and who is residing in this State.

Bids shall be accepted only from contractors who are licensed under LS R.S. 37:2150-2163 for the classification of **Building Construction**. No bid may be withdrawn for a period of forty-five (45) days after receipt of bids, except under the provisions of LS R.S. 38:2214.

The Owner reserves the right to reject any and all bids for just cause. In accordance with LS R.S. 38:2212(B)(1), the provisions and requirements of this Section, and those stated in the Bidding Documents shall not be waived by any entity. Awarding or rejecting bids shall be in accordance with LA Public Bid Law Statutes.

The public shall incur no obligation to the Contractor until the Contract between Eternity Full Gospel Fellowship and the Contractor is fully executed.

Official action on this bid will be taken within forty-five (45) days by **Eternity Full Gospel Fellowship**.

All bids must be plainly marked on the outside of the envelope:

BID FOR:

ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID

Contractor's Name

State of Louisiana License Number

ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID

ADVERTISEMENT SHALL RUN: American Press – **JULY 10TH, 17TH, AND 24TH**

KING ARCHITECTS, INC.

SECTION 00 11 16

INVITATION TO BID

Eternity Full Gospel Fellowship, hereinafter termed the Owner, does hereby invite to bid on a General Contract for Eternity Full Gospel Fellowship Hall Rebid located at Westlake, Louisiana 70669. The bids shall be on a lump sum basis.

A **MANDATORY Pre-Bid Conference** for general contractors will be held at the Project Site on **FRIDAY, JULY 28th, 2026 at 10:00 am.**, local time. Bidders must be present the entire meeting in order to bid.

The Owner will receive bids **NO LATER THAN: THURSDAY, AUGUST 13TH, 2026 at 2:00 pm., local time.**

AT: King Architects, Inc (KAI), 1312 Sampson Street, Westlake, Louisiana 70669. Attention Barry King.

Bids may be mailed or delivered to the address above. Bids received after this time will not be accepted. Bids will be publicly opened and read aloud at the time and date mentioned.

The Owner, unless designated to another entity, supervises the bidding and awarding of all construction contracts, approves contracts, change orders, requests for payment and ensures that on-site inspections are accomplished

Bona fide bidders may obtain a digital copy of the proposed contract documents in PDF format, including plans and specifications, from King Architects, Inc. at office@kingarchitects.net. Or complete physical, paper documents may be obtained upon deposit of \$200.00 for each set of documents at 1312 Sampson St., Westlake, LA 70669. Deposit is fully refundable for the first set of documents to all bona fide prime* bidders upon return of the documents in good condition no later than ten (10) days after receipt of bids.

Prime bidders are defined as licensed General Contractor bidding this job as such.

Preference is given to materials, supplies, and provisions that are produced manufactured, or grown in Louisiana, quality being equal to articles offered by competitors outside the State.

All bids must be accompanied by bid security equal to five percent (5%) of the sum of the base bid and all alternates, and must be in the form of a certified check or cashier's check drawn on a bank insured by the FDIC, or the Bid Bond Form contained in the bidding documents, which shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent (10%) of policyholders' surplus as shown in the A.M. Best's Key Rating Guide or by an insurance company in good standing licensed to write bid bonds which is either domiciled in Louisiana or owned by Louisiana residents, all in accordance with LSA-R.S. 38:2218. No Bid Bond indicating an obligation of less than five percent (5%) by any method is acceptable.

The successful bidder shall be required to furnish a Performance and Payment Bond written by a company licensed to do business in Louisiana, in an amount equal to 100% of the Contract amount, written by a surety company licensed to do business in Louisiana with an A.M. Best Rating of "A-" or better, all in accordance with LS R.S. 38:2219. The bond shall be countersigned by a person who is under contract with the surety company or bond issuer as an insurance agent in this State, and who is residing in this State.

Bids shall be accepted only from contractors who are licensed under LS R.S. 37:2150-2163 for the classification of **Building Construction**. No bid may be withdrawn for a period of forty-five (45) days after receipt of bids, except under the provisions of LS R.S. 38:2214.

The Owner reserves the right to reject any and all bids for just cause. In accordance with LS R.S. 38:2212(B)(1), the provisions and requirements of this Section, and those stated in the Bidding Documents shall not be waived by any entity. Awarding or rejecting bids shall be in accordance with LA Public Bid Law Statutes.

Official action on this bid will be taken within forty-five (45) days by Eternity Full Gospel Fellowship.

All bids must be plainly marked on the outside of the envelope:

BID FOR:

ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID

Contractor's Name

State of Louisiana License Number

)

ARTICLE 1 - DEFINITIONS
1.1 The Bidding Documents include the following:

Title Page
 Seals Page
 Table of Contents
 List of Drawings
 Invitation to Bid
 Instruction to Bidders
 Scope of Work
 Pre-Bid Meeting Form
 Geotechnical Data, if applicable
 Louisiana Public Work Bid Form
 Louisiana Public Work Unit Price Form, if applicable
 Bid Bond
 Allowance Form, if applicable
 Substitution Request Form (During Procurement)
 Proposed Subcontractor Listing Form
 Non-Collusion Affidavit of Prime Bidder
 Attestation Form
 Verification of Employees Affidavit
 Certification Regarding Unpaid Workers' Compensation Insurance
 Resolution
 Notice of Award
 Contract Between Owner and Contractor (AIA A101-2017)
 Notice to Proceed
 Performance and Payment Bond (AIA A312-2010)
 Submittal Transmittal Form
 Application for Payment Certificate (AIA G702 & 703-1992)
 Request for Information (RFI) Form
 Change Order Request Form
 Change Order
 Certificate of Substantial Completion (AIA G704-2017)
 General Conditions of the Contract for Construction (AIA A201-2017)
 Supplementary Conditions
 Specifications, Divisions 01 – 35 dated JULY 2026
 Drawings Sheets Numbered G0.0 thru E-1.0, dated JULY 2026
 Any Addenda Issued during the bid period and acknowledged in the Bid Form.

1.1.1 Forms turned in with bid. The Louisiana Uniform Public Work Bid Form (Section 00 41 13), Unit Prices Form, if applicable (Section 00 41 43), Bid Bond Form (Section 00 43 13), and a Corporate Resolution (Section 00 45 43) or written evidence of the authority of the person signing the bid are the **only** forms that are to be turned in by the date and time specified.

1.1.2 Forms turned in within ten (10) days after the bid opening. The Subcontractor's Listing (Section 00 43 36), the Louisiana Non-Collusion Affidavit of Prime Bidder (LA-R.S. 38:2224) (Section 00 45 19), the Attestation (LA-R.S. 38:2227) (Section 00 45 19.16), Verification of Employees Affidavit (LA-R.S. 38:2212.10) (Section 00 45 19.19), Certification Regarding Unpaid Workers' Compensation Insurance (LA-R.S. 23:1726(B)) (Section 00 45 19.19), the Roofing Manufacturing Warranty Letter (Section 00 45 63) and Approved Applicator Letter (Section 00 45 63.13), if applicable

1.2 All definitions set forth in the General Conditions of the Contract for Construction, A.I.A. Document A201, or in other Contract Documents are applicable to the Bidding Documents.

1.3 Addenda are written on graphic instruments issued by the Architect prior to the opening of bids which modify or interpret the bidding documents by additions, deletions, clarifications, corrections, and prior approvals.

-
- 1.4 A Bid is a complete and properly signed proposal to do the work or designated portion thereof for the sums stipulated therein supported by data called for by the Bidding Documents.
- 1.5 Base Bid is the sum stated in the Bid for which the Bidder offers to perform the work described as the Base, to which work may be added for sums stated in Alternate Bids.
- 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or subtracted from the amount of the base bid if the corresponding change in project scope or materials or methods of construction described in the Bidding Documents is accepted.
- 1.7 A Bidder is one who submits a bid for a prime contract with the Owner for the work described in the proposed contract documents.
- 1.8 A Subbidder is one who submits a bid to a Bidder for materials and/or labor for a portion of the work.
- 1.9 Where the word "Architect" is used in any of the Documents, it shall refer to the Prime Designer of the project, an Architect, Engineer or Landscape Architect.

ARTICLE 2 - BIDDER'S REPRESENTATION

- 2.1 Each Bidder by making his bid represents that:
- 2.1.1 He has read and understands the Bidding Documents and his Bid is made in accordance therewith.
- 2.1.2 He has visited the site and has familiarized himself with the local conditions under which the work is to be performed.
- 2.1.3 His bid is based upon the materials, systems and equipment described in the Bidding Documents as advertised and as modified by Addenda.
- 2.2 The Bidder must be fully qualified under any state or local licensing law for Contractors in effect at the time and at the location of the work before submitting his bid. In the State of Louisiana, Revised Statutes 37:2150, et seq. will be considered, if applicable. The Contractor shall be responsible for determining that all of his Subbidders or prospective Subcontractors are duly licensed in accordance with law.

ARTICLE 3 - BIDDING DOCUMENTS

- 3.1 Copies
- 3.1.1 Bidding Documents may be obtained from the Architect as stated in the Advertisement for Bids.
- 3.1.2 Complete sets of Bidding Documents shall be used in preparing bids; neither the Owner nor the Architect assumes any responsibility for errors or misinterpretation resulting from the use of incomplete sets of Bidding Documents.
- 3.1.3 The Owner or Architect in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining bids on the work and do not confer a license or grant for any other use.
- 3.2 Interpretation or correction of Bidding Documents.
- 3.2.1 Bidders shall promptly notify the Architect of any ambiguity, inconsistency, or error which they may discover upon examination of the Bidding Documents or of the site and local conditions.
- 3.2.2 Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Architect, to reach him at least seven days prior to the date of receipt of bids.
- 3.2.3 Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections, or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not

rely upon such interpretations, corrections and changes.

3.3 Substitutions

- 3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.
- 3.3.2 No substitution will be considered unless written request for approval has been submitted by the Proposer and has been received by the Architect at least **ten (10)** days prior to the date for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including model numbers, drawings, cuts, performance and test data and other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the Proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.
- 3.3.3 If the Architect approves any proposed substitution, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

3.4 Addenda

- 3.4.1 Addenda will be mailed or delivered to all who are known by the Architect to have received a complete set of Bidding Documents.
- 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.
- 3.4.3 Addenda shall not be issued within a period of seventy-two (72) hours prior to the advertised time for the opening bids, excluding Saturdays, Sundays, and any other legal holidays; however, if the necessity arises to issue an addendum modifying plans and specifications within the seventy-two hour (72) period prior to the advertised time for the opening of bids, then the opening of bids shall be extended for at least seven but not more than twenty-one working days, without the requirement of readvertising. The addendum shall state the revised time and date for the opening of bids. The Owner shall be consulted prior to issuance of such an Addendum and shall approve such issuance.
- 3.4.4. Each Bidder shall ascertain from the Architect prior to submitting his bid that he has received all Addenda issued, and he shall acknowledge their receipt on the Bid Form.

ARTICLE 4 - BIDDING PROCEDURE

4.1 Form and Style of Bids.

- 4.1.1 Bids shall be submitted on the form provided by the Architect in these bidding documents; see Section 00 41 13.
- 4.1.2 All blanks on the Bid Form shall be filled in by the typewriter or manually in ink.
- 4.1.3 Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the written words shall govern.
- 4.1.4 Any interlineations, alteration or erasure must be initialed by the signer of the Bid or his authorized representative.
- 4.1.5 Bidders are cautioned to complete all Alternates should such be required in the Bid Form. Failure to submit alternate prices will render the Proposal informal and may cause its rejection.
- 4.1.6 Bidder shall make no additional stipulation on the Bid Form nor qualify his Bid in any other manner.
- 4.1.7 The Bid shall include the legal name of Bidder and statement whether Bidder is a sole proprietor, a partnership, a corporation, or any other legal entity, and the bid shall be signed by the person or persons legally authorized to bind

the Bidder to a contract. A Bid submitted by any agency shall have a current Power of Attorney attached certifying agent's authority to bind Bidder.

- 4.1.8 On any Bid in excess of fifty thousand dollars (\$50,000.00), the Contractor shall certify that he is licensed under R.S. 37:2150-2163 and show his license number on the Bid above his signature or his duly authorized representative.

4.2 Bid Security

- 4.2.1 No Bid shall be considered or accepted unless the bid is accompanied by bid security in an amount of not less than five percent (5%) of the Base Bid and all additive Alternates. The bid security shall be in the form of a certified check or cashier's check drawn on a bank insured by the Federal Deposit Insurance Corporation, or on the Bid Bond Form (Section 00 43 13) contained in these bidding documents, which shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent (10%) of policyholders' surplus as shown in the A.M. Best's Key Rating Guide or by an insurance company in good standing licensed to write bid bonds which is either domiciled in Louisiana or owned by Louisiana residents, all in accordance with LSA-R.S. 38:2218. No Bid Bond indicating an obligation of less than five percent (5%) by any method is acceptable.

Bid security furnished by the Contractor shall guarantee that the Contractor will, if awarded the work according to the terms of his proposal, enter into the Contract and furnish Performance and Payment Bonds as required by these Contract Documents, within ten (10) days after written notice that the instrument is ready for his signature.

Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as penalty.

- 4.2.2 The Owner will have the right to retain the bid security of Bidders until either (a) the Contract has been executed and bonds have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all bids have been rejected.

4.3 Submission of Bids

- 4.3.1 Bids shall be sealed in an opaque envelope and will be received until the time specified and at the place specified in the Advertisement for Bids. It shall be the specific responsibility of the Bidder to deliver his sealed bid to King Architects, Inc. and prior the announced time for the opening of bids. Later delivery of a bid for any reason, including late delivery by United States Mail, or express delivery, shall disqualify the bid. The bid envelope shall be identified on the outside with the name of the project, and the name, address, and license number of the Bidder as required by R.S. 37:2163. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "Bid Enclosed" on the face thereof. Such bids shall be sent by Registered or Certified Mail, Return Receipt Requested, addressed to: King Architects, Inc., 1312 Sampson Street, Westlake, LA 70669.
- 4.3.2 Bids shall be deposited at the designated location prior to the time on the date for receipt of bids indicated in the Advertisement for Bids, or an extension thereof made by Addendum. Bids received after the time and date for receipt of bids will be returned unopened.
- 4.3.3 Bidder shall assume full responsibility for timely delivery at location designated for receipt of bids.
- 4.3.4 Oral, telephonic, or telegraphic bids or modifications to bids are invalid and will not receive consideration. Owner will not consider notation written on outside of Bid Envelope which have the effect of amending the Bid.

4.4 Modification or Withdrawal of Bid

- 4.4.1 A bid may not be modified, withdrawn or canceled by the Bidder during the time stipulated in the Advertisement for Bids, for the period following the time and bid date designated for the receipt of bids, and the Bidder so agrees in submitting his bid, except in accordance with Act III of 1983 which states, in part, "Bids containing patently obvious

mechanical, clerical, or mathematical errors may be withdrawn by the Contractor if clear and convincing sworn, written evidence of such errors is furnished to the public entity within forty-eight hours of the bid opening excluding Saturdays, Sundays and legal holidays”.

- 4.4.2 Prior to the time and date designated for receipt of Bids, Bids submitted early may be modified or withdrawn only by notice to the party receiving bids at the place and prior to the time designated for receipt of bids.
- 4.4.3 Withdrawn Bids may be resubmitted up to the time designated for the receipt for bids provided that they are then fully in conformance with these Instructions to Bidders.
- 4.4.4 Bid Security shall be in an amount sufficient for the Bid as modified or resubmitted.

ARTICLE 5 - CONSIDERATION OF BIDS

5.1 Opening of Bids.

- 5.1.1 The properly identified bids received on time will be opened publicly and will be read aloud, and a tabulation abstract of the amounts of the Base Bids and Alternates, if any, will be made available to Bidders.

5.2 Rejection of Bids

- 5.2.1 The Owner shall have the right to reject any or all bids and in particular to reject a bid not accompanied by any required bid security or data required by the Bidding Documents or a Bid in any way incomplete or irregular.

5.3 Acceptance of Bid

- 5.3.1 Any bid shall include no more than three alternates. Alternates, if accepted, shall be accepted in the order in which they are listed on the bid form. Determination of the low bidder shall be on the basis of the sum of the base bid and any alternates accepted. However, the Owner shall reserve the right to accept alternates in any order which does not affect determination of the low bidder. LA. R.S. 38:2212 (A) (3) (e); Act 868.
- 5.3.2 It is the intent of the Owner to award a contract to the lowest responsible Bidder in accordance with the requirements of the Bidding Documents, and if the bid does not exceed the funds available.

ARTICLE 6 - POST BID INFORMATION

6.1 Post Bid Documents.

- 6.1.1 Within 10 days after bids are opened, the Contractor, identified as the apparent low bidder, will make the following submittals to the Architect. A tentative list of all Subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to special design) proposed for principal portions of the work, as well as the proposed Superintendent. Also provide a designation of the work to be performed by the Contractor with his own forces. No bids shall be received within 24 hours before a weekend or legal holiday, unless deemed necessary by the Owner.

It is recognized that the acceptance or rejection of alternates contained in the bid proposal may ultimately determine the low bidder on the project. In the event a Contractor, other than the Contractor identified as the apparent low bidder at the bid opening, becomes the low bidder as a result of such selection of alternates, this Contractor shall make the submittals required by this section within 24 hours after notification by the Owner.

- 6.1.2 The Contractor will be required to establish to the satisfaction of the Architect and the Owner the reliability and responsibility of the proposed subcontractors to furnish and perform the work described in the section of the specifications pertaining to such proposed Subcontractors' respective trades.
- 6.1.3 The Architect will notify the Contractor if the Owner, after due investigation, has reasonable and substantial objection to any person or organization on the Contractor's list of proposed Subcontractors. If there are objections the Contractor

shall submit alternative Subcontractor(s) for their approval.

- 6.1.4 Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and the Architect upon the awarding of a contract must be used on the work for which they were proposed and accepted and shall not be changed except upon the recommendation of the Architect and approved by the Owner in the form of a change order. Any changes on the tentative 24-hour list submitted by the Contractor prior to the awarding of the contract must be requested in writing to the Architect with proper justification. Any change in the tentative List of Subcontractors will require recommendation from the Architect to the Owner. The recommendation and approval of the Owner must be made in writing.
- 6.1.6 The lowest responsible bidder on this project shall execute a Non-Collusion Affidavit of Prime Bidder which is found within this bid package, see Section 00 45 19. The Non-Collusion Affidavit form shall be submitted to the Owner through the Architect ten (10) days after the opening of bids
- 6.1.7 In accordance with LA-R.S. 38:2224 2190 2290-2296, the lowest responsible bidder on this project shall execute an Affidavit which is found within this bid package, see Section 00 45 19.13. The Affidavit form shall be submitted to the Owner through the Architect ten (10) days after the opening of bids.
- 6.1.8 In accordance with La. R.S. 38:2227, the lowest responsible bidder on this project must submit the completed Attestation Affidavit (Past Criminal Convictions of Bidders) form found within this bid package; see Section 00 45 19.16. The Attestation Affidavit form shall be submitted to the Owner through the Architect within ten (10) days after the opening of bids.
- 6.1.9 The lowest responsible bidder on this project shall execute a Manufacturer's Warranty letter from the manufacturer that they approve installing the specified roof system. This manufacturer shall be one that has received prior approval or is named in the specifications. The Manufacturer' Warranty letter shall be submitted to the Owner through the Architect ten (10) days after the opening of bids
- 6.1.10 The lowest responsible bidder on this project shall execute an Approved Applicator's letter from the manufacturer that the manufacturer will issue the roof system and include the name of the applicator acceptable to the manufacturer for installing the specified roof system. This manufacturer shall be one that has received prior approval or is named in the specifications. The Approved Applicator Letter shall be submitted to the Owner through the Architect ten (10) days after the opening of bids

6.2 Additional Submissions

- 6.2.1 A breakdown of the contract into the 35 Divisions of the C.S.I. shall be provided to the Architect (Schedule of Values). No payments will be made to the Contractor until this is received.
- 6.2.2 A copy of applicable state, parish, or municipal licenses legally required for General Contractor and subcontractors shall be provided to the Architect. No payments will be made to the Contractor until this is received.
- 6.2.3 Federal and state tax identification numbers on General Contractors and subcontractors shall be provided to the Architect. NO payments will be made to the Contractor until this is received.

ARTICLE 7 - PERFORMANCE AND PAYMENT BOND

7.1 Bond Required.

- 7.1.1 The Contractor shall furnish and pay for a Performance and Payment Bond written by a company licensed to do business in Louisiana, which shall be countersigned by a person who is contracted with the surety company or bond issuer as an agent of the company or issuer, and who is licensed as an insurance agent in this State, and who is residing in this State, in an amount equal to the 100% of the Contract amount. By issuing such Performance and Payment Bond, the surety acknowledges they are on the current U.S. Department of the Treasury Financial Management Service List of approved bonding companies and complies with all other provisions of R.S. 38:2219.

7.2 Time of Delivery and Form of Bond.

- 7.2.1 The Bidder shall deliver the required bond to the Owner simultaneous with the execution of the Contract.
- 7.2.2 Bond shall be in the form furnished by the Contractor, entitled Contract Between Owner and Contractor and Performance and Payment Bond, a copy of which is included in the Contract Documents; see Section.
- 7.2.3 The Bidder shall require the Attorney-In-Fact who executes the required bond on behalf of the surety to affix thereto a certified and current copy of his power of attorney.

ARTICLE 8 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

8.1 Form to be Used.

- 8.1.1 Form of the Contract to be used shall be furnished by the Contractor, a copy of which is bound in the Bidding Documents; see Section 00 52 13.

8.2 Award

- 8.2.1 In accordance with Louisiana Law, if the Contractor is awarded to the Bidder, he shall at the time of the signing of the Contract execute the Non-Collusion Affidavit included in the Contract Documents.
- 8.2.2 Before award of the contract, the successful Bidders shall furnish to the Owner a certified copy of the minutes of the corporation or partnership meeting which authorized the party executing the Bid to sign on behalf of the Contractor.

ARTICLE 9 - COMPLETION TIME AND LIQUIDATED DAMAGES

- 9.1 The Bidder shall agree to fully complete the contract within **275** consecutive calendar days, subject to such extensions as may be granted under Section 4.3.7.1.1 of Supplementary Conditions, Delays and Extensions of Time: in the General Conditions and the Supplementary Conditions, and acknowledges that this construction time will start on or before the date specified in the written Notice to Proceed or the Contractor will be subject to pay to the Owner Liquidated Damages in the amount of **Five Hundred Dollars (\$500.00)** per day for each day of delay beyond the period indicated provided extension has not been granted as indicated in the contract documents.

ARTICLE 10 - BUILDING MATERIAL EXCLUSIONS

- 10.1 All building materials shall be free of asbestos.
- 10.2 All plumbing materials shall be free of lead.
- 10.3 All paints shall be free of lead.
- 10.4 All contractors should use the least hazardous materials on all jobs. Material Safety Data Sheets (MSDS) shall be given to the owner on all materials used.

ARTICLE 11 – PRE-BID CONFERENCE

- 11.1 A Pre-Bid Conference shall be held at the project site at least 7 days before the date for receipt for bids. The Architect shall coordinate the setting of the date, time and place for the Pre-Bid Conference and shall invite in writing the Owner, and all who have received sets of the Bidding Documents to attend. The purpose of the Pre-Bid Conference is to familiarize Bidders with the requirements of the Project and the intent of the Contract Documents, and to receive comments and information from interested Bidders.
 - 11.1.1 A **Mandatory Pre-bid Conference** (for General Contractors Only) will be held at the project site, on **Tuesday, JULY 28th, 2026, at 10:00 am.**

KING ARCHITECTS, INC.

SECTION 00 21 13

- 11.2 Any revision of the Bidding Documents made as a result of the Pre-Bid Conference shall not be valid unless included in an Addendum issued in accordance with Paragraph 3.4 of the Instructions to Bidders.

ARTICLE 12 - APPLICABILITY

- 12.1 Any article located in the Instructions to Bidders found to be in conflict with the General Conditions and/or Supplementary Conditions will take precedence over the latter two set of Articles.

ARTICLE 14 - MISCELLANEOUS PROVISIONS

- 14.1 The General Contractor shall repair, replace, or pay for the relocation of telephones and wiring, fire alarms, intercoms, bells, TV cable, security system wiring and equipment, and any other cable type installation that may be damaged, cut or removed during the construction.
- 14.2 The General Contractor will be responsible for the removal and relocation of any playground equipment that needs to be moved due to construction.
- 14.3 The Owner is hereby recognized as a statutory employer of Contractor's employees, including but not limited to Contractor's direct employees, immediate employees, and statutory employees. This contract recognizes the existence of a statutory employer relationship between the Owner and Contractor in accord with Act 315 of 1997.

END OF SECTION 00 21 13

SCOPE OF WORK

The Project entails furnishing labor, materials, tools and equipment necessary for the construction of the Eternity Full Gospel Fellowship's New Building. The installation of all new materials shall be performed in strict accordance with the Manufacturer's written installation instructions, and in accordance with all approved shop drawings.

PRE-BID MEETING AND SITE INSPECTION - SIGN-IN SHEET

TUESDAY, JULY 28th, 2026 at 10:00 am

[illegible]

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: ETERNITY FULL GOSPEL FELLOWSHIP

932 Mulberry Street
Westlake, Louisiana 70669

(Owner to provide name and address of owner)

BID FOR: ETERNITY FULL GOSPEL FELLOWSHIP

HALL
932 Mulberry Street
Westlake, Louisiana 70669

(Owner to provide name of project and other identifying information)

The undersigned bidder hereby declares and represents that she/he: a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: _____

KING ARCHITECTS INC and dated: JULY 2026
(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA:** (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____.

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

_____ Dollars (\$ _____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 (N/A) for the lump sum of:

_____ Dollars (\$ _____)

Alternate No. 2 (N/A) for the lump sum of:

_____ Dollars (\$ _____)

Alternate No. 3 (N/A) for the lump sum of:

_____ Dollars (\$ _____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **: _____

DATE: _____

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** **A CORPORATE RESOLUTION OR WRITTEN EVIDENCE** of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA R.S. 38:2218(A) attached to and made a part of this bid.

LOUISIANA UNIFORM PUBLIC WORK BID FORM

UNIT PRICE FORM

TO: Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669

(Owner to provide name and address of owner)

BID FOR: Eternity Full Gospel Fellowship Hall
932 Mulberry Street
Westlake, Louisiana 70669

(Owner to provide name of project and other identifying information)

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

DESCRIPTION:	☐ Base Bid or ☐ Alt.# ____			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

Wording for “DESCRIPTION” is to be provided by the Owner.

All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

KING ARCHITECTS, INC

SECTION 00 43 13

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we _____

as Principal, hereinafter called the Principal, and _____

a corporation duly organized under the laws of the State of _____
as Surety, herinafter called the Surety, are held and firmly bound unto _____

as Obligee, hereinafter called the Obligee, in the sum of _____

_____ Dollars (\$ _____),
for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for _____

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the
terms of such bid, and give such bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance
of such Contract and for the prompt payment of labor and materials furnished in the prosecution thereof, or in the event of the failure of the Principal to enter
such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount
specified in said bid and such larger amount of which the Obligee may in good faith contract with another party to perform the Work covered by said bid,
then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____, 20____.

WITNESS

SIGNATURE

PRINTED NAME AND TITLE

WITNESS

SIGNATURE

PRINTED NAME AND TITLE

KING ARCHITECTS, INC

SECTION 00 43 21

ALLOWANCE FORM

PROJECT NO:2242B

PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall Rebid

932 Mulberry Street

Westlake, Louisiana 70669

Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and/or equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.

Listed below are allowances for individual items:

ITEM NO.	SPEC REFERENCE	TITLE/DESCRIPTION	UNIT OF MEASURE	UNIT PRICE
1	04 21 13	Brick Masonry	Per 1,000	\$750
2	08 71 00	Door Hardware	Per Door	\$800

SUBSTITUTION REQUEST FORM (During Procurement)

IDENTIFICATION:

Owner: Eternity Full Gospel Fellowship
Architect: King Architects, Inc
Contractor:
Project Name: Eternity Full Gospel Fellowship Hall Rebid
Project Number: 2242B

Date: _____

REFERENCE:

Specification Title: _____
Specification No.: _____ Page: _____ Article/Paragraph: _____

DESCRIPTION:

Manufacturer's Name: _____ Model No.: _____
Trade Name: _____
Proposed Substitution General Description: _____

CERTIFICATION:

The Undersigned certifies:

- Proposed substitution has been investigated and determined that it meets or exceeds the quality level of the specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing and construction costs caused by the substitution.

Submitted and Signed by:

Name _____ Title _____

Firm: _____

Address: _____

Telephone: _____

ATTACHED SUPPORTING DATA:

☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

ARCHITECT'S REVIEW AND ACTION:

- ☐ Substitution approved - Make submittals in accordance with Specification Section
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed By:

Name _____ Title _____ Date _____

[illegible]

00 43 36-1

KING ARCHITECTS, INC

SECTION 00 45 19.13

AFFIDAVIT

LA RS §38:2224 2190 2290-2296

STATE OF LOUISIANA

PARISH OF CALCASIEU

PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall
932 Mulberry Street
Westlake, Louisiana 70669

PROJECT NUMBER: 2242B

Before me, the undersigned authority, duly commissioned and qualified within and for the state and parish aforesaid, personally came and appeared _____ representing _____
who, being by me first duly sworn deposed and said that he has read this affidavit and does hereby agree under oath to comply with all

Appearer does hereby attest that:

(1) Bidder is _____ of _____,
the Bidder that has submitted the above referenced Bid:

- (2) Bidder is fully informed respecting the preparations and contents of the attached Bid and all pertinent circumstances respecting such Bid:
- (3) Such Bid is genuine and is not a collusive or sham Bid:
- (4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communications or conference with any other Bidder or to fix any overhead, profit or cost element of the bid price or the Bid price of any other Bidder, or to secure through the collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner, or any person interested in the proposed Contract; and
- (5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees or parties in interest, including this affiant.

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER

SWORN TO AND SUBSCRIBE before me this _____ day of _____, 20____,
in _____, _____
CITY STATE

NOTARY PUBLIC

My Commission Expires _____

**THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT
WITHIN TEN (10) CALENDAR DAYS AFTER THE BID HAS BEEN OPENED.**

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KING ARCHITECTS, INC.

SECTION 00 45 19.13

STATE OF LOUISIANA

PARISH OF CALCASIEU

PROJECT NAME: ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID

PROJECT NO: 2242B

LOCATION: WESTLAKE, LOUISIANA

Before me, the undersigned authority, duly commissioned and qualified within and for the state and parish aforesaid,

personally came and appeared _____

representing _____

who, being by me first duly sworn deposed and said that he has read this affidavit and does hereby agree under oath

to comply with all provisions herein as follows:

PART I

Section 2224 of Part I of Chapter 10 of Title 38 of the La. Revised Statutes of 1950 as Amended.

- (1) That affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the affiant whose services in connection with the construction of the public building or project or in securing the public contract were in the regular course of their duties for affiant; and
- (2) That no part of the contract price received by affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the affiant whose services in connection with the construction of the public building or project were in the regular course of their duties for affiant.

PART II

Section 2190 of Part I of Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950 as amended.

That affiant, if he be an architect or engineer, or representative thereof, does not own a substantial financial interest, either directly or indirectly, in any corporation, firm, partnership, or other organization which supplies materials for the construction of a public building or project when the architect or engineer has performed architectural or engineering services, either directly or indirectly, in connection with the public building or project for which the materials are being supplied.

For the purposes of this section, a "substantial financial interest" shall exclude any interest in stock being traded on the American Stock Exchange of the New York Stock Exchange.

That affiant, if subject to the provisions of this section, does hereby agree to be subject to the penalties involved for the violation of this section.

KING ARCHITECTS, INC.

SECTION 00 45 19.13

PART III

That affiant does hereby state that he has read and agrees to comply with and be subject to the provisions of Part V of Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950, being Sections 2290 through 2296 of Title 38 as amended.

NAME

COMPANY

Sworn to and Subscribed Before Me This _____ day of _____, 20____.

NOTARY PUBLIC

THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT WITHIN TEN (10) DAYS AFTER THE BID HAS BEEN OPENED.

KING ARCHITECTS, INC

SECTION 00 45 19.16

ATTESTATION - PAST CRIMINAL CONVICTIONS OF BIDDERS

PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Lake Charles, Louisiana 70669

PROJECT NO: 2242B

Appearer, as a Bidder on the above-entitled Project, does hereby attest that: In accordance with the requirements of **Louisiana Revised Statute 38:2227**:

- (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. 14:23) |
- (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) | |

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER

SWORN TO AND SUBSCRIBE before me this _____ day of _____, 20____,

in _____, _____
CITY STATE

NOTARY PUBLIC

My Commission Expires _____

**THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT
WITHIN TEN (10) CALENDAR DAYS AFTER THE BID HAS BEEN OPENED.**

KING ARCHITECTS, INC

SECTION 00 45 19.19

VERIFICATION OF EMPLOYEES AFFIDAVIT

PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

Appearer, as a Bidder on the above-entitled Project, does hereby attest that: In accordance with the requirements of **Louisiana Revised Statute 38:2212.10**:

- (A) Appearer is registered and participates in a status verification system (E-Verify) to verify that all new employees 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 (E-Verify) to verify the legal status of all new employees in the state of Louisiana.
- (C) If awarded the contract, Appearer shall require all subcontractor to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER

SWORN TO AND SUBSCRIBE before me this _____ day of _____, 20____,

in _____, _____
CITY STATE

NOTARY PUBLIC

My Commission Expires _____

**THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT
WITHIN TEN (10) CALENDAR DAYS AFTER THE BID HAS BEEN OPENED.**

CERTIFICATION REGARDING UNPAID WORKERS' COMPENSATION INSURANCE

KING ARCHITECTS, INC

SECTION 00 45 19.19

CERTIFICATION REGARDING UNPAID WORKERS' COMPENSATION INSURANCE

PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

PROJECT NO: 2242B

Appearer, as a Bidder on the above-entitled Project, does hereby attest that: In accordance with the requirements of **Louisiana Revised Statute 23:1726(B)**:

- (A) L.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 below, 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

SWORN TO AND SUBSCRIBE before me this _____ day of _____, 20____,
in _____, _____
CITY STATE

NOTARY PUBLIC

My Commission Expires _____

**THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT
WITHIN TEN (10) CALENDAR DAYS AFTER THE BID HAS BEEN OPENED.**

KING ARCHITECTS, INC

SECTION 00 45 43

RESOLUTION

BE IT RESOLVED that

NAME

Officer/Owner of

COMPANY

is hereby authorized to sign any contract or document on behalf of

COMPANY_____
COMPANY ADDRESS_____
OFFICER/OWNER_____
SIGNATURE OF OFFICER/OWNER

SWORN TO AND SUBSCRIBED before me this _____ day of _____

2022, in _____, Louisiana.

NOTARY PUBLIC

ROOFING MANUFACTURER'S WARRANTY AND INSPECTION LETTER

PROJECT NAME AND ADDRESS:

Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

PROJECT NO: 2242B

The undersigned Roofing System Manufacturer acknowledges that they have inspected the job site for the above referenced project; read the specifications in their entirety; that they approve the installation of their roofing system as specified over the existing substrate conditions; and will provide a _____ of the Specifications/Project Manual.

The undersigned also agrees that the Manufacturer will provide ay no charge to the Owner, daily job site inspections during construction; and provide, at the annual request of the Owner, annual inspections for the duration of the warranty period as specified in Section _____ of the Specifications/Project Manual. These inspections shall be by only full-time employees of the Manufacturer.

I, _____, certify that I am the _____ of the below named Corporation.

NAME OF ROOFING SYSTEM MANUFACTURER

SIGNATURE

DATE

(AFFIX CORPORATE SEAL)

THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT
WITHIN TEN (10) DAYS AFTER THE BID HAS BEEN OPENED.

KING ARCHITECTS, INC

SECTION 00 45 63.13

APPROVED APPLICATOR LETTER

PROJECT NAME AND ADDRESS:

Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

PROJECT NO:

2242B

This letter of approval is to certify that _____ Roofing Contractor,
is currently an approved applicator of _____ Roofing Systems,
and is authorized to install our Roofing System on the above referenced project.

NAME OF ROOFING SYSTEM MANUFACTURER

BY

SIGNATURE

TITLE

DATE

THIS FORM MUST BE SUBMITTED TO THE PROJECT ARCHITECT
WITHIN TEN (10) DAYS AFTER THE BID HAS BEEN OPENED.

DATE OF ISSUANCE: _____ PROJECT NO: 2242B

PROJECT NAME: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669OWNER:
Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669ARCHITECT:
King Architects, Inc
1312 Sampson Street
Westlake, Louisiana 70669

TO CONTRACTOR:

You are hereby notified that your Bid dated _____ for the above referenced Contract has been considered. You are the apparent Successful Bidder and have been awarded a Contract for your Bid totaling:

DOLLARS (\$) _____

One (1) digital copy of **executable contract documents** accompany this Notice of Award.

You must comply with the following conditions precedent **within ten (10) days** of the date you receive this Notice of Award.

1. Deliver to Architect _____ counterparts of the Document 00 52 00 (Contract Agreement), fully executed by Bidder.
2. Deliver with the executed Agreements the Contract security (e.g., performance and payment bonds) and insurance documentation as specified in the Instructions to Bidders and General Conditions.
2. Deliver with the executed Contract Agreements one original set of insurance certificates with endorsements required under Section 00 72 13 (General Conditions) and Section 00 73 00 (Supplementary Conditions).
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle the Owner to consider you in default, annul this Notice of Award and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, the Architect will return to you two fully executed counterparts of the Agreement. One copy is for your records and one is for you to file with the Calcasieu parish Clerk of Court.

Authorized By: (Architect) Barry King, AIA for King Architects, Inc

Authorized Signature: _____

Title: President

ACCETANCE OF AWARD

Receipt of the above Notice of Award is hereby acknowledged this _____ day of _____, 2022.

Accepted By: (Contractor) _____

Authorized Signature: _____

Title: _____

AIA® Document A101™ – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

The Architect:
(Name, legal status, address and other information)

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

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement.

AIA Document A201™–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.

The Owner and Contractor agree as follows.

Init.

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TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- ☐ The date of this Agreement.
- ☐ A date set forth in a notice to proceed issued by the Owner.
- ☐ Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

- ☐ Not later than () calendar days from the date of commencement of the Work.

Init.

☐ By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work

Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item

Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item

Price

Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item

Price

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item

Units and Limitations

Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

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

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

_____ %

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- ☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- ☐ Litigation in a court of competent jurisdiction
- ☐ Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:

(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

- ☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

Init.

☐ The Sustainability Plan:

Title	Date	Pages

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

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

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)



AIA[®] Document A101[™] – 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

for the following **PROJECT**:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE CONTRACTOR:
(Name, legal status and address)

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

This document is intended to be used in conjunction with AIA Document A201[™]–2017, General Conditions of the Contract for Construction. Article 11 of A201[™]–2017 contains additional insurance provisions.

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201[™]–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's

property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Cause of Loss	Sub-Limit

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- ☐ **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
- ☐ **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
- ☐ **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
- ☐ **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
- ☐ **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
- ☐ **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
- ☐ **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

- ☐ **§ A.2.5.1 Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information.
(Indicate applicable limits of coverage or other conditions in the fill point below.)

☐ **§ A.2.5.2 Other Insurance**

(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than _____ (\$ _) each occurrence, _____ (\$ _) general aggregate, and _____ (\$ _) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to, or destruction of, tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the work involves such hazards.
- .11 Claims related to explosion, collapse, and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than _____ (\$) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than _____ (\$) each accident, _____ (\$) each employee, and _____ (\$) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than _____ (\$) per claim and _____ (\$) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

- ☐ § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below.

(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

- ☐ § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than _____ (\$___) per claim and _____ (\$___) in the aggregate, for Work within fifty (50) feet of railroad property.
- ☐ § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than _____ (\$___) per claim and _____ (\$___) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.
- ☐ § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.
- ☐ § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.
- ☐ § A.3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

Init.

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:
(Specify type and penal sum of bonds.)

Type	Penal Sum (\$0.00)
Payment Bond	
Performance Bond	

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

KING

ARCHITECTS, INC

NOTICE TO PROCEED

PROJECT NO: 2242B

PROJECT NAME: Eternity Full Gospel Fellowship Rebid
932 Mulberry Street
Westlake, Louisiana 70669

CONTRACT INFORMATION:

Contract For: General Construction

Contract Date:

OTHER INFORMATION:

Date:

Project Number:

OWNER:

Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669

ARCHITECT:

King Architects, Inc
1312 Sampson Street
Westlake, LA 70669

TO CONTRACTOR:

You are hereby notified that the Contract Times stated for the Project will commence on

On that date, start performing the obligations required by the Contract Documents. You are to fully complete the work within
consecutive calendar days in accordance with your Contract Completion Date of

Before commencing Work at the Project Site, deliver the certificates of insurance to the Architect as required by the Contract Documents.

Also before commencing Work at the Project Site, perform:

Authorized By: (Architect) Barry D King, AIA, King Architects, Inc

Authorized Signature:

Title:

President

Date:

Accepted By: (Contractor)

Authorized Signature:

Title:

Date:

SUBMITTAL TRANSMITTAL FORM

DATE: _____

SUBMITTAL NO: _____

☐ original submittal ☐ resubmittal

PROJECT NO: 242B

PROJECT NAME: Eternity Full Gospel Fellowship Hall Rebid

932 Mulberry Street

Westlake, Louisiana 70669

TO (Architect):

FROM (General Contractor):

King Architects, Inc
1312 Sampson Street
Westlake, Louisiana 70669

Per the Contract Documents, contractor shall use this transmittal form for submittal of submittals, shop drawings, testing reports, and product information. The procedure for submitting these items is located in the Contract Documents.

Contractor shall follow all specifications. Failure to follow requirements included in the Contract Documents and Specifications will constitute as reason for the return of the submittal for an additional re-submittal. Contractor is to number each submittal.

Submittal Name/Description: _____

Specification Section No: _____

Contractor: _____

Subcontractor/Supplier: _____

Submittal Type: ☐ Shop Drawing ☐ Sample(s) ☐ Product Data ☐ Other: _____

Notes/Comments: _____

Contractor hereby certifies that (i) CONTRACTOR has complied with the requirements of the Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

CONTRACTOR

SIGNATURE

PRINT

DATE

APPLICATION AND CERTIFICATE FOR PAYMENT

AIA DOCUMENT G702/Cma

(Instructions on reverse side)

CONSTRUCTION MANAGER-ADVISOR EDITION

PAGE ONE OF 3 PAGES

CONTRACTOR:

PROJECT:

APPLICATION NUMBER:

PERIOD TO:

PROJECT NOS.:

Distribution to:

☐ OWNER
☐ CONSTRUCTION
MANAGER
☐ ARCHITECT
☐ CONTRACTOR

SUBCONTRACTOR:

CONTRACT DATE:

CONTRACT FOR:

VIA CONSTRUCTION MANAGER:

VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in accordance with the Contract.

Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM**2. Net Change By Change Orders.....****3. CONTRACT SUM TO DATE** (Line 1 +2).....

\$ -

4. TOTAL COMPLETED & STORED TO DATE.....

(Column G on G703)

5. RETAINAGE:a. 10% % of Completed Work
(Columns D & E on G703)b. 10% % of Stored Material
(Column F on G703)Total Retainage (Line 5a + 5b or
Total in Column I of G703)**6. TOTAL EARNED LESS RETAINAGE.....**

(Line 4 less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT

(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE**9. BALANCE TO FINISH, INCLUDING RETAINAGE**

(Line 3 less Line 6)

\$ -

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total Approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief, the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

BY: _____ DATE: _____

State of: _____ County of: _____
Subscribed and sworn before me this _____ day of _____ 20____
Notary Public:
My Commission Expires: _____

CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Construction Manager certifies that to the best of his knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED..... \$ -

(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that changed to conform to the amount certified.).

CONSTRUCTION MGR:

By: _____ Date: _____

ARCHITECT:

By: _____ Date: _____

This certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

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TOTALS								



_____, an agency of the United States government, or an agency, board, commission, or instrumentality of the State of Louisiana or its political subdivisions, including parishes, municipalities and school boards, does hereby designate the following contractor as its agent for the purpose of making sales tax exempt purchases on behalf of the governmental body:

Name of Contractor		
Address		
City	State	ZIP

This designation of agency shall be effective for purchases of component construction materials, taxable services and leases and rentals of tangible personal property for the following named construction project:

Construction Project	Contract Number

This designation and acceptance of agency is effective for the period

Beginning Date (mm/dd/yyyy)	End Date (mm/dd/yyyy)

Purchases for the named project during this period by the designated contractor shall be considered as the legal equivalent of purchases directly by the governmental body. Any materials purchased by this agent shall immediately, upon the vendor’s delivery to the agent, become the property of this government entity. This government entity, as principal, assumes direct liability to the vendor for the payment of any property, services, leases, or rentals made by this designated agent. This agreement does not void or supersede the obligations of any party created under any construction contract related to this project, including specifically any contractual obligation of the construction contractor to submit payment to the vendors of materials or services for the project.

This contractor-agent is not authorized to delegate this purchasing agency to others; separate designations of agency by this governmental entity are required for each contractor or sub-contractor who is to purchase on behalf of this governmental entity. The undersigned hereby certify that this designation is the entirety of the agency designation agreement between them. In order for a purchase for an eligible governmental entity through a designated agent to be eligible for sales tax exemption, the designation of agency must be made, accepted, and disclosed to the vendor before or at the time of the purchase transaction.

Designation of Agency			Acceptance of Agency		
Signature of Authorized Designator		Date (mm/dd/yyyy)	Signature of Contractor or Subcontractor Authorized Acceptor		Date (mm/dd/yyyy)
Name of Authorized Designator			Name of Contractor's or Subcontractor's Acceptor		
Name of Governmental Entity			Name of Contractor		
Address			Address		
City	State	ZIP	City	State	ZIP

This designation of agency form, when properly executed by both the contractor and the governmental entity, shall serve as evidence of the sales tax exempt status that has been conferred onto the contractor. No other exemption certificate form is necessary to claim exemption from sales taxes. The agency agreement evidenced by this sales tax exemption certificate must be implemented at the time of contract execution with the governmental entity. The contract between the governmental entity and his agent must contain provisions to authenticate the conferment of agency.

KING

ARCHITECTS, INC

REQUEST FOR INFORMATION (RFI)

PROJECT NO: 2242B

PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

RFI No: _____ Issue Date: _____

CONTRACTOR:

RFI DESCRIPTION:

REFERENCES/ATTACHMENTS:

Specifications

Drawings

Other

CONTRACTOR'S RECOMMENDATION:

ARCHITECT'S RESPONSE:

Architect's Name and Title: _____ Date: _____



Note: Some of the items in this response may result in credits or additions which may become part of a future Request for Change Order.

#

PROJECT NO: 2242B

Change Order Request No.:

King Architects, Inc
1312 Sampson Street
Westlake, Louisiana 70669

00 63 57-1

EQUIPMENT COSTS:

3rd Party Rentals	Vendor	Rate/ Day	Days	Total	Delivery Cost	15.00% Mark-Up	Total Cost
				\$0.00		\$0.00	\$0.00
				\$0.00		\$0.00	\$0.00
				\$0.00		\$0.00	\$0.00
				\$0.00		\$0.00	\$0.00
				\$0.00		\$0.00	\$0.00
				\$0.00		\$0.00	\$0.00
				\$0.00		\$0.00	\$0.00
Sub-Total							\$0.00

Change Order Subtotal Amount

\$0.00

Total Change Order Costs

\$0.00

Insurance Cost

	Rate / \$1,000	Cost
Builder Risk	\$0.00	\$0.00
Bond Premium	\$0.00	\$0.00
Sub-Total		\$0.00
Mark-Up	15.00%	\$0.00
Total Insurance Cost		\$0.00

AMOUNT OF CALENDAR DAYS REQUESTED TO BE ADDED TO CONTRACT TIME FOR THIS CHANGE

THIS IS NOT A CHANGE ORDER, A CONSTRUCTION CHANGE DIRECTIVE OR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED IN THE PROPOSED MODIFICATIONS.

REQUESTED BY:

SIGNED

PRINTED NAME AND TITLE

COMPANY

CHANGE ORDER

#

**PROJECT NAME AND
ADDRESS:**

Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

PROJECT NO: 2242B**CONTRACT INFORMATION:**

Contract For: General Construction
Contract Date:

CHANGE ORDER INFORMATION:

Change Order Date:
Change Order Number:
CO Request Number:

OWNER:

Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669

ARCHITECT:

King Architects, Inc
1312 Sampson Street
Westlake, Louisiana 70669

CONTRACTOR:**THE CONTRACT IS CHANGED AS FOLLOWS:**

(Insert a detailed description of the change(s) and attach the itemized breakdown.)

ORIGINAL CONTRACT SUM	\$	
NET CHANGES BY PREVIOUS CHANGE ORDERS	\$	
CONTRACT SUM PRIOR TO THIS CHANGE ORDER	\$	
CONTRACT SUM WILL BE INCREASED/ DECREASED BY THIS CHANGE ORDER - DETAILS ATTACHED	\$	
NEW CONTRACT SUM INCLUDING THIS CHANGE ORDER	\$	
CONTRACT TIME WILL BE <u>INCREASED</u> BY		DAYS.
REVISED CONTRACT COMPLETION DATE:		

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.**RECOMMENDED:****ACCEPTED:****APPROVED:**

ARCHITECT

Barry King, AIA
King Architects, Inc.

CONTRACTOR

OWNER

By: _____
Dated: _____

By: _____
Dated: _____

By: _____
Dated: _____

KING ARCHITECTS, INC

SECTION 00 65 19

DATE:
PROJECT NO: 2242B
PROJECT NAME ADDRESS: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

ARCHITECT: KING ARCHITECTS, INC
1312 Sampson Street
Westlake, Louisiana 70669

CONTRACTOR:

OWNER: Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669

I certify that, to the best of my knowledge and belief, this project is complete or substantially complete in accordance with the Drawings and Project Manual to the point where it can be used for the purpose in which was intended. It is recommendaed that it be accepted.

DATE OF ACCEPTANCE: _____

CONTRACT DATE OF COMPLETION: _____

NUMBER OF DAYS (Overrun) (Underrun) _____
(As of Acceptance Date): _____

LIQUIDATED DAMAGES PER DAY (STIMPULATED IN CONTRACT): \$ _____

VALUE OF PUNCH LIST: \$ _____
(Attach Itemized List)

Was part of the Project occupied prior to Acceptance: _____

PORTION OCCUPIED: _____
(Attach Beneficial Occupancy forms)

Barry King, AIA for King Architects, Inc

For Use of Owner:
I concur in the Acceptance of this Project: _____

KING ARCHITECTS, INC

SECTION 00 65 83

NOT FOR RECORDATION

DATE:

PROJECT NO: 2242B
PROJECT NAME AND ADDRESS: Eternity Full Gospel Fellowship Hall Rebid
932 Mulberry Street
Westlake, Louisiana 70669

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.
(See Attached List.)

ARCHITECT:	CONTRACTOR:	OWNER:
KING ARCHITECTS, INC 1312 SAMPSON ST. WESTLAKE, LA 70669		Eternity Full Gospel Fellowship 932 Mulberry Street Westlake, Louisiana 70669
BY _____	BY _____	BY _____
PRINT NAME _____	PRINT NAME _____	PRINT NAME _____
DATE _____	DATE _____	DATE _____

PUNCH LIST
Attached ☐
None ☐
Other ☐ _____

NOT FOR RECORDATION PURPOSES

DRAFT AIA® Document A201® – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

«Eternity Full Gospel Fellowship Hall Rebid»
«932 Mulberry Street
Westlake, Louisiana 70669»

THE OWNER:

(Name, legal status and address)

« »«Eternity Full Gospel Fellowship »
«932 Mulberry Street
Westlake, Louisiana 70669 »

THE ARCHITECT:

(Name, legal status and address)

«King Architects, Inc»«, Professional Corporation»
«1312 Sampson Street
Westlake, Louisiana 70669»

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS
12	UNCOVERING AND CORRECTION OF WORK
13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES

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.

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INDEX

(Topics and numbers in bold are section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3

Access to Work

3.16, 6.2.1, 12.1

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,
10.2.8, 13.4.2, 13.7, 14.1, 15.2

Addenda

1.1.1, 3.11

Additional Costs, Claims for

3.7.4, 3.7.5, 6.1.1, 7.3.7.5, 10.3, 15.1.4

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.5**

Additional Insured

11.1.4

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.5**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8, 7.3.8

All-risk Insurance

11.3.1, 11.3.1.1

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.6.3, 9.7, 9.10, 11.1.3

Approvals

2.1.1, 2.2.2, 2.4, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10,
4.2.7, 9.3.2, 13.5.1

Arbitration

8.3.1, 11.3.10, 13.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.4, 3.12.7, 4.1, 4.2, 5.2, 6.3, 7.1.2, 7.3.7, 7.4, 9.2,
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,
13.5.1, 13.5.2, 14.2.2, 14.2.4, 15.1.3, 15.2.1

Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3,
4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2,
9.5.3, 9.6.4, 15.1.3, 15.2

Architect's Additional Services and Expenses

2.4, 11.3.1.1, 12.2.1, 13.5.2, 13.5.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 4.2, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.4, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,
7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,
13.5.2, 15.2, 15.3

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.5

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.5.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5,
3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18,
4.1.2, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.4.2, 13.5, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3.7

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1, 5.2.1, 11.4.1

Binding Dispute Resolution

9.7, 11.3.9, 11.3.10, 13.1, 15.2.5, 15.2.6.1, 15.3.1,
15.3.2, 15.4.1

Boiler and Machinery Insurance

11.3.2

Bonds, Lien

7.3.7.4, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.7.4, 9.6.7, 9.10.3, 11.3.9, **11.4**

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.3

Certificates of Inspection, Testing or Approval
13.5.4

Certificates of Insurance

9.10.2, 11.1.3

Change Orders

1.1.1, 2.4, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.6, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.3.1.2, 11.3.4, 11.3.9, 12.1.2, 15.1.3

Change Orders, Definition of

7.2.1

CHANGES IN THE WORK

2.2.1, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.3.9

Claims, Definition of

15.1.1

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4

Claims and Timely Assertion of Claims

15.4.1

Claims for Additional Cost

3.2.4, 3.7.4, 6.1.1, 7.3.9, 10.3.2, **15.1.4**

Claims for Additional Time

3.2.4, 3.7.4, 6.1.1, 8.3.2, 10.3.2, **15.1.5**

Concealed or Unknown Conditions, Claims for
3.7.4

Claims for Damages

3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6

Claims Subject to Arbitration

15.3.1, 15.4.1

Cleaning Up

3.15, 6.3

Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.3.1, 11.3.6, 11.4.1, 15.1.4

Commencement of the Work, Definition of

8.1.2

Communications Facilitating Contract

Administration

3.9.1, **4.2.4**

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 13.7, 14.1.2

COMPLETION, PAYMENTS AND

9

Completion, Substantial

4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 13.7

Compliance with Laws

1.6, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 10.2.2, 11.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 11.3.1, 13.2, 13.4.2, 15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, **6**

Construction Change Directive, Definition of
7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, **7.3**, 9.3.1.1

Construction Schedules, Contractor's

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contingent Assignment of Subcontracts

5.4, 14.2.2.2

Continuing Contract Performance

15.1.3

Contract, Definition of

1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 11.3.9, **14**

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1, 11.1.3, 11.3.6, 11.4.1

Contract Documents, Copies Furnished and Use of

1.5.2, 2.2.5, 5.3

Contract Documents, Definition of

1.1.1

Contract Sum

3.7.4, 3.8, 5.2.3, 7.2, 7.3, 7.4, **9.1**, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.3.1, 14.2.4, 14.3.2, 15.1.4, 15.2.5

Contract Sum, Definition of

9.1

Contract Time

3.7.4, 3.7.5, 3.10.2, 5.2.3, 7.2.1.3, 7.3.1, 7.3.5, 7.4, 8.1.1, 8.2.1, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 14.3.2, 15.1.5.1, 15.2.5

15.1.5.1, 15.2.5

Contract Time, Definition of

8.1.1

CONTRACTOR

3

Contractor, Definition of

3.1, **6.1.2**

Contractor's Construction Schedules

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contractor's Employees
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1

Contractor's Liability Insurance
11.1
Contractor's Relationship with Separate Contractors and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3.7, 12.1.2, 12.2.4
Contractor's Relationship with Subcontractors
1.2.2, 3.3.2, 3.18.1, 3.18.2, 5, 9.6.2, 9.6.7, 9.10.2, 11.3.1.2, 11.3.7, 11.3.8
Contractor's Relationship with the Architect
1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.5, 15.1.2, 15.2.1
Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2
Contractor's Responsibility for Those Performing the Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8
Contractor's Review of Contract Documents
3.2
Contractor's Right to Stop the Work
9.7
Contractor's Right to Terminate the Contract
14.1, 15.1.6
Contractor's Submittals
3.10, 3.11, 3.12.4, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3, 11.1.3, 11.4.2
Contractor's Superintendent
3.9, 10.2.6
Contractor's Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.5, 7.3.7, 8.2, 10, 12, 14, 15.1.3
Contractual Liability Insurance
11.1.1.8, 11.2
Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1
Copies Furnished of Drawings and Specifications
1.5, 2.2.5, 3.11
Copyrights
1.5, **3.17**
Correction of Work
2.3, 2.4, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**
Correlation and Intent of the Contract Documents
1.2
Cost, Definition of
7.3.7
Costs
2.4, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.7, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.3, 12.1.2, 12.2.1, 12.2.4, 13.5, 14
Cutting and Patching
3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 11.1.1, 11.3, 12.2.4
Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 11.3.1, 12.2.4
Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6
Damages for Delay
6.1.1, 8.3.3, 9.5.1.6, 9.7, 10.3.2
Date of Commencement of the Work, Definition of
8.1.2
Date of Substantial Completion, Definition of
8.1.3
Day, Definition of
8.1.4
Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 15.2, 6.3, 7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.5.2, 14.2.2, 14.2.4, 15.1, 15.2
Decisions to Withhold Certification
9.4.1, **9.5**, 9.7, 14.1.1.3
Defective or Nonconforming Work, Acceptance, Rejection and Correction of
2.3, 2.4, 3.5, 4.2.6, 6.2.5, 9.5.1, 9.5.2, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1
Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 15.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1
Delays and Extensions of Time
3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5
Disputes
6.3, 7.3.9, 15.1, 15.2
Documents and Samples at the Site
3.11
Drawings, Definition of
1.1.5
Drawings and Specifications, Use and Ownership of
3.11
Effective Date of Insurance
8.2.2, 11.1.2
Emergencies
10.4, 14.1.1.2, 15.1.4
Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1
Equipment, Labor, Materials or
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.2.3, 2.2.5, 3.1, 3.3.1, 3.4.1, 3.5, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.5, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.2, 14.2, 14.3.1, 15.1.3

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.5, 15.2.5

Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2

Faulty Work
(See Defective or Nonconforming Work)

Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 11.1.2, 11.1.3, 11.3.1, 11.3.5, 12.3, 14.2.4, 14.4.3

Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4

Fire and Extended Coverage Insurance
11.3.1.1

GENERAL PROVISIONS

1

Governing Law

13.1
Guarantees (See Warranty)

Hazardous Materials
10.2.4, **10.3**
Identification of Subcontractors and Suppliers
5.2.1

Indemnification
3.17, **3.18**, 9.10.2, 10.3.3, 10.3.5, 10.3.6, 11.3.1.2, 11.3.7

Information and Services Required of the Owner
2.1.2, **2.2**, 3.2.2, 3.12.4, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.4, 13.5.1, 13.5.2, 14.1.1.4, 14.1.4, 15.1.3

Initial Decision
15.2
Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Decisions
14.2.2, 14.2.4, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Initial Decision Maker, Extent of Authority
14.2.2, 14.2.4, 15.1.3, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property
10.2.8, 10.4
Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 12.2.1, 13.5
Instructions to Bidders
1.1.1
Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.5.2

Instruments of Service, Definition of
1.1.7
Insurance
3.18.1, 6.1.1, 7.3.7, 9.3.2, 9.8.4, 9.9.1, 9.10.2, **11**

Insurance, Boiler and Machinery
11.3.2
Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 11.1.2

Insurance, Loss of Use
11.3.3
Insurance, Owner's Liability
11.2
Insurance, Property
10.2.5, **11.3**
Insurance, Stored Materials
9.3.2

INSURANCE AND BONDS
11
Insurance Companies, Consent to **Partial Occupancy**
9.9.1
Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13, 7.4

Interest
13.6
Interpretation
1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1
Interpretations, Written
4.2.11, 4.2.12, 15.1.4
Judgment on Final Award
15.4.2

Labor and Materials, Equipment
1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Labor Disputes
8.3.1
Laws and Regulations
1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1, 10.2.2, 11.1.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14, 15.2.8, 15.4
Liens
2.1.2, 9.3.3, 9.10.2, 9.10.4, 15.2.8
Limitations, Statutes of
12.2.5, 13.7, 15.4.1.1
Limitations of Liability
2.3, 3.2.2, 3.5, 3.12.10, 3.17, 3.18.1, 4.2.6, 4.2.7, 4.2.12, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 10.2.5, 10.3.3, 11.1.2, 11.2, 11.3.7, 12.2.5, 13.4.2
Limitations of Time
2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.3.1.5, 11.3.6, 11.3.10, 12.2, 13.5, 13.7, 14, 15

Loss of Use Insurance
11.3.3
Material Suppliers
1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.6, 9.10.5

Materials, Hazardous
10.2.4, **10.3**
Materials, Labor, Equipment and
1.1.3, 1.1.6, 1.5.1, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2
Means, Methods, Techniques, Sequences and
Procedures of Construction
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien

2.1.2, 15.2.8

Mediation

8.3.1, 10.3.5, 10.3.6, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1

Minor Changes in the Work

1.1.1, 3.12.8, 4.2.8, 7.1, **7.4**

MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2, 11.3.1

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, **12.3**

Nonconforming Work, Rejection and Correction of
2.3, 2.4, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Notice

2.2.1, 2.3, 2.4, 3.2.4, 3.3.1, 3.7.2, 3.12.9, 5.2.1, 9.7, 9.10, 10.2.2, 11.1.3, 12.2.2.1, 13.3, 13.5.1, 13.5.2, 14.1, 14.2, 15.2.8, 15.4.1

Notice, Written

2.3, 2.4, 3.3.1, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 11.3.6, 12.2.2.1, **13.3**, 14, 15.2.8, 15.4.1

Notice of Claims

3.7.4, 10.2.8, **15.1.2**, 15.4

Notice of Testing and Inspections

13.5.1, 13.5.2

Observations, Contractor's

3.2, 3.7.4

Occupancy

2.2.2, 9.6.6, 9.8, 11.3.1.5

Orders, Written

1.1.1, 2.3, 3.9.2, 7, 8.2.2, 11.3.9, 12.1, 12.2.2.1, 13.5.2, 14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Information and Services Required of the

2.1.2, **2.2**, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.3, 13.5.1, 13.5.2, 14.1.1.4, 14.1.4, 15.1.3

Owner's Authority

1.5, 2.1.1, 2.3, 2.4, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.1.3, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.1.3, 11.3.3, 11.3.10, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7

Owner's Financial Capability

2.2.1, 13.2.2, 14.1.1.4

Owner's Liability Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.4, 14.2.2

Owner's Right to Clean Up

6.3

Owner's Right to Perform Construction and to Award Separate Contracts

6.1

Owner's Right to Stop the Work

2.3

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2

Ownership and Use of Drawings, Specifications and Other Instruments of Service

1.1.1, 1.1.6, 1.1.7, **1.5**, 2.2.5, 3.2.2, 3.11, 3.17, 4.2.12, 5.3

Partial Occupancy or Use

9.6.6, **9.9**, 11.3.1.5

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 13.7, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, **9.7**, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, 12.3, 13.7, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.7.4, 9.6.7, 9.10.3, **11.4**

Payments, Progress

9.3, **9.6**, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

7.3.7.4, 9.6.7, 9.10.3, **11.4**

Permits, Fees, Notices and Compliance with Laws

2.2.2, **3.7**, 3.13, 7.3.7.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, **3.12**, 4.2.7

Progress and Completion

4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.3

Progress Payments

9.3, **9.6**, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3

Project, Definition of

1.1.4

Project Representatives

4.2.10

Property Insurance

10.2.5, **11.3**

PROTECTION OF PERSONS AND PROPERTY **10**

Regulations and Laws

1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14, 15.2.8, 15.4

Rejection of Work

3.5, 4.2.6, 12.2.1

Releases and Waivers of Liens

9.10.2

Representations

3.2.1, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.8.2, 9.10.1

Representatives

2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.1, 4.2.2, 4.2.10, 5.1.1, 5.1.2, 13.2.1

Responsibility for Those Performing the Work

3.3.2, 3.18, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10

Retainage

9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3

Review of Contract Documents and Field

Conditions by Contractor

3.2, 3.12.7, 6.1.3

Review of Contractor's Submittals by Owner and Architect

3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2

Review of Shop Drawings, Product Data and Samples by Contractor

3.12

Rights and Remedies

1.1.2, 2.3, 2.4, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.2, 12.2.4, **13.4**, 14, 15.4

Royalties, Patents and Copyrights

3.17

Rules and Notices for Arbitration

15.4.1

Safety of Persons and Property

10.2, 10.4

Safety Precautions and Programs

3.3.1, 4.2.2, 4.2.7, 5.3, **10.1**, 10.2, 10.4

Samples, Definition of

3.12.3

Samples, Shop Drawings, Product Data and

3.11, **3.12**, 4.2.7

Samples at the Site, Documents and

3.11

Schedule of Values

9.2, 9.3.1

Schedules, Construction

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Separate Contracts and Contractors

1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

Shop Drawings, Definition of

3.12.1

Shop Drawings, Product Data and Samples

3.11, **3.12**, 4.2.7

Site, Use of

3.13, 6.1.1, 6.2.1

Site Inspections

3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.4.2, 9.10.1, 13.5

Site Visits, Architect's

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5

Special Inspections and Testing

4.2.6, 12.2.1, 13.5

Specifications, Definition of

1.1.6

Specifications

1.1.1, **1.1.6**, 1.2.2, 1.5, 3.11, 3.12.10, 3.17, 4.2.14

Statute of Limitations

13.7, 15.4.1.1

Stopping the Work

2.3, 9.7, 10.3, 14.1

Stored Materials

6.2.1, 9.3.2, 10.2.1.2, 10.2.4

Subcontractor, Definition of

5.1.1

SUBCONTRACTORS

5

Subcontractors, Work by

1.2.2, 3.3.2, 3.12.1, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7

Subcontractual Relations

5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1

Submittals

3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.7, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3, 11.1.3

Submittal Schedule

3.10.2, 3.12.5, 4.2.7

Subrogation, Waivers of

6.1.1, **11.3.7**

Substantial Completion

4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, **9.8**, 9.9.1, 9.10.3, 12.2, 13.7

Substantial Completion, Definition of

9.8.1

Substitution of Subcontractors

5.2.3, 5.2.4

Substitution of Architect

4.1.3

Substitutions of Materials

3.4.2, 3.5, 7.3.8

Sub-subcontractor, Definition of

5.1.2

Subsurface Conditions

3.7.4

Successors and Assigns

13.2

Superintendent

3.9, 10.2.6

Supervision and Construction Procedures

1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.7, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.3

Surety

5.4.1.2, 9.8.5, 9.10.2, 9.10.3, 14.2.2, 15.2.7

Surety, Consent of

9.10.2, 9.10.3

Surveys

2.2.3

Suspension by the Owner for Convenience

14.3

Suspension of the Work

5.4.2, 14.3

Suspension or Termination of the Contract

5.4.1.1, 14

Taxes

3.6, 3.8.2.1, 7.3.7.4

Termination by the Contractor

14.1, 15.1.6

Termination by the Owner for Cause

5.4.1.1, **14.2**, 15.1.6

Termination by the Owner for Convenience

14.4

Termination of the Architect

4.1.3

Termination of the Contractor

14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14

Tests and Inspections

3.1.3, 3.3.3, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 11.4.1, 12.2.1, **13.5**

TIME

8

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5

Time Limits

2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 12.2, 13.5, 13.7, 14, 15.1.2, 15.4

Time Limits on Claims

3.7.4, 10.2.8, **13.7**, 15.1.2

Title to Work

9.3.2, 9.3.3

Transmission of Data in Digital Form

1.6

UNCOVERING AND CORRECTION OF WORK

12

Uncovering of Work

12.1

Unforeseen Conditions, Concealed or Unknown

3.7.4, 8.3.1, 10.3

Unit Prices

7.3.3.2, 7.3.4

Use of Documents

1.1.1, 1.5, 2.2.5, 3.12.6, 5.3

Use of Site

3.13, 6.1.1, 6.2.1

Values, Schedule of

9.2, 9.3.1

Waiver of Claims by the Architect

13.4.2

Waiver of Claims by the Contractor

9.10.5, 13.4.2, 15.1.6

Waiver of Claims by the Owner

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.4.2, 14.2.4, 15.1.6

Waiver of Consequential Damages

14.2.4, 15.1.6

Waiver of Liens

9.10.2, 9.10.4

Waivers of Subrogation

6.1.1, **11.3.7**

Warranty

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2, 13.7

Weather Delays

15.1.5.2

Work, Definition of

1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 11.4.1, 13.2, 13.4.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Notice

2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 5.2.1, 8.2.2, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 12.2.2, 12.2.4, **13.3**, 14, 15.4.1

Written Orders

1.1.1, 2.3, 3.9, 7, 8.2.2, 12.1, 12.2, 13.5.2, 14.3.1, 15.1.2

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 Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 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 may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect'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 Contractor to fulfill the 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 Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 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 and certify termination of the Agreement under Section 14.2.2.

§ 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 Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the 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.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 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.

§ 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 Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect’s or Architect’s consultants’ reserved rights.

§ 1.5.2 The 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. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The 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, Architect and the Architect’s consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 Architect 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 Contractor within fifteen days after receipt of a written request, information necessary and relevant for the 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 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner’s obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner’s ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the 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.

§ 2.2.3 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 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.

§ 2.2.4 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 Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the 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 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 Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the 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 written 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 deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The 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 Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the 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.

§ 3.2.2 Because the Contract Documents are complementary, the 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 2.2.3, 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 Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The 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 Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect 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.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The 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, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

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

§ 3.3.3 The 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 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 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

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

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The 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 Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the 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 Contractor shall secure and pay for the building permit as well as for other 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.

§ 3.7.2 The 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 Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the 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 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 Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect 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 Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The 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 may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect 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 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 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.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the 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 Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect 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 Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect 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 contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the 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 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 respective submittal has been approved by the Architect.

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

§ 3.12.9 The 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 Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The 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 Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly 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 Architect. The Owner and the Architect 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 Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, 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 Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The 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 and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

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

§ 3.15 CLEANING UP

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

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

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such 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 Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect 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, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect 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 Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

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

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect 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 Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the 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 Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect'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 Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion 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 Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect 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 Architect will endeavor to secure faithful performance by both Owner and 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 Architect'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 Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect 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 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 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.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect 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 Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The 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 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 Contractor in writing; 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 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 such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor 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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those

portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the 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 “Contractor” in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-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 Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner’s own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The 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 Contractor’s construction and operations with theirs as required by the Contract Documents.

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

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

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

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

§ 6.3 OWNER’S RIGHT TO CLEAN UP

If a dispute arises among the 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 Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. 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, the Contract Sum and Contract Time being adjusted accordingly.

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

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 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 Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the 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 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and 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 Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies 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 Contractor or others;

- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. 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 of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

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

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 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. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The 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 Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the 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.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect'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 Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, 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 Contractor;
- .3 failure of the 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.

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

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 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.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 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.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, 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 will make an inspection to determine whether the Work or designated portion thereof is substantially complete. 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 or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, 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 Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the

Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, 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 a 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. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect 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 Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect'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 Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that 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, (2) 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, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the 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 Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed 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 written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect 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 constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material 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.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The 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 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 Contractor or the Contractor's Subcontractors or Sub-subcontractors; 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.

§ 10.2.2 The 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 safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The 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.

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

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the 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 Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect 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 Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 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, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the 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 Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the 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 Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement

of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 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, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, 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 covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise

have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND 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.

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 Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established

under Section 9.9.1, 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 Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The 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 Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the 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 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the 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 Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept 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 will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 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.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or 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 as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 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. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the 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 Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the 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 Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the 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 Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the 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 Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the 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.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. 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 Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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, 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 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 Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given 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.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The 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 Claim is necessary.

§ 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.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver 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 Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver 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 be deemed to preclude an award 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 Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation 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, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten 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, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 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 such 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 Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand

fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the 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 Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 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 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.



AIA® Document A201® – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Eternity Full Gospel Fellowship Hall
932 Mulberry Street
Westlake, Louisiana 70669

THE OWNER:

(Name, legal status and address)

Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669

THE ARCHITECT:

(Name, legal status and address)

King Architects, Inc, Professional Corporation
1312 Sampson Street
Westlake, Louisiana 70669

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS
12	UNCOVERING AND CORRECTION OF WORK
13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES

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. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

INDEX

(Topics and numbers in bold are section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, **12.3**

Access to Work

3.16, 6.2.1, **12.1**

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,
10.2.8, 13.4.2, 13.7, 14.1, 15.2

Addenda

1.1.1, 3.11

Additional Costs, Claims for

3.7.4, 3.7.5, 6.1.1, 7.3.7.5, 10.3, 15.1.4

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.5**

Additional Insured

11.1.4

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.5**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8, 7.3.8

All-risk Insurance

11.3.1, 11.3.1.1

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.6.3, 9.7, 9.10, 11.1.3

Approvals

2.1.1, 2.2.2, 2.4, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10,
4.2.7, 9.3.2, 13.5.1

Arbitration

8.3.1, 11.3.10, 13.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.4, 3.12.7, 4.1, 4.2, 5.2, 6.3, 7.1.2, 7.3.7, 7.4, 9.2,
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,
13.5.1, 13.5.2, 14.2.2, 14.2.4, 15.1.3, 15.2.1

Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3,
4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2,
9.5.3, 9.6.4, 15.1.3, 15.2

Architect's Additional Services and Expenses

2.4, 11.3.1.1, 12.2.1, 13.5.2, 13.5.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 4.2, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.4, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,
7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,
13.5.2, 15.2, 15.3

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.5

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.5.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5,
3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18,
4.1.2, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.4.2, 13.5, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3.7

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1, 5.2.1, 11.4.1

Binding Dispute Resolution

9.7, 11.3.9, 11.3.10, 13.1, 15.2.5, 15.2.6.1, 15.3.1,
15.3.2, 15.4.1

Boiler and Machinery Insurance

11.3.2

Bonds, Lien

7.3.7.4, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.7.4, 9.6.7, 9.10.3, 11.3.9, **11.4**

Building Permit

3.7.1

Init.

/

Capitalization

1.3

Certificate of Substantial Completion
9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7,
9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.3

Certificates of Inspection, Testing or Approval
13.5.4

Certificates of Insurance
9.10.2, 11.1.3

Change Orders

1.1.1, 2.4, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8,
5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.6, 7.3.9, 7.3.10, 8.3.1,
9.3.1.1, 9.10.3, 10.3.2, 11.3.1.2, 11.3.4, 11.3.9, 12.1.2,
15.1.3

Change Orders, Definition of
7.2.1

CHANGES IN THE WORK

2.2.1, 3.11, 4.2.8, **7**, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1,
11.3.9

Claims, Definition of
15.1.1

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4
Claims and Timely Assertion of Claims
15.4.1

Claims for Additional Cost

3.2.4, 3.7.4, 6.1.1, 7.3.9, 10.3.2, **15.1.4**

Claims for Additional Time

3.2.4, 3.7.4, 6.1.1, 8.3.2, 10.3.2, **15.1.5**

Concealed or Unknown Conditions, Claims for **3.7.4**

Claims for Damages

3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1,
11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6

Claims Subject to Arbitration
15.3.1, 15.4.1

Cleaning Up

3.15, 6.3

Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3,
6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.3.1, 11.3.6, 11.4.1,
15.1.4

Commencement of the Work, Definition of
8.1.2

Communications Facilitating Contract Administration

3.9.1, **4.2.4**

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,
9.10, 12.2, 13.7, 14.1.2

COMPLETION, PAYMENTS AND **9**

Completion, Substantial
4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2,
13.7

Compliance with Laws

1.6, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 10.2.2,
11.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14.1.1,
14.2.1.3, 15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1,
9.10.2, 9.10.3, 11.3.1, 13.2, 13.4.2, 15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, **6**

Construction Change Directive, Definition of
7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, **7.3**,
9.3.1.1

Construction Schedules, Contractor's
3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contingent Assignment of Subcontracts
5.4, 14.2.2.2

Continuing Contract Performance **15.1.3**

Contract, Definition of

1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 11.3.9, **14**

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1, 11.1.3, 11.3.6, 11.4.1

Contract Documents, Copies Furnished and Use of
1.5.2, 2.2.5, 5.3

Contract Documents, Definition of
1.1.1

Contract Sum

3.7.4, 3.8, 5.2.3, 7.2, 7.3, 7.4, **9.1**, 9.4.2, 9.5.1.4, 9.6.7,
9.7, 10.3.2, 11.3.1, 14.2.4, 14.3.2, 15.1.4, 15.2.5

Contract Sum, Definition of
9.1

Contract Time

3.7.4, 3.7.5, 3.10.2, 5.2.3, 7.2.1.3, 7.3.1, 7.3.5, 7.4,
8.1.1, 8.2.1, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 14.3.2,
15.1.5.1, 15.2.5

Contract Time, Definition of
8.1.1

CONTRACTOR

3

Contractor, Definition of

3.1, **6.1.2**

Contractor's Construction Schedules

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contractor's Employees

3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1

Contractor's Liability Insurance

11.1

Contractor's Relationship with Separate Contractors and Owner's Forces

3.12.5, 3.14.2, 4.2.4, 6, 11.3.7, 12.1.2, 12.2.4

Contractor's Relationship with Subcontractors

1.2.2, 3.3.2, 3.18.1, 3.18.2, 5, 9.6.2, 9.6.7, 9.10.2, 11.3.1.2, 11.3.7, 11.3.8

Contractor's Relationship with the Architect

1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.5, 15.1.2, 15.2.1

Contractor's Representations

3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2

Contractor's Responsibility for Those Performing the Work

3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8

Contractor's Review of Contract Documents
3.2

Contractor's Right to Stop the Work
9.7

Contractor's Right to Terminate the Contract
14.1, 15.1.6

Contractor's Submittals

3.10, 3.11, 3.12.4, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3, 11.1.3, 11.4.2

Contractor's Superintendent

3.9, 10.2.6

Contractor's Supervision and Construction Procedures

1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.5, 7.3.7, 8.2, 10, 12, 14, 15.1.3

Contractual Liability Insurance

11.1.1.8, 11.2

Coordination and Correlation

1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1

Copies Furnished of Drawings and Specifications

1.5, 2.2.5, 3.11

Copyrights

1.5, **3.17**

Correction of Work

2.3, 2.4, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**

Correlation and Intent of the Contract Documents 1.2

Cost, Definition of

7.3.7

Costs

2.4, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.7, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.3, 12.1.2, 12.2.1, 12.2.4, 13.5, 14

Cutting and Patching

3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors

3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 11.1.1, 11.3, 12.2.4

Damage to the Work

3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 11.3.1, 12.2.4

Damages, Claims for

3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6

Damages for Delay

6.1.1, 8.3.3, 9.5.1.6, 9.7, 10.3.2

Date of Commencement of the Work, Definition of 8.1.2

Date of Substantial Completion, Definition of 8.1.3

Day, Definition of

8.1.4

Decisions of the Architect

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 15.2, 6.3, 7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.5.2, 14.2.2, 14.2.4, 15.1, 15.2

Decisions to Withhold Certification

9.4.1, **9.5**, 9.7, 14.1.1.3

Defective or Nonconforming Work, Acceptance, Rejection and Correction of

2.3, 2.4, 3.5, 4.2.6, 6.2.5, 9.5.1, 9.5.2, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Definitions

1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 15.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1

Delays and Extensions of Time

3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5

Disputes

6.3, 7.3.9, 15.1, 15.2

Documents and Samples at the Site

3.11

Drawings, Definition of

1.1.5

Drawings and Specifications, Use and Ownership of
3.11

Effective Date of Insurance

8.2.2, 11.1.2

Emergencies

10.4, 14.1.1.2, 15.1.4

Employees, Contractor's

3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1

Equipment, Labor, Materials or

1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2

Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.2.3, 2.2.5, 3.1, 3.3.1, 3.4.1, 3.5,
3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.5, 8.2,
9.5.1, 9.9.1, 10.2, 10.3, 12.2, 14.2, 14.3.1, 15.1.3
Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2,
10.4, 14.3, 15.1.5, 15.2.5
Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2
Faulty Work
(See Defective or Nonconforming Work)
Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 11.1.2, 11.1.3, 11.3.1, 11.3.5,
12.3, 14.2.4, 14.4.3
Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4
Fire and Extended Coverage Insurance
11.3.1.1
GENERAL PROVISIONS
1
Governing Law
13.1
Guarantees (See Warranty)
Hazardous Materials
10.2.4, **10.3**
Identification of Subcontractors and Suppliers
5.2.1
Indemnification
3.17, **3.18**, 9.10.2, 10.3.3, 10.3.5, 10.3.6, 11.3.1.2,
11.3.7
Information and Services Required of the Owner
2.1.2, **2.2**, 3.2.2, 3.12.4, 3.12.10, 6.1.3, 6.1.4, 6.2.5,
9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.4, 13.5.1,
13.5.2, 14.1.1.4, 14.1.4, 15.1.3
Initial Decision
15.2
Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Decisions
14.2.2, 14.2.4, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Initial Decision Maker, Extent of Authority
14.2.2, 14.2.4, 15.1.3, 15.2.1, 15.2.2, 15.2.3, 15.2.4,
15.2.5
Injury or Damage to Person or Property
10.2.8, 10.4
Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,
9.9.2, 9.10.1, 12.2.1, 13.5
Instructions to Bidders
1.1.1
Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.5.2
Instruments of Service, Definition of
1.1.7
Insurance
3.18.1, 6.1.1, 7.3.7, 9.3.2, 9.8.4, 9.9.1, 9.10.2, **11**

Insurance, Boiler and Machinery
11.3.2
Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 11.1.2
Insurance, Loss of Use
11.3.3
Insurance, Owner's Liability
11.2
Insurance, Property
10.2.5, **11.3**
Insurance, Stored Materials
9.3.2
INSURANCE AND BONDS
11
Insurance Companies, Consent to Partial Occupancy
9.9.1
Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13, 7.4
Interest
13.6
Interpretation
1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1
Interpretations, Written
4.2.11, 4.2.12, 15.1.4
Judgment on Final Award
15.4.2
Labor and Materials, Equipment
1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3,
9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Labor Disputes
8.3.1
Laws and Regulations
1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1,
10.2.2, 11.1.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6,
14, 15.2.8, 15.4
Liens
2.1.2, 9.3.3, 9.10.2, 9.10.4, 15.2.8
Limitations, Statutes of
12.2.5, 13.7, 15.4.1.1
Limitations of Liability
2.3, 3.2.2, 3.5, 3.12.10, 3.17, 3.18.1, 4.2.6, 4.2.7,
4.2.12, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 10.2.5, 10.3.3, 11.1.2,
11.2, 11.3.7, 12.2.5, 13.4.2
Limitations of Time
2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,
5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.3.1.5,
11.3.6, 11.3.10, 12.2, 13.5, 13.7, 14, 15
Loss of Use Insurance
11.3.3
Material Suppliers
1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.6, 9.10.5
Materials, Hazardous
10.2.4, **10.3**

Materials, Labor, Equipment and
1.1.3, 1.1.6, 1.5.1, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13,
3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3,
9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2
Means, Methods, Techniques, Sequences and
Procedures of Construction
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2
Mechanic's Lien
2.1.2, 15.2.8
Mediation
8.3.1, 10.3.5, 10.3.6, 15.2.1, 15.2.5, 15.2.6, **15.3**,
15.4.1
Minor Changes in the Work
1.1.1, 3.12.8, 4.2.8, 7.1, **7.4**
MISCELLANEOUS PROVISIONS
13
Modifications, Definition of
1.1.1
Modifications to the Contract
1.1.1, 1.1.2, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7,
10.3.2, 11.3.1
Mutual Responsibility
6.2
Nonconforming Work, Acceptance of
9.6.6, 9.9.3, **12.3**
Nonconforming Work, Rejection and Correction of
2.3, 2.4, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4,
12.2.1
Notice
2.2.1, 2.3, 2.4, 3.2.4, 3.3.1, 3.7.2, 3.12.9, 5.2.1, 9.7,
9.10, 10.2.2, 11.1.3, 12.2.2.1, 13.3, 13.5.1, 13.5.2,
14.1, 14.2, 15.2.8, 15.4.1
Notice, Written
2.3, 2.4, 3.3.1, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 9.7, 9.10,
10.2.2, 10.3, 11.1.3, 11.3.6, 12.2.2.1, **13.3**, 14, 15.2.8,
15.4.1
Notice of Claims
3.7.4, 10.2.8, **15.1.2**, 15.4
Notice of Testing and Inspections
13.5.1, 13.5.2
Observations, Contractor's
3.2, 3.7.4
Occupancy
2.2.2, 9.6.6, 9.8, 11.3.1.5
Orders, Written
1.1.1, 2.3, 3.9.2, 7, 8.2.2, 11.3.9, 12.1, 12.2.2.1, 13.5.2,
14.3.1
OWNER
2
Owner, Definition of
2.1.1
Owner, Information and Services Required of the
2.1.2, **2.2**, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2,
9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.3, 13.5.1,
13.5.2, 14.1.1.4, 14.1.4, 15.1.3

Owner's Authority
1.5, 2.1.1, 2.3, 2.4, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2,
4.1.3, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1,
7.3.1, 8.2.2, 8.3.1, 9.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1,
9.10.2, 10.3.2, 11.1.3, 11.3.3, 11.3.10, 12.2.2, 12.3,
13.2.2, 14.3, 14.4, 15.2.7
Owner's Financial Capability
2.2.1, 13.2.2, 14.1.1.4
Owner's Liability Insurance
11.2
Owner's Relationship with Subcontractors
1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2
Owner's Right to Carry Out the Work
2.4, 14.2.2
Owner's Right to Clean Up
6.3
Owner's Right to Perform Construction and to
Award Separate Contracts
6.1
Owner's Right to Stop the Work
2.3
Owner's Right to Suspend the Work
14.3
Owner's Right to Terminate the Contract
14.2
Ownership and Use of Drawings, Specifications
and Other Instruments of Service
1.1.1, 1.1.6, 1.1.7, **1.5**, 2.2.5, 3.2.2, 3.11, 3.17, 4.2.12,
5.3
Partial Occupancy or Use
9.6.6, **9.9**, 11.3.1.5
Patching, Cutting and
3.14, 6.2.5
Patents
3.17
Payment, Applications for
4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1,
14.2.3, 14.2.4, 14.4.3
Payment, Certificates for
4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1,
9.10.3, 13.7, 14.1.1.3, 14.2.4
Payment, Failure of
9.5.1.3, **9.7**, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2
Payment, Final
4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, 12.3,
13.7, 14.2.4, 14.4.3
Payment Bond, Performance Bond and
7.3.7.4, 9.6.7, 9.10.3, **11.4**
Payments, Progress
9.3, **9.6**, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3
PAYMENTS AND COMPLETION
9
Payments to Subcontractors
5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2
PCB
10.3.1

Performance Bond and Payment Bond

7.3.7.4, 9.6.7, 9.10.3, **11.4**

Permits, Fees, Notices and Compliance with Laws

2.2.2, **3.7**, 3.13, 7.3.7.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, **3.12**, 4.2.7

Progress and Completion

4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.3

Progress Payments

9.3, **9.6**, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3

Project, Definition of

1.1.4

Project Representatives

4.2.10

Property Insurance

10.2.5, **11.3**

PROTECTION OF PERSONS AND PROPERTY

10

Regulations and Laws

1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14, 15.2.8, 15.4

Rejection of Work

3.5, 4.2.6, 12.2.1

Releases and Waivers of Liens

9.10.2

Representations

3.2.1, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.8.2, 9.10.1

Representatives

2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.1, 4.2.2, 4.2.10, 5.1.1, 5.1.2, 13.2.1

Responsibility for Those Performing the Work

3.3.2, 3.18, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10

Retainage

9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3

Review of Contract Documents and Field

Conditions by Contractor

3.2, 3.12.7, 6.1.3

Review of Contractor's Submittals by Owner and Architect

3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2

Review of Shop Drawings, Product Data and Samples by Contractor

3.12

Rights and Remedies

1.1.2, 2.3, 2.4, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.2, 12.2.4, **13.4**, 14, 15.4

Royalties, Patents and Copyrights

3.17

Rules and Notices for Arbitration

15.4.1

Safety of Persons and Property

10.2, 10.4

Safety Precautions and Programs

3.3.1, 4.2.2, 4.2.7, 5.3, **10.1**, 10.2, 10.4

Samples, Definition of

3.12.3

Samples, Shop Drawings, Product Data and

3.11, **3.12**, 4.2.7

Samples at the Site, Documents and

3.11

Schedule of Values

9.2, 9.3.1

Schedules, Construction

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Separate Contracts and Contractors

1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

Shop Drawings, Definition of

3.12.1

Shop Drawings, Product Data and Samples

3.11, **3.12**, 4.2.7

Site, Use of

3.13, 6.1.1, 6.2.1

Site Inspections

3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.4.2, 9.10.1, 13.5

Site Visits, Architect's

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5

Special Inspections and Testing

4.2.6, 12.2.1, 13.5

Specifications, Definition of

1.1.6

Specifications

1.1.1, **1.1.6**, 1.2.2, 1.5, 3.11, 3.12.10, 3.17, 4.2.14

Statute of Limitations

13.7, 15.4.1.1

Stopping the Work

2.3, 9.7, 10.3, 14.1

Stored Materials

6.2.1, 9.3.2, 10.2.1.2, 10.2.4

Subcontractor, Definition of

5.1.1

SUBCONTRACTORS

5

Subcontractors, Work by

1.2.2, 3.3.2, 3.12.1, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7

Subcontractual Relations

5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1

Submittals

3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.7, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3, 11.1.3

Submittal Schedule

3.10.2, 3.12.5, 4.2.7

Subrogation, Waivers of

6.1.1, **11.3.7**

Substantial Completion

4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, **9.8**, 9.9.1, 9.10.3, 12.2, 13.7

Substantial Completion, Definition of 9.8.1

Substitution of Subcontractors

5.2.3, 5.2.4

Substitution of Architect

4.1.3

Substitutions of Materials

3.4.2, 3.5, 7.3.8

Sub-subcontractor, Definition of 5.1.2

Subsurface Conditions

3.7.4

Successors and Assigns

13.2

Superintendent

3.9, 10.2.6

Supervision and Construction Procedures

1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.7, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.3

Surety

5.4.1.2, 9.8.5, 9.10.2, 9.10.3, 14.2.2, 15.2.7

Surety, Consent of

9.10.2, 9.10.3

Surveys

2.2.3

Suspension by the Owner for Convenience 14.3

Suspension of the Work

5.4.2, 14.3

Suspension or Termination of the Contract

5.4.1.1, 14

Taxes

3.6, 3.8.2.1, 7.3.7.4

Termination by the Contractor

14.1, 15.1.6

Termination by the Owner for Cause

5.4.1.1, **14.2**, 15.1.6

Termination by the Owner for Convenience 14.4

Termination of the Architect

4.1.3

Termination of the Contractor

14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14

Tests and Inspections

3.1.3, 3.3.3, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 11.4.1, 12.2.1, **13.5**

TIME

8

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5

Time Limits

2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 12.2, 13.5, 13.7, 14, 15.1.2, 15.4

Time Limits on Claims

3.7.4, 10.2.8, **13.7**, 15.1.2

Title to Work

9.3.2, 9.3.3

Transmission of Data in Digital Form

1.6

UNCOVERING AND CORRECTION OF WORK 12

Uncovering of Work

12.1

Unforeseen Conditions, Concealed or Unknown

3.7.4, 8.3.1, 10.3

Unit Prices

7.3.3.2, 7.3.4

Use of Documents

1.1.1, 1.5, 2.2.5, 3.12.6, 5.3

Use of Site

3.13, 6.1.1, 6.2.1

Values, Schedule of

9.2, 9.3.1

Waiver of Claims by the Architect

13.4.2

Waiver of Claims by the Contractor

9.10.5, 13.4.2, 15.1.6

Waiver of Claims by the Owner

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.4.2, 14.2.4, 15.1.6

Waiver of Consequential Damages

14.2.4, 15.1.6

Waiver of Liens

9.10.2, 9.10.4

Waivers of Subrogation

6.1.1, **11.3.7**

Warranty

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2, 13.7

Weather Delays

15.1.5.2

Work, Definition of

1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 11.4.1, 13.2, 13.4.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Notice

2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 5.2.1, 8.2.2, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 12.2.2, 12.2.4, **13.3**, 14, 15.4.1

Written Orders

1.1.1, 2.3, 3.9, 7, 8.2.2, 12.1, 12.2, 13.5.2, 14.3.1, 15.1.2

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 Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 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 may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect'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 Contractor to fulfill the 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 Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 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 and certify termination of the Agreement under Section 14.2.2.

§ 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 Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the 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.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 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.

§ 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 Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The 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. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The 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, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 Architect 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 Contractor within fifteen days after receipt of a written request, information necessary and relevant for the 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 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the

portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the 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.

§ 2.2.3 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 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.

§ 2.2.4 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 Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the 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 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 Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the 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 written 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 deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The 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 Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the 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.

§ 3.2.2 Because the Contract Documents are complementary, the 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 2.2.3, 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 Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The 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 Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect 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.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The 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, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

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

§ 3.3.3 The 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 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 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

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

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The 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 Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the 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 Contractor shall secure and pay for the building permit as well as for other 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.

§ 3.7.2 The 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 Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the 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 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 Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect 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 Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The 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 may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required

submittals. These shall be available to the Architect and shall be delivered to the Architect 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 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 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.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the 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 Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect 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 Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect 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 contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the 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 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 respective submittal has been approved by the Architect.

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

§ 3.12.9 The 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 Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The 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 Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly 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 Architect. The Owner and the Architect 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 Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, 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 Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The 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 and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

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

§ 3.15 CLEANING UP

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

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

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such 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 Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a

party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect 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, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect 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 Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

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

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed.

However, neither this authority of the Architect 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 Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the 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 Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect'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 Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion 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 Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect 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 Architect will endeavor to secure faithful performance by both Owner and 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 Architect'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 Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect 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 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 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.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect 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 Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The 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 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 Contractor in writing; 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 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 such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor 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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the 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 "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-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 Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The 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 Contractor's construction and operations with theirs as required by the Contract Documents.

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

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

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

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

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the 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 Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. 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, the Contract Sum and Contract Time being adjusted accordingly.

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

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 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 Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the 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 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and 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 Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies 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 Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. 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 of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

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

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 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. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon

compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The 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 Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the 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.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect'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 Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, 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 Contractor;
- .3 failure of the 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.

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

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the

Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 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.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 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.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, 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 will make an inspection to determine whether the Work or designated portion thereof is substantially complete. 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 or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, 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 Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, 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 a 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. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect 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 Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect'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 Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that 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, (2) 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, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract

Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the 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 Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed 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 written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect 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 constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material 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.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The 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 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 Contractor or the Contractor's Subcontractors or Sub-subcontractors; 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.

§ 10.2.2 The 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 safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The 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.

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

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in

whole or in part by the 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 Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect 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 Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 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, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the 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 Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the 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 Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional

insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 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, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, 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 covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND 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.

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 Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, 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 Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The 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 Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the 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 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the 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 Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept 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 will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 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.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or 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 as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 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. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the 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 Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the 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 Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the 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 Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the 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 Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the 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.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. 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 Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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, 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 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 Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given 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.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The 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 Claim is necessary.

§ 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.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver 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 Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver 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 be deemed to preclude an award 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 Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation 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, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten 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, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 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 such 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 Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the 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 Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 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 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

Additions and Deletions Report for

AIA® Document A201® – 2007

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 11:42:17 ET on 03/17/2026.

PAGE 1

Eternity Full Gospel Fellowship Hall
932 Mulberry Street
Westlake, Louisiana 70669

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Eternity Full Gospel Fellowship
932 Mulberry Street
Westlake, Louisiana 70669

...

King Architects, Inc, Professional Corporation
1312 Sampson Street
Westlake, Louisiana 70669

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Barry D. King, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 11:42:17 ET on 03/17/2026 under Order No. 500036736 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2007, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

These supplementary conditions modify, change, delete from or add to the General Conditions of the Contract for Construction AIA Document A201-2017. When any article of the General Conditions is modified, or any paragraph, subparagraph or clause thereof is modified or deleted by this supplement, the unaltered provisions of that article, paragraph, subparagraph, or clause shall remain in effect.

Article, 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 Subsection 1.1.1 delete the third sentence and add the following sentence:)

"The Contract Documents shall include the bidding documents as listed in the Instruction to Bidders and any modifications made thereto by Addenda."

1.8 BUILDING INFORMATION MODELS USE AND RELIANCE

(Delete Section 1.8 in its entirety.)

ARTICLE 2 OWNER

2.2 EVIDENCE OF THE OWNER'S FINANCIAL ARRANGEMENTS

(Add the following sentence to the end of Subsection 2.2.4:)

2.2.4 "The Owner shall not be responsible for any explanation or interpretation of the Contract Documents."

(Add the following new Subsection 2.2.5:)

2.2.5 Unless otherwise provided in the Contract documents, The Architect will furnish to the Contractor, free of charge, up to one (1) copy of Contract Documents. Additional copies may be purchased by the Contractor by paying actual printing and mailing costs."

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER

(Delete the entire paragraph of Subsection 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, Professional 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 Owner-Contractor Agreement, and is referred to throughout the Contract Documents as if singular in number and masculine in gender.

(Add the following new Section and Subsection:)

2.6 OWNER'S RIGHT OF PARTIAL OCCUPANCY

2.6.1 The Owner shall have the right to use any and all portions of the building that have reached such a stage of completion as to permit occupancy or use provided that such occupancy or use does not hamper the Contractor or prevent his efficient completion of the Contract. Use form provided in the Contract Documents entitled "Beneficial Occupancy"

ARTICLE 3 CONTRACTOR

3.9 SUPERINTENDENT

(Add the following Subsection 3.9.2:)

3.9.2 If, in the opinion of the Owner and the Architect, such superintendent or any of his assistants are either negligent or unqualified to perform their duties, they shall be replaced promptly."

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.

ARTICLE 5 SUBCONTRACTORS

- 5.2.3 (Delete Subsection 5.2.3)

ARTICLE 7 CHANGES IN THE WORK**7.2 CHANGE ORDERS**

(Add the following Subsections 7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.6, 7.2.7, 7.2.8:)

- 7.2.2 "The cost to the Owner resulting from the change in the work shall be the sum of:

1. Contractor's material and labor cost.
2. Subcontractor's (as defined in Article 5.1.1) material and labor cost.
3. Overhead and Profit.

The credit to the Owner resulting from a change in the work shall be the sum of:

1. Contractor's material and labor cost.
2. Subcontractor's material and labor cost.
3. Credit will not be required for overhead and profit.

- 7.2.3 Before a Change Order is prepared, the Contractor shall provide and deliver to the Architect the following information, not subject to waiver, within ten (10) days after being notified to prepare said Change Order:

1. An itemized list of material and labor cost for each subcontractor's work including quantities and unit costs for each item of labor and each item of material.
2. An itemized list of material and labor costs for Contractor's work including quantities and unit costs for each item of labor and each item of material.
3. Overhead and profit shall be computed by one of the following methods: (not to exceed 25% on any portion of work).
 - a. When all of the work is Contractor's work; 15% of the cost of the work as defined hereafter.
 - b. When the work is all Subcontract work; 15% of the cost of the work for Subcontractor's overhead and profit plus 10% of the cost of the work for Contractor's overhead and profit.
 - c. When the work is a combination of Contractor's work and Subcontractor's work; 15% of the cost of the work for Subcontractor's overhead and profit plus 10% of the cost of the work for Contractor's overhead and profit plus 15% of the cost of the Contractor's work for Contractor's overhead and profit.

- 7.2.4 The Contractor shall include extensions of time if any with the Change Order Request and shall submit substantiation for such extension of time.

- 7.2.5 Cost of the work for the purpose of change orders shall be costs necessarily incurred in performance of the work and paid by the contractor which shall consist of:

1. Wages paid
2. Cost of all materials and supplies.
3. Cost of necessary machinery and equipment.
4. Cost of applicable taxes, insurance, fringe benefits, unemployment compensation, social security, old age and bond premiums.
5. Any other documents costs.

- 7.2.6 Subcontractor's cost shall consist of items in 7.2.5 above plus overhead and profit as defined in 7.2.3.

- 7.2.7 Cost of the work whether Contractor's Cost or Subcontractor's cost shall not apply the following:

1. Salaries or other compensation of the Contractor's personnel at the Contractor's principal office and branch

- offices.
2. Expenses of the Contractor's principal offices, branch offices and the field office.
3. Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the work.
4. Overhead and general expenses of any kind or the cost of any items not specifically and expressly included above in Cost of the Work.
5. Costs due to the negligence of the Contractor, any Subcontractor, anyone directly employed by any of them, or for whose acts any of them may be liable, including but not limited to the correction of defective or nonconforming work, disposal of material and equipment wrongly supplied, or making good any damage to property.

7.2.8 When applicable, as provided by the Agreement, the Cost to the 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

- 7.3.1 (Delete the second sentence of paragraph 7.3.1.)
- (Delete 7.3.2, 7.3.3, 7.3.4, 7.3.5, 7.3.6, 7.3.7, 7.3.8 and 7.3.9)

7.4 MINOR CHANGES IN THE WORK

(Add the following after the last sentence of Subsection 7.4.1)

- 7.4.1 "However, any changes which effects a reduction in quantity or quality of materials or equipment shall not be made without the written approval of the Owner."

ARTICLE 8 TIME

8.1 DEFINITIONS

- 8.1.2 (In Subsection 8.1.2 change the words "in the agreement" to read "by the written Notice to Proceed").
- (Add new Subsection 8.1.5:)
- 8.1.5 "The date of Beneficial Occupancy shall be the date when a certain portion or portions of a project are complete to a point where they can be occupied by the Owner."

8.2 PROGRESS AND COMPLETION

(Delete Subsection 8.2.1 and substitute the following:)

- 8.2.1 "Time is of the essence and completion of the work must be within the time 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 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 Agreement. 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 his surety shall be liable for and shall pay to the Owner the sum stated in the Contract Documents as fixed, for each consecutive calendar day (Saturday, Sunday and holidays included) of delay until the Work is substantially complete."

8.3 DELAYS AND EXTENSIONS OF TIME

- 8.3.1 Change the words "by Change Order for such reasonable time as the Architect may determine" to read "as recommended by the Architect, subject to Owner's approval of the Change Order".
- (Delete Subsection 8.3.3.)

ARTICLE 9 PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

(Delete Subsection 9.2.1 and substitute the following)

- 9.2.1 "At the preconstruction conference, the Contractor shall submit to the Owner and the Architect a Schedule of Values prepared as follows:
1. The Schedule of Values form as submittal shall be on continuation sheet of Application of Certificate for Payment, AIA Documents G702-G703A.
 2. Use the index (table of contents, Section 00 01 00) of the specifications as a basis for format for listing costs of work for sections under Division 1 through 32. Use each section number under each division for subtitles. Each section shall be subdivided into separate line items for the total cost (with overhead and profit) of separate items in sections.
 3. The total of all items shall equal the total Contract Sum."

9.3 APPLICATIONS FOR PAYMENT

(Delete Subsection 9.3.1 and substitute the following).

- 9.3.1 "Monthly, the Contractor shall submit to the Architect an itemized Application of Certificate for Payment, notarized if required, supported by such data substantiating the 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 in the work and of material suitable 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 Project with Contract Sum of less than \$500,000.00 - 10% of the Contract Sum.
 - 9.3.1.2 Project with Contract Sum of more than \$500,000.00 - 5% of the Contract Sum.
 - 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 Subsection 9.3.1.1.)

9.6 PROGRESS PAYMENTS

(Delete Subsection 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."

9.8 SUBSTANTIAL COMPLETION

- 9.8.2 Delete the words "or a portion thereof which the Owner agrees to accept separately" where they appear in 9.8.2.

(Delete the second and third sentences of paragraph 9.8.5 and substitute the following)

- 9.8.5 "The normal retainage shall not be due to the Contractor until expiration of the **forty-five day** lien period and submission to the Architect of a clear lien certificate and invoice for same".

(Add the following Subsections 9.8.6, 9.8.7, and 9.8.8).

- 9.8.6 Delete the words "or designated portion thereof" wherever they appear in Subsections 9.8.1, 9.8.2, and 9.8.3 above.
- 9.8.7 "Upon the recommendation and issuance of the Architect, the Contractor will record with the Clerk of Courts a Notice of Acceptance of Building Contract Certificate of Substantial Completion."
- 9.8.8 A "Punch List" of "exceptions" and the dollar value related thereto will be prepared. A monetary value will be assigned to each item so that a "special" retainage can be withheld for exceptions to acceptance in addition to the "normal" retainage. This monetary value shall be based on the estimated actual value of each item multiplied by Two."

9.9 PARTIAL OCCUPANCY OR USE

(Delete Section 9.9)

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.2 (Delete part (6) of the paragraph and substitute the following:)

"The Owner shall record the acceptance for the Work that has been performed and the Contractor shall furnish a clear lien certificate from the Clerk of Courts not less than forty-five (45) days after the recordation of acceptance. The cost of recordation shall be the responsibility of the Contractor.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.4 EMERGENCIES

(Add the following Subsection 10.4.1:)

10.4.1 "All Contractors should use the least hazardous materials on all jobs. Material safety data sheets (MSDS shall be given to the Owner on all materials used).

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

(Delete Subsection 11.1.2 and substitute the following)

11.1.2 "The Contractor shall, before commencing any work to be conducted under this Agreement, procure Workmen's Compensation and Employer's Liability Insurance with an insurance company authorized to write such policies of insurance in the state of Louisiana. It shall be the further responsibility of the Contractor to require that all Subcontractors have in full force and effect a policy of Workmen's Compensation and Employer's Liability Insurance before proceeding with any of the Work required under this Agreement. The Contractor shall procure and maintain, during the life of this agreement, such public liability and property damage insurance, including the operation of motor vehicles, with limits as hereinafter provided which will cover the Contractor's legal liability arising out of the Work performed by the Contractor any Subcontractor, and by anyone directly or indirectly employed by either of them for claims for damages for bodily injury, including accidental death, as well as claims for property damages, which may arise from operations under this contract.

Insurance coverage specified in the General Conditions (AIA Document A201) to be provided by the Contractor, and any other insurance described below shall be furnished with the following minimum limits:

11.1.2.1 Workmen's Compensation (Clause 11.1.1.1):

1.	Applicable State	Standard Louisiana
2.	Employer's Liability	\$500,000.00

11.1.2.1.1 Contractor's Liability Insurance (Clause 11.1.1.2, 11.1.1.3, 11.1.1.4) including contractual liability (Subparagraph 11.1.3): Form of insurance shall be Comprehensive General Liability including Broad Form CGL and the Contractor shall furnish a certificate naming the as an additional insured:

Coverage required for Projects:	<\$1,000,000	>\$1,000,000

1.	Bodily injury and Property damage Combined Single Limit (CSL)-Includes products and completed operations and contractual liability

Each Occurrence	500,000 (CSL)	1,000,000 (CSL)
Aggregate	500,000 (CSL)	1,000,000 (CSL)

2.	Personal Injury Combined Single Limit (CSL) (Aggregate Limits) - Including products and completed Operations and contractual liability

	Each Person Aggregate	500,000(CSL)	1,000,000 (CSL)
	General Aggregate	500,000(CSL)	1,000,000 (CSL)
3.	Automobile Liability		
	Combined Single Limit (CSL)-Owner, Non-owned and hired car bodily injury and property damage	300,000 (CSL)	500,000 (CSL)
4.	XCU Coverage		
5.	Umbrella Policy - The Contractor shall procure and maintain during the life of this agreement an Umbrella Policy in the amount of \$1,000,000 in excess of all other insurance requirements.		

- 11.1.3 The Contractor shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" (except earthquake and flood insurance coverage) completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Contractor's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this agreement.

11.2 OWNER'S LIABILITY INSURANCE

(Delete Subsection 11.2.1 and substitute the following)

- 11.2.1 Owner's and Contractor's Protective Liability Insurance shall be furnished by the Contractor naming the as an additional insured.

Coverage required for Projects: <\$1,000,000 >\$1,000,000

1.	Bodily injury and Property damage		
	Combined Single Limit (CSL) - Includes products and completed operations and contractual liability		
	Each Occurrence	500,000 (CSL)	1,000,000 (CSL)
	Aggregate	500,000 (CSL)	1,000,000 (CSL)

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.2 SUCCESSORS AND ASSIGNS

- 13.2.1 (Eliminate the second sentence of Subsection 13.2.1 and substitute the following):

"There shall be no assignment of the Contract."

(Delete Subsection 13.2.2 in its entirety.)

(Add the following Section 13.8).

13.8 Recordation of Contract and Bond

- 13.8.1 "The Owner shall record the Agreement between the Owner and Contractor and Performance and Payment Bond with the Clerk of Court in the parish in which the work is to be performed. The cost of recordation shall be the responsibility of the Contractor.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.2 Termination by the Owner for Cause

(Add the following Subsection 14.2.1.5:)

(Add the following Subsection 14.2.5:)

- 14.2.5 "If an agreed sum of stipulated/liquidated damages has been established, termination by the Owner under this Article will not relieve the Contractor of his obligations under the stipulated/liquidated damages provisions and the Contractor shall be liable the Owner for per diem stipulated/liquidated damages."

ARTICLE 15 CLAIMS AND DISPUTE

15.1.6 Claims for Additional Time

(Add the following Subsection 15.1.6.1:)

- 15.1.6.1 "The following days are considered reasonable anticipated days of adverse weather on a monthly basis:

January	11 days	July	6 days
February	10 days	August	5 days
March	8 days	September	4 days
April	7 days	October	3 days
May	5 days	November	5 days
June	6 days	December	8 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: Agreement is on a calendar day basis.

15.2 INITIAL DECISION

(Add the following sentence to the end of Subsection 15.2.2:)

- 15.2.2 The Architect is the Initial Decision Maker.

15.4 ARBITRATION

(Delete Subsections 15.4.4, 15.4.4.1, 15.4.4.2 and 15.4.4.3 and add the following:)

- 15.4.4 All claims, disputes and other matters in question between the parties to this Agreement under Ten Thousand Dollars and no cents (\$10,000.00) arising out of, or relating to this agreement or the breach thereof, shall be decided by arbitration under the following rules of arbitration. All claims, disputes and other matters over Ten Thousand dollars and no cents (\$10,000.00) may be decided by mutual of the parties to this agreement. Notice of the demand for arbitration shall be filed in writing with the other party of the agreement. The demand for arbitration shall be made within the time limits specified in paragraph 15.1.2 of AIA Document A201, 2017 edition. Any such arbitration proceeding shall, at the option of the Owner, be consolidated with or joined to other arbitration proceedings between the Owner and other persons or entities under contract with the Owner for the construction, repair or alterations of the project in question.
- 15.4.5 All claims by the Contractor shall first be submitted to the Architect in accordance with paragraph 15.2.1 of the General Conditions. In the event that the Contractor does not receive a decision from the Architect in accordance with the provisions of 15.2.1, the Contractor shall demand arbitration not later than forty (40) days from the date of submission to the Architect or else the Contractor expressly agrees that the claim is waived.
- 15.4.6 The parties hereby agree that the locale of the arbitration proceedings shall be in Louisiana and that all legal issues shall be governed by Louisiana Law. The Louisiana state courts shall have sole jurisdiction in any court proceedings.
- 15.4.7 There shall be full right of discovery in arbitration to the extent permitted by the Louisiana Code of Civil Procedure for court suits.

15.4.8 The right of AAA to make administrative appointments or appoint arbitrators is revoked. The Contractor and the Owner shall select arbitrators as follows:

1. After demand has been made to arbitrate, each party shall within (15) days name their respective arbitrator.
2. The two arbitrators named by each party shall meet and jointly name the third arbitrator within the next fifteen (15) days.
3. Arbitration proceedings must be commenced no later than forty (40) days after the initial demand to arbitrate has been made.
4. Arbitrators must reach a decision within fifteen (15) days after the arbitration hearings are complete.
5. No more than one item shall be arbitrated at one time unless agreed upon by both parties. In the event it is agreed by both parties that more than one item is to be arbitrated by one panel of arbitrators, each item must be arbitrated separately and only after a decision has been reached by the panel on the proceeding item can the second item be arbitrated.
6. The decision of the arbitrators shall be in writing and shall be final.

15.4.9 This agreement to arbitrate shall be specifically enforceable under provisions of R.S. 9:4201 et seq.

15.4.10 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain progress during any arbitration proceeding, and the Owner shall continue to make payments in accordance with the Agreement.

(Add the following Articles 16, 17, 18, 19, 20, 21, 22, and 23:)

ARTICLE 16 SHOP DRAWINGS

- 16.1 Follow all provisions of General Conditions regarding shop drawings and samples.
- 16.2 Shop drawings must be submitted in quadruplicate.
- 16.3 No shop drawings will be allowed at the construction site which do not bear the Architect's stamp "Reviewed for field use."
- 16.4 The Contractor shall furnish the Owner with two sets of complete shop and working drawings of all apparatus, equipment, controls, etc. to be provided in the said project. These drawings shall give dimensions, weights, mounting data, locations, ratings and other pertinent information. No separate items will be accepted.

ARTICLE 17 COMPLIANCE WITH LOUISIANA LICENSING LAW

- 17.1 The Contractor must be fully qualified under state or local licensing law for "General Contractors" in effect and at the location of the Work before submitting his bid. For projects in the state of Louisiana, Contractors and Subcontractors must be licensed under Louisiana Revised Statutes 37:2151, et. seq. For projects requiring licensing in accordance with law. The Contractor shall state his license number with his bid and be responsible for determining that all Subcontractors and prospective Subcontractors are duly licensed.

ARTICLE 18 CONSTRUCTION SIGN

- 18.1 The Contractor shall erect a sign at the project site in accordance with the sample drawing included in the specifications. Sign shall be erected as soon as practical after commencement of the Work. Location of sign shall be as directed. Sign shall be maintained in good condition until completion of project.

ARTICLE 19 COORDINATION OF TRADES

- 19.1 The contract documents are intended to produce a piece of work complete in every respect and the Contractor shall furnish all things necessary to complete the Work within the meaning and intent of said documents. It shall be the responsibility of the Contractor to provide everything necessary to complete the Work.
- 19.2 If installation of conduits, piping and ductwork become a problem, it will be expected that the various Subcontractors with the General Contractor will coordinate their work to complete the installation at no additional cost to the Owner. Attention is called to the priority list for as enumerated here:
 1. Sanitary drain and waste.
 2. Storm drain and sewer.
 3. Acids waste.
 4. Steam supply.
 5. Heating hot water.
 6. Chilled water.

7. Clinical gases.
8. Air conditioning supply duct.
9. Sprinkler system.
10. Natural gas.
11. Domestic hot water.
12. Domestic cold water.
13. Electric conduit.

Items not required will be deleted, but adjusted sequence will remain.

- 19.3 It will be the responsibility of the Contractor and all Subcontractors to review all architectural, structural, mechanical and electrical plans and call discrepancies in coordination to the attention of the Architect for addendum items. After the contract is signed, it will be the responsibility of the Contractor and all Subcontractors to provide necessary rough-in and connection, mechanical and electrical, to all items and equipment necessary to place this unit or equipment in complete operating condition. If item is shown on any one segment (architectural, structural, mechanical or electrical), it shall be considered as being required by all and will be provided with all utility hook-up at no additional cost to the Owner, unless specifically noted otherwise.
- 19.4 Electrical panel locations shall be reviewed and locations adjusted for reasonable access by conduits within walls. If structure interferes with access to panels, the panel will be relocated at no cost to the Owner. Further, if the electrical panels cannot be flush mounted two options remain:
1. If the space is 1/2" or less from the wall, provide a finished wood trim filler at the perimeter of panel 2-1/2" wide with mitered corners.
 2. Subcontractor shall arrange with the General Contractor to provide an increase in wall thickness so that the panel may be flush mounted with no additional cost the Owner.
- 19.5 Plans will generally be complete with regard to pipe chases and furred areas. If additional furring is required, this should be called to the attention of the Architect for an addendum. After the contract is signed it will be the responsibility of the Contractor to provide all pipe chases, increases in wall dimension and other furring necessary to complete the project with required finishes at no additional cost to the Owner. No exposed piping or conduit will be permitted.

ARTICLE 20 DOCUMENT INTENT

- 20.1 The Contract Documents are intended to produce a piece of work complete in every respect and the Contractor shall furnish all things necessary to complete the work within the meaning and intent of the said documents. It shall be the responsibility of the Contractor to provide everything necessary to complete the Work as enumerated in these Supplementary Conditions.

ARTICLE 21 PRODUCT AND COLOR SELECTIONS

- 21.1 Although one carpet, vinyl wall covering, paint and/or other similar items are specified and scheduled, it is not the intent of the documents to use a single selection for all such scheduled areas.

ARTICLE 22 AS-BUILT DOCUMENTS (OWNER'S OPTION)

- 22.1 The Contractor will be furnished one (1) complete set of contract documents at the end of the contract period. On these documents will be entered any changes from the original documents for "As-Built" documents submitted to the Architect for the use of the Owner. Final acceptance shall not be issued until the Architect receives these "As-Built" documents for submittal to the Owner. If required, the cost will be negotiated between Owner and Architect.

ARTICLE 23 OPEN WALL AND CEILING INSPECTION

- 23.1 No finish material or construction will be issued on walls, partitions and ceilings until a representative of the Architect in the presence of the General Contractor and his Subcontractors make an open wall inspection of all plumbing piping, fixtures, supports, electrical conduit wall bracing, duct work and support, etc. Contractor will notify Architect forty-eight (48) hours prior to requested inspection.

END OF SUPPLEMENTARY CONDITIONS 00 73 00

ATTACHMENT: FEDERAL CONTRACT CLAUSES

Since the parties anticipate that federal funding will be applied to this Agreement, the following federal contract clauses must be complied with, where applicable, in addition to the clauses already mentioned.

REMEDIES

No suggested language- Insert your own language applicable to your entity.

TERMINATION FOR CAUSE

If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner his obligations under this contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this contract, the Owner shall thereupon have the right to terminate this contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least five (5) days before the effective date of such termination. In such event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports prepared by the Contractor under this contract shall, at the option of the Owner, become the Owner's property and the Contractor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder. Notwithstanding the above, the Contractor shall not be relieved of liability to the Owner for damages sustained by the Owner by virtue of any breach of the contract by the Contractor, and the Owner may withhold any payments to the Contractor for the purpose of set-off until such time as the exact amount of damages due the Owner from the Contractor is determined.

TERMINATION FOR CONVENIENCE

The Eternity Full Gospel Fellowship may terminate the agreement for convenience completely or partially after providing a minimum of 30 days' written notice to Contractor notifying it of its intent to terminate for convenience.

EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency,

the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided*, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon

contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

COMPLIANCE WITH THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT.

(1) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia

or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) *Withholding for unpaid wages and liquidated damages.* The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

CLEAN AIR ACT

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 *et seq.*

(2) The Contractor agrees to report each violation to (*The Eternity Full Gospel Fellowship*) and understands and agrees that (*The Eternity Full Gospel Fellowship*) will, in turn, report each violation as required to assure notification to FEMA, and the appropriate Environmental Protection Agency Regional Office.

(3) The Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

FEDERAL WATER POLLUTION CONTROL ACT

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 7401 *et seq.*

(2) The Contractor agrees to report each violation to (*The Eternity Full Gospel Fellowship s*) and understands and agrees that (*The Eternity Full Gospel Fellowship*) will, in turn, report each violation as required to assure notification to the FEMA, and the appropriate Environmental Protection Agency Regional Office.

(3) The Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

SUSPENSION AND DEBARMENT

(1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the contractor is required to verify that none of the contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

(2) The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

(3) This certification is a material representation of fact relied upon by (*The Eternity Full Gospel Fellowship*). If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to (*The Eternity Full Gospel Fellowship*), the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

(4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

BYRD ANTI-LOBBYING ACT

The Contractor will be expected to comply with Federal statutes required in the Anti-Lobbying Act.

Contractors who apply or bid for an award of more than \$100,000 shall file the required certification. Each tier certifies to the tier above that it will not and has not used federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the federal awarding agency.

PROCUREMENT OF RECOVERED MATERIALS

In the performance of this Contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—

- i. Competitively within a timeframe providing for compliance with the Contract performance schedule;
- ii. Meeting Contract performance requirements; or
- iii. At a reasonable price.

Information about this requirement, along with the list of EPA-designate items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>.

PROHIBITION ON CONTRACTING FOR COVERED TELECOMMUNICATIONS EQUIPMENT OR SERVICES. (REQUIRED FOR CONTRACTS AFTER 11/12/20)

(a) *Definitions.* As used in this clause, the terms backhaul; covered foreign country; covered telecommunications equipment or services; interconnection arrangements; roaming; substantial or essential component; and telecommunications equipment or services have the meaning as defined in FEMA Policy 405-143-1, Prohibitions on Expending FEMA Award Funds for Covered Telecommunications Equipment or Services (Interim), as used in this clause—

(b) *Prohibitions.*

- (1) Section 889(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, and 2 C.F.R. § 200.216 prohibit the head of an executive agency on or after Aug.13, 2020, from obligating or expending grant, cooperative agreement, loan, or loan guarantee funds on certain telecommunications products or from certain entities for national security reasons.
- (2) Unless an exception in paragraph (c) of this clause applies, the contractor and its subcontractors may not use grant, cooperative agreement, loan, or loan guarantee funds from the Federal Emergency Management Agency to:
 - (i) Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;
 - (ii) Enter into, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;
 - (iii) Enter into, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system; or
 - (iv) Provide, as part of its performance of this contract, subcontract, or other contractual instrument, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(c) *Exceptions.*

- (1) This clause does not prohibit contractors from providing—
 - (i) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or
 - (ii) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.
- (2) By necessary implication and regulation, the prohibitions also do not apply to:
 - (i) Covered telecommunications equipment or services that:
 - i. Are *not used* as a substantial or essential component of any system; *and*
 - ii. Are *not used* as critical technology of any system.
 - (ii) Other telecommunications equipment or services that are not considered covered telecommunications equipment or services.

(d) *Reporting requirement.*

- (1) In the event the contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the contractor is notified of such by a subcontractor at any tier or by any other source, the contractor shall report the information in paragraph (d)(2) of this clause to the recipient or subrecipient, unless elsewhere in this contract are established procedures for reporting the information.
- (2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause:
 - (i) Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.
 - (ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts.* The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments.

DOMESTIC PREFERENCES FOR PROCUREMENTS. (REQUIRED FOR CONTRACTS AFTER 11/12/20)

As appropriate, and to the extent consistent with law, the contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or

materials produced in the United States. This includes, but is not limited to iron, aluminum, steel, cement, and other manufactured products.

For purposes of this clause:

Produced in the United States means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

Manufactured products mean items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

ACCESS TO RECORDS

The following access to records requirements apply to this contract:

(1) The Contractor agrees to provide GOHSEP, (*The Eternity Full Gospel Fellowship*), the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

(2) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(3) The Contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

DHS SEAL, LOGO, AND FLAGS

The contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.

COMPLIANCE WITH FEDERAL EXECUTIVE ORDERS

This is an acknowledgement that FEMA financial assistance will be used to fund the Contract only. The Contractor will comply with all applicable federal law, regulations, executive orders, FEMA policies, procedures, and directives.

NO OBLIGATION BY THE FEDERAL GOVERNMENT

The Federal Government is not a party to this Contract and is not subject to any obligations or liabilities to the non-Federal entity, Contractor, or any other party pertaining to any matter resulting from the Contract.

PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor's actions pertaining to this contract.

CONTRACTING WITH SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS.

(a) Any party to this contract must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. These steps are also required for the hiring of any subcontractors under this contract.

(b) Affirmative steps must include:

- (1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- (2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
- (3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
- (4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
- (5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

COPYRIGHT AND DATA RIGHTS

The Contractor grants to the (*The Eternity Full Gospel Fellowship*), a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the (*The Eternity Full Gospel Fellowship*) or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the (*The Eternity Full Gospel Fellowship*) data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the (*The Eternity Full Gospel Fellowship*).

BONDING REQUIREMENTS

The following bonds shall be provided in favor of Owner:

- (a) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other

negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.

- (b) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor’s obligations under such contract.
- (c) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract.

Where bonds are required in the situations described herein, the bonds shall be obtained from companies holding certificates of authority as acceptable sureties pursuant to 31 CFR part 223, “Surety Companies Doing Business with the United States.”

SECTION 01 10 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section Includes:
1. Project information.
 2. Work covered by Contract Documents.
 3. Phased construction.
 4. Work by Owner.
 5. Work under separate contracts.
 6. Future work.
 7. Purchase contracts
 8. Salvage requirements.
 9. Owner-furnished products.
 10. Contractor-furnished, Owner-installed products.
 11. Access to site.
 12. Coordination with occupants.
 13. Work restrictions.
 14. Specification and drawing conventions.
 15. Miscellaneous provisions.

1.3 PROJECT INFORMATION

- A. Project Identification: **ETERNITY FULL GOSPEL FELLOWSHIP HALL REBID**, Project number 2242B.
1. Project Location: 932 Mulberry Street
Westlake, Louisiana 70669
- B. Owner: **ETERNITY FULL GOSPEL FELLOWSHIP**
1. Owner's Representative: Apostle Marie Carrier
932 Mulberry Street
Westlake, Louisiana 70669
337.433.4138
- C. Architect: **KING ARCHITECTS, INC.**
1. Project Architect: Barry King, AIA
1312 Sampson Street
Westlake, Louisiana 70669
337.494.0806
office@kingarchitects.net
www.kingarchitects.net
- D. Contractor: Unknown at the time of execution of this Project Manual. The Procurement Phase will occur in order for the Owner to decide the General Contractor for this Project.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
1. **<New construction of 3,056 sq ft building with A2 occupancy, construction type VB. This will be a wood framed, brick veneer building with asphalt shingles>.**

B. Type of Contract:

1. Project will be constructed under a single prime contract.
2. Project will be constructed under coordinated, concurrent multiple contracts.
 - a. **<Insert name of the Contract>.**

1.5 SALVAGE REQUIREMENT

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.6 ACCESS TO SITE

- A. Use of Site: Limit use of Project site to **[work in areas]** **[areas within the Contract limits]** indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to **<areas on and around Fellowship Hall>.**
 2. Driveways, Walkways and Entrances: Keep driveways, **[loading areas,]** and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Site Utilization Plan: Prepare and submit a site utilization plan demonstrating the requirements provided by the Owner's Project representative. Do not commence mobilization on the Project site prior to written approval of the site utilization plan.

1.7 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and **[existing]** **[adjacent]** building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 2. Notify Owner not less than **[21]** days in advance of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify **Architect** not less than **[21]** days in advance of proposed utility interruptions.
 2. Obtain **Architect's** written permission before proceeding with utility interruptions.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify **Architect** not less than **[21]** **<Insert number>** days in advance of proposed disruptive operations.
 2. Obtain **Architect's** written permission before proceeding with disruptive operations.
- D. Controlled Substances: Use of controlled substances is similarly prohibited.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations **[published as part of the U.S. National CAD Standard] [and] [scheduled on Drawings]**.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers and titles found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

KING ARCHITECTS, INC

SECTION 01 21 00

SECTION 01 23 00 - ALLOWANCES

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 governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Unit-cost allowances.
 - 2. Lump Sum Allowances.
- C. Related Sections:
 - 1. Divisions 32 Sections for items of Work covered by allowances.

1.03 SUBMITTALS

- A. Submit reports from the Owner's Independent Testing Agency to document actual quantities of materials delivered to or removed from the site for use in fulfillment of each allowance.

1.04 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.05 UNIT-COST ALLOWANCES

- A. Allowance shall include all costs to Contractor of specific products, materials and work under allowance and shall include taxes, freight, and delivery to Project Site.

PART 2 - PRODUCTS *(not applicable)*

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

MEDIAPOST STUDIO
LAKE CHARLES, LOUISIANA

ALLOWANCES

KING ARCHITECTS, INC

SECTION 01 21 00

3.03 SCHEDULE OF ALLOWANCES

A.	Allowance No. One (1):	Brick Masonry
B.	Allowance No. Two (2):	Door Hardware

1. **Allowance: \$750.00 per 1,000 for ALL Brick Masonry**
2. **Allowance: \$800.00 per door for ALL Door Hardware.**
3. The above allowance shall be included in the Base Bid.

END OF SECTION 01 23 00

SECTION 01 25 00 - 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.
- B. Related Requirements:
 - 1. Section 00 63 11 "Request for Information Form" for clarification and/or Project information.
 - 2. Section 01 21 00 "Allowances" for products selected under an allowance.
 - 3. Section 01 23 00 "Alternates" for products selected under an alternate.
 - 4. Section 01 31 00 "Project Management & Coordination" for Requests for Information.
 - 5. Section 01 33 00 "Submittal Procedures" for requirements for submitting comparable product submittals for products.
 - 6. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

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, change in performance data, product dimensions or other design criteria.
 - 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. --No substitutions for convenience are allowed.
- B. "Or Equal": When a product, material or equipment specified by brand or trade name is followed by the words "or equal," a substitution may be permitted if the substitution is equal to or superior to the first-named product, material or equipment in quality, utility and appearance, and if the substitution complies with all other requirements of the plans and specifications.
- C. Procurement (Bidding) Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Procurement and Contracting Documents, submitted prior to receipt of bids.
- D. During Construction Substitution Requests: Not allowed.

1.04 ACTION SUBMITTALS

- A. Substitution Requests: Submit to Architect. Substitution Request shall be made in writing and in compliance with the following requirements. 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: Use **form provided in Division 00 – Bidding & Contract Requirements, Sections 00 43 25 –Substitution Request Form.**
 - 2. Requests for substitution of materials and equipment will be considered if received no later than **10 days** prior to date of bid opening.
 - 3. Required 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 During Bidding Phase: If necessary, Architect will request additional information or documentation for evaluation within **three (3)** days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within **seven (7)** days of receipt of request.
 - a. Forms of Acceptance: Addenda. Architect will notify all bidders of accepted substitution.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.
- B. Architect's approval of substitute does not relieve Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents.
- C. Architect's approval of a particular manufacturer does not suggest or imply any deviation from the Contract Documents. All products shall comply with the drawings and specifications. The Contractor shall note that prior approval will be by manufacturer's name only. The Contractor shall ensure that the products used in preparation of proposal and proposed to be used on this project, is equivalent to that specified in all aspects. Any material, product, or component found to not be equivalent to that specified will be rejected. Approval of one manufacturer does not automatically approve any subsidiary, parent, and/or sister company, and their associated products.

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.

1.07 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 **fifteen (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. Substitution request is **fully** documented and **properly** submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. 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: Not allowed.

PART 3 - EXECUTION

3.01 REQUESTING A SUBSTITUTION DURING BIDDING

- A. In the event that a substitution is requested during the Bidding Phase, in order to be considered, the Contractor or Supplier shall submit it to the Architect no later than **ten (10)** days prior to bid opening. In general, this procedure shall be as follows:
- 1. Submit a Substitution Request form for each individual product.
 - 2. Support your request with required documentation as previously addressed.
- B. Requests for Substitutions submitted and approved during Bidding Phase shall be announced by the Architect by Addenda prior to the bid due date.

3.02 UNAUTHORIZED SUBSTITUTIONS

- A. Any Contractor who substitutes products without proper authorization by the Architect will be required to immediately remove and replace the product and all costs required to conform to the Contract Documents shall be borne by the General Prime Contractor.

END OF SECTION 01 25 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications. Construction Manager shall develop and implement a system acceptable to Owner for the preparation, review and processing of Change Order Requests, contingency and allowance expenditure authorizations, Change Orders, and requests for information.
- B. Related Requirements:
 - 1. Section 01 25 13 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 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 or 14 days, 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.
- 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 on a Change Order Request Form.
 - 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 applicable 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 Section 01 25 13 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Change Order Request Form: Use form provided by Architect. Sample copy is included in Division 00 – Bidding & Contract Requirements section of the Specifications.

1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Contract Change Order for signatures of Owner and Contractor on Owner's standard form.

PART 2 - PRODUCTS *(Not Applicable)*

PART 3 - EXECUTION *(Not Applicable)*

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 01 21 00 "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Section 01 22 00 "Unit Prices" for administrative requirements governing the use of unit prices.
 - 3. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 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 schedule of values to Architect at earliest possible date, but no later than at the Pre-Construction Meeting
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
 - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
- 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. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange schedule of values consistent with format of AIA Document G703.
 - 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.
 - a. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
 - 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. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

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.
 - a. Include each Change Order as a new line item.

1.4 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: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement or on a monthly period basis.
 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use form AIA Document G702 for Applications for Payment.
- 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 completely executed 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, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 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. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit **three (3)** signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. 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. Products list (preliminary if not final).
 5. Schedule of unit prices.

6. Submittal schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
- H. Application for Payment at Substantial Completion: After Architect issues 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 Certificate(s) of Substantial Completion issued for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: After completing Project closeout requirements, 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. Punch List
 5. AIA Document G704, "Certificate of Substantial Completion."
 6. Clear Lien Certificate
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract 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 temporary field office or in life safety binder and by each temporary telephone. Always keep list current.

1.5 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. 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.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, 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. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - e. Indicate required installation sequences.
 - f. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations shall not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.

2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Contractor shall execute a data licensing agreement in the form of the Architect's In-house Digital Data Licensing Agreement.

1.7 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 in the form that can be found in Section 00 63 13 – Request for Information Form.
 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.
 3. Submit RFI electronically via email to jack@kingarchitects.net or to electronic project management software/site acceptable to Architect specifically established for Project.
- 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. RFI Forms: Found in Section 00 63 13 – Request for Information form.
 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 1. The following Contractor-generated 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 01 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.

- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number.
- F. 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.

1.8 PROJECT MEETINGS

- A. General: 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 and Architect 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 shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 7 days before commencement of construction.
 - 1. Conduct the conference to review responsibilities and personnel assignments.
 - 2. Attendees: Attendance is mandatory for authorized representatives of the Owner, Architect, and their appropriate consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 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. Quality control plan.
 - i. Procedures for testing and inspecting.
 - j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Submittal procedures.
 - m. Sustainable design requirements.
 - n. Preparation of record documents.
 - o. Site logistics plan.
 - p. Use of the premises.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.
 - y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. Site-specific safety plan.
 - bb. First aid.
 - cc. Security.
 - dd. Progress cleaning.
 - 4. Minutes: Entity responsible for conducting meeting shall record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Submit proposed dates of preinstallation conferences for Owner's approval.
 2. Submit a list of planned preinstallation conferences and list Work to be discussed by relevant specification section(s) to Owner and Architect.
 3. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting.
 4. Advise Owner and Architect of scheduled meeting dates at least 7 days in advance.
 5. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Schedules
 - c. Options.
 - d. Related RFIs.
 - e. Related Change Orders.
 - f. Purchases.
 - g. Deliveries.
 - h. Submittals.
 - i. Sustainable design requirements.
 - j. Review of mockups.
 - k. Coordination with other work
 - l. Possible conflicts.
 - m. Compatibility requirements.
 - n. Weather limitations.
 - o. Manufacturer's written instructions.
 - p. Warranty requirements.
 - q. Compatibility of materials.
 - r. Acceptability of substrates.
 - s. Temporary facilities and controls.
 - t. Space and access limitations.
 - u. Regulations of authorities having jurisdiction.
 - v. Testing and inspecting requirements.
 - w. Installation procedures.
 - x. Required performance results.
 - y. Protection of adjacent work.
 - z. Protection of construction and personnel.
 6. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 7. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 8. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Owner, Architect, Contractor Meetings: Conduct Owner, Architect, Contractor meetings at regular intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and 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 Owner, Architect, Contractor 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) Interface requirements.

- 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Status of sustainable design documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of proposal requests.
 - 16) Pending changes.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.
 - 19) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting shall 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 Owner, Architect, Contractor 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 32 16 – CONSTRUCTION SCHEDULING

PART 1 – GENERAL

1.01 OVERVIEW

It is expressly understood and agreed by the Contractor that the rate of progress and the time of completion of the Work is of the essence for this Contract. The contractor shall execute the Work with such progress as required to prevent delay to Contract and to other contractors working on other contracts at Site.

The section includes preparation and submittal of Baseline Schedule, maintenance schedule during the execution of the Work, preparation and submittal of monthly schedule updates, and preparation and submittal of final As Delivered Schedule.

Baseline Schedule shall conform to time provisions specified in Contract Documents and to requirements of other specified work sequence constraints set forth in the Contract Documents. The contractor shall demonstrate its intent to safely execute the Work by preparing and submitting the Baseline Schedule and monthly schedule updates.

Develop Baseline Schedule to a reasonable level of detail and follow work breakdown structure and execution strategy correlating to the Schedule of Values (SOV). Maintain schedule according to instructions and requirements set forth in this Specification. Upon completion of the Work, the Contractor shall prepare and submit a final As Delivered Schedule.

1.02 PURPOSE

This Specification sets forth requirements and procedures for Baseline Schedule and related reports:

- A. Purpose of Baseline Schedule is to allow Contractor to prepare an orderly plan of execution with logically sequenced activities to successfully accomplish timely completion of Project and to identify, via Critical Path Method, which chain of activities drives completion date of Project.
- B. Purpose of schedule and related reports is to:
 - 1. Ensure adequate planning and timely execution of the Work.
 - 2. Establish a Baseline Schedule to which subsequent monthly schedule updates shall be compared to determine overall progress and performance towards satisfactory completion of the Contract.
 - 3. Identify interdependencies and facilitate coordination of Contractor's work with others as needed.
 - 4. Assist the Architect and Owner Representative in monitoring progress.
 - 5. Evaluate proposed changes to the Contract and subsequent impacts to the schedule.
 - 6. Effectively determine impacts of time extensions and Change Order costs to overall Project completion.
 - 7. Identify and mitigate risks early in the Project's lifecycle and during each period of progress.

1.03 DEFINITIONS

The following definitions apply to this Specification:

- A. Baseline Schedule: Accepted schedule for Contract, demonstrating planned activities, activity sequencing, and activity durations.
- B. Project Critical Path: One or more continuous sequences of activities (Critical path shall not pass solely through any lag relationships) with zero total float, spanning a portion of, or entire remaining duration of Project, which ends at Project completion milestone and delineates remaining duration of Project.
- C. Critical Path Method (CPM): Schedule development technique that starts with a network of work activities logically sequenced from beginning to end according to their interdependencies, followed by time-driven forward and backward pass calculation to establish Critical Path and Total Float.

- D. Early Finish: Earliest a schedule activity is planned to finish based on its logical relationship to other activities in Project.
- E. Early Start: Earliest a schedule activity is planned to start based on its logical relationship to other activities in Project.
- F. Fragnet (Methodology): A template building utility that can be used to model work outside of a project and then plugged into the Project's logic network.
- G. Free Float: Amount of time an activity can be delayed before it affects other activities in the schedule.
- H. Late Finish: Latest a schedule activity can finish based on its logical relationship to other activities on Project and still permits the Project to be completed on time.
- I. Late Start: Latest a schedule activity can start based on its logical relationship to other activities on Project and still permits the Project to be completed on time.
- J. Milestone: A significant event that is important for timely completion of the Project. Milestones occur at a particular point in time. Milestones have no duration and do not contain work, cost loading, or resource loading.
- K. Original Duration: Amount of time an activity was expected to take to complete at beginning of Project as shown on Baseline Schedule in calendar days or workdays depending upon software calendar assigned to a given task.
- L. Recovery Schedule: When the Project is not meeting its planned goals and becomes necessary to re-arrange the remaining work to represent the Work more accurately and how the work will be performed. The method indicates how the Project will either get back on track to finish on time, or to depict a new project finish date.
- M. Task: Element of the Work Breakdown Structure (WBS) that may represent a work package, assembly, sub-assembly, component, phase, or deliverable.
- N. Time Impact Analysis: Analytical process of adding a Fragnet or similar method of adding activities within a Project's existing set of activities in a CPM schedule network with corresponding appropriate logical relationship ties to be used as an analytical tool to effectively assess the impact that a given event, series of events, or delay has had on a Project's critical path.
- O. Total Float: Amount of time a given activity or path of activities may be delayed before it will affect the Project's completion date. Total Float is calculated as the difference between early and late dates.
- P. Work Activity: Activity that requires time and resources to complete and shall be performed before the Contract is considered complete. Activities are the detailed steps necessary to complete or deliver a Task.
- Q. Work Breakdown Structure (WBS): Hierarchical structure that decomposes and subdivides, into smaller and more manageable pieces, the Work required to deliver the scope of a Contract. Each descending level of the WBS represents an increasing level of detail of Project work. Typically, the lowest level WBS groups the Work activities of the Contract into tasks and subtasks, which may represent work packages, assemblies, subassemblies, components, phases, and deliverables. Work activities are assigned to WBS elements. Guidance on development can be obtained from Project Management Institute Practice Standard for Work Breakdown Structures if needed.

1.04 PROJECT SCHEDULER QUALIFICATIONS

Employ or retain services of a qualified Scheduler.

- A. Project Scheduler shall meet the following minimum requirements:

1. Understanding of construction process to the extent that a logical CPM schedule can be developed, maintained, and progressed which accurately represents the scope of work to be performed.
 2. Must possess knowledge of the Critical Path Method of scheduling and the ability to analyze schedules for determining reasonable durations and logical relationships.
- B. Project Scheduler shall attend meetings, including monthly progress and special meetings pertaining to scheduling of the Work. The project scheduler and the Contractor's management team are expected to collaborate closely with the Architect and Owner Representative to deliver acceptable products outlined in this section.

1.05 SOFTWARE

Prepare and maintain Project's schedule according to the following requirements:

- A. Use Primavera Project Management version 19.1 (P6) or Microsoft Project version 2016 or the latest version of either software at the time of award of the Contract.
- B. The Architect shall approve the contractor's use of alternative software.

1.06 SUBMITTALS

- A. Submit electronic schedule files in PDF format and the native file format (Primavera Project Management or Microsoft Project file Format [.xer or .mpp]) for the chosen software platform in accordance with submittal specifications as specified herein. The Architect shall approve the contractor's use of alternative software.

1.07 BASIS OF PAYMENT

The schedule shall be utilized as the relative basis for progress payments:

- A. The Contractor's first payment application will be processed when the initial Baseline Schedule has been submitted and accepted by the Architect.
- B. If the Baseline Schedule has been submitted but has not been accepted at the time of the first payment application, only mobilization costs will be paid by the Owner, as established in the Contract Document, and to an extent otherwise supported by the Contractor.
- C. The contractor's monthly progress payment applications shall not be accepted for payment without monthly schedule updates submitted in time and manner required by this specification and is accepted by the Architect.
- D. Failure to maintain the schedule in an accepted status may result in the Owner withholding payment until the schedule is accepted.

PART 2 – PRODUCTS *not used*

PART 3 – EXECUTION

3.01 BASELINE SCHEDULE

- A. Upon receipt of the Notice to Proceed, prepare and submit the Baseline Schedule for the Work included under the scope of Contract. Submittal of Baseline Schedule shall comply with the following requirements:

3.02 CRITICAL PATH METHOD

- A. Use the Critical Path Method (CPM) scheduling technique as the basis for preparing schedules and for monitoring job progress.
- B. Provide information concerning sequencing, logic, and duration of activities as well as providing the CPM logic network diagram and tabular schedule data.

3.03 INITIAL BASELINE SCHEDULE

- A. Submit Initial Baseline Schedule in accordance with requirements of this section and Section 01 33 00, Submittals, ten (10) days before Preconstruction Conference.
- B. Architect will schedule and conduct a Preconstruction Scheduling Meeting to initiate the development of the required Baseline Schedule. At the meeting, requirements will be reviewed with the Contractor. The Contractor shall present the proposed methodology utilized for the development of the Baseline Schedule, including the proposed methodology for sequencing, or segregating the work. Baseline Schedule shall comply with requirements set forth in these Specifications and in the rest of the Contract Documents.
- C. Within ten (10) days after Notice to Proceed, submit Final Baseline Schedule. Submittal shall be accompanied by a narrative report describing general project execution strategy, perceived risks, and identification of coordination efforts with the Architect or third parties required to effectively deliver the Project on time.
- D. Architect will accept or reject the Baseline Schedule within ten (10) days after receipt of the required information. If the Baseline Schedule is not accepted, Architect will provide comments to the Contractor stating reasons why the submission was not accepted.
- E. Following receipt of the Architect's review comments, the Contractor shall correct the Baseline schedule to identify missing activities and relationships relevant to the scope of work; resubmit the Baseline Schedule within seven (7) days. Time extensions will not be granted to complete this process.
- F. Comments made by Architect during review shall not relieve Contractor from compliance with requirements of the Contract Documents.
- G. To the extent that there are any conflicts between the accepted Baseline Schedule and requirements of the Contract Documents, the Contract Documents shall prevail.
- H. Once Baseline Schedule is accepted it becomes the schedule of record and basis for future schedule updates and performance metrics calculations. After acceptance of the Baseline Schedule, no changes shall be made therein without the approval of the Architect.

3.04 BASELINE SCHEDULE REQUIREMENTS

- A. General Requirements:
 - 1. Use software as prescribed within Section 1.05.
 - 2. Do not use mandatory constraints in development and avoid, or minimize, use of other types of constraints within the schedule.
 - 3. Demonstrate the final level of detail for each activity; include required relationships and durations of each activity based on work quantities and planned resources to accomplish the Work.
 - 4. Contain no changes or delays which may have been incurred during the Initial Baseline Schedule development period. At first schedule update after Baseline Schedule has been accepted, include changes which have been approved via Change Order.
 - 5. Data date shall be Notice to Proceed date.
 - 6. Indicate the longest critical path of activities from Notice to Proceed to the Contract completion date. The contractor shall provide a narrative defining the critical path and potential schedule risks to activity along the critical path.

- B. Subcontractor Work:
1. Collect information from Subcontractors, suppliers, and equipment manufacturers for incorporation into the Baseline Schedule, including the estimated durations for each separable work activity and material lead times.
 2. Coordinate with major lower-tier Subcontractors and with the Architect representative to comply with scheduling requirements.
 3. Major lower-tier Subcontractors shall provide schedule requirements specified herein to Contractor so that Contractor can prepare a fully coordinated Baseline Schedule.
 4. Submit certification that accepted Baseline Schedule has been reviewed and discussed with Subcontractors, Suppliers, and vendors as it relates to their work prior to commencement of their work.
- C. Work Breakdown Structure:
1. Develop the Baseline Schedule within a single project in Primavera P6 or Microsoft Project. The Project schedule shall only contain WBS elements that correspond to the scope of this Contract.
 2. The first level WBS node shall represent the appropriate lifecycle phase of the Project, such as Design, Procurement, or Construction.
 3. Other levels of the WBS below the first level may be used to group the Work in a logical way that represents lower-level phases, locations, deliverables, work packages, components, assemblies, or other scope elements.
- D. Milestones:
1. Milestone dates are defined in calendar days following the date set forth in Notice to Proceed or listed in the Contract Documents.
 2. Include as a minimum the following:
 - a. Notice to Proceed
 - b. Critical Submittals / Procurement
 - c. Construction Start
 - d. Substantial Completion
 - e. Final Completion
 - f. Specified Contract Milestones as identified in Contract Documents
- E. Project Duration and Scheduled Project Completion
1. Show sequence and interdependence of activities required for the complete performance of the Work, beginning with the date specified in Notice to Proceed and concluding with the date of Final Completion of the Contract:
 - a. The schedule duration from the early start to late finish for a subphase, phase, or entire Project shall not exceed the Contract times specified.
 - b. Lag durations shall not have a negative value unless specifically approved by the Architect.
 - c. Project float, total float, slack time, or time contingency within schedule (i.e., the difference in time between projected early completion date and required Contract completion date), and free float or critical path float within the overall schedule is not for the exclusive use of Owner or Contractor but is jointly owned and is an expiring resource available to and shared by both as needed to meet Contract milestones and the Contract completion date.
 2. Comply with limits imposed by the scope of Work, with contractually specified intermediate milestones and completion dates, and with constraints, restraints, or sequences included in Contract Documents.
- F. Project Calendar:
1. Defined within schedule and accurately reflect the work plan.
 2. Each activity within the schedule shall possess an assigned calendar.
 3. Weather conditions shall be anticipated and planned.
 4. If work crews are to work a schedule different from the rest of the Project, then a separate calendar shall be defined for that work crew and the Work shall be scheduled utilizing that specific calendar.

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5. Use of, or requirement for, special work schedules or calendars shall be communicated to Architect in Narrative Report as part of Baseline Schedule submission.
- G. Activity Duration and Level of Detail:
1. Schedule shall include an appropriate level of detail. Failure to develop or update the Schedule shall result in nonacceptance of the Schedule.
 2. The Work activities shall be of sufficient detail to ensure adequate planning and execution of the Work and provide a basis for forecasting, monitoring, and evaluating the progress of the Work.
 3. Work activities shall conform to the following requirements:
 - a. Describe Work activities using consistent terminology such that the Work is readily identifiable for assessment of completion. Activity descriptions shall be stand-alone and not rely on WBS or activity codes for identification.
 - b. One day shall be the smallest time unit shown unless otherwise directed by Architect.
 - c. Subdivide the Work into activities of duration no longer than twenty (20) working days, except as to non-construction activities (such as procurement of materials, delivery of materials, and delivery of equipment) and any other activities for which Architect may approve a longer duration.
 - d. Activity descriptions shall be written in English, start with a verb, clearly describe the Work to be performed, and be used in a consistent manner throughout the Schedule.
 4. Activity durations shall be appropriate for the Work to be performed by crew size and major equipment assigned to the tasks.
- H. Procurement Activities and Submittals:
1. Prepare in chronological order of submittals. Show Specification section of submittal and submittal name. Include activities to cover the procurement process such as submittal preparation, review, approval, procurement, fabrication, delivery, permits, and similar preconstruction work. Submittal timeframes shall not be on the critical path, and sufficient time shall be included in the Schedule to allow for resubmittal if necessary.
 2. Activity ID numbers for submittals shall be coded to clearly identify each submittal number. Submittals shall be appropriately tied in the logic of the Schedule. Resubmittals shall be coded with the same Activity ID number as originally submitted submittal with the addition of one additional alpha character starting with the letter "A" and progressing subsequent letters for each resubmittal of the same submittal until approved to make each Activity ID unique.
 3. Resubmitted submittals shall be logically tied to appropriate Activities in the network logic model.
- I. Work Areas:
1. Code activities to show each major area of construction.
 2. Activities shall not be allowed to span more than one work area.
- J. Other Baseline Schedule Requirements:
1. Include the following items as appropriate to this Contract:
 - a. Purchases, submittals, submittal reviews, fabrication, deliveries, manufacturer factory tests, field tests, readiness tests, and installation activities for materials and equipment for which Contractor intends to seek payment, including stored materials.
 - b. Delivery, installation, check out/testing, and startup of Owner furnished equipment and materials in accordance with Schedule dates set forth in the Specifications or furnished by the Architect.
 - c. Approvals required by regulatory agencies or other third parties.
 - d. Connection to existing systems and equipment.
 - e. Temporary utilities and construction.
 - f. Interruption and shut down requests of facilities or utilities to allow for new connections.
 - g. Start up, testing, training, and assistance required under Contract Documents.
 - h. Contractor activities that will be coordinated with the Owner or Architect through ongoing activities.
 - i. Contractor obtained permits.

- j. Preparation of coordination and layout drawings.
- k. Punchlists.
- l. Final cleanup.
- m. Monthly updating of Record Drawings and final submittal of as-built drawings at project completion, or as directed by Architect.
- n. Required inspections by Architect.
- o. Other specific information required by Architect.

3.05 BASELINE SCHEDULE SUBMITTAL

Submit Baseline Schedule according to the following requirements:

- A. Baseline Schedule Narrative Report:
 - 1. Include the following information:
 - a. Transmittal letter.
 - b. Description of critical path as well as near critical paths with a total float of less than ten (10) days.
 - c. Listing of each Contract milestone showing its planned completion date.
 - d. Proposed number of working days per week for each calendar assigned within the Baseline Schedule.
 - e. Planned holidays to be observed during the life of the Contract (by day, month, and year).
 - f. Planned number of shifts per day.
 - g. Number of hours per shift.
 - h. Planned versus actual equipment productivity where applicable.
 - 2. Failure to include this information will delay review of the Schedule until Architect is in receipt of sufficient detail to validate the intent.
- B. Baseline Schedule Network Diagram:
 - 1. Depict schedule network diagram in Gantt chart format, showing schedule activities grouped according to the WBS and sorted by start date. The diagram shall show activity relationships and be formatted for tabloid-size paper (11" x 17").
- C. Baseline Schedule
 - 1. In accordance with Baseline Schedule Requirements.
 - 2. Submit in XER or MPP format as well as PDF format; include transmittal letter, Baseline Schedule Narrative Report, and Baseline Schedule Network Diagram.
- D. Accepted Baseline Schedule
 - 1. Basis for progress and performance measurement. No changes shall be allowed to the accepted Baseline Schedule.

3.06 MONTHLY SCHEDULE UPDATES

Once the Baseline Schedule is accepted, prepare, and submit a Monthly Schedule Update in compliance with the following requirements:

- A. Process for submittal of monthly schedule update:
 - 1. Prepare and submit with accurate information on logic, status, physical percent complete, percent complete, actual start and finish dates, remaining duration changes, and related reports, diagrams, and schedules based on periodic progress payment cycle.
 - 2. On date provided by Architect, meet with Architect to review monthly schedule update. The contractor and Architect will review the updated schedule and discuss the content of the Narrative Report.
 - 3. Allow Architect seven (7) days after meeting to review and accept or reject schedule updates.

4. Rejected schedule updates shall be resubmitted to Architect within seven (7) days. Requested changes shall be included in resubmittal. Submittal of Monthly Schedule Update to Architect shall be a condition precedent to making of payments, which are due or may become due under terms of the Contract.
 5. Subsequent Monthly Schedule Updates shall be compared to the accepted Baseline Schedule. In addition, each current monthly update shall be compared to last month's update. Each update shall be labeled by a period with a data date.
- B. Monthly schedule update requirements:
Update schedule every month with accurate progress and status information. Update according to the following requirements:
1. Updated Schedule Data Date
 - a. Accurately portray the Work performed as of the last day of the month, which will be considered the monthly schedule update cutoff date unless otherwise specified by the Architect.
 - b. Change Project's data date to correspond to Monthly Schedule Update cutoff date.
 2. Updating Progress and Status Information
 - a. Cutoff date to accurately reflect the Work performed during the month.
 - b. Actual start and finish dates for activities that started or finished during the month.
 - c. Activity remaining duration shall accurately reflect the time required to complete each activity.
 3. Default Progress Data and Retroactive Changes Disallowed
 - a. Default progress data provided from the scheduling system shall not be allowed.
 - b. Actual start and finish dates shall not be automatically updated by default mechanisms that may be included in scheduling software.
 - c. Ensure software settings prevent percent complete and remaining duration from being related so that Contractor evaluates activity remaining duration at each Monthly Schedule Update without affecting progress measurement.
 - d. Do not retroactively change progress data provided on previous Monthly Schedule Updates including, but not limited to, actual start and finish dates, and percent complete.
 4. Conditions Relating to Float
 - a. Extensions of time for the performance required under Contract Documents pertaining to equitable time adjustment will be granted only to extent that equitable time adjustment exceeds total float in the activity or path of activities affected at time approval was issued for the change.
 - b. Pursuant to float sharing requirements of the Contract, use of float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity times, or imposed dates shall be cause for rejection of schedule and revisions or updates.
 - c. Owner initiated changes that extend or shorten Contract Times shall be the sole basis to adjust the Contract completion date. Delays in the critical path not associated with proper requests for time extensions in accordance with General Conditions and General Requirements shall be deemed to be the responsibility of the Contractor.
 - d. Delays to early completion date shall be non-compensable and considered Project Float.
 5. Out of Sequence Progress
 - a. Defined as activities that have reported progress without predecessor activities being completed. Or in the case of Start-to-Start relationships, where predecessor activities have not begun.
 - b. A written explanation of each out-of-sequence activity shall be described in the monthly Narrative Report update. The architect may direct changes in schedule logic be made to correct significant out-of-sequence Work.
 6. Approval of Changes
 - a. Execute the Work in accordance with the accepted Baseline Schedule.
 - b. Only schedule changes that have been previously accepted by Architect through a Change Order shall be included in the Monthly Schedule Update. Narrative Report shall specifically reference on activity-by-activity basis changes made since previous period and relate each change to accepted Change Order.

- c. Upon approval of change order request or issuance of a unilateral change order by Architect the agreed upon Change Order activities, activity duration, logic, and impacts shall be reflected in the next Monthly Schedule Update and in subsequent schedule updates.
 - d. No change to accepted activities, original activity durations, logic, interdependencies, resource loading of the Baseline Schedule shall be made without prior notification to and acceptance from the Architect.
 - e. If Contractor desires to make a change to accepted Baseline Schedule, request permission from Architect in writing stating reasons for change as well as specifics, such as the proposed changes in activities, original activity durations, logic, interdependencies, milestones, the planned sequence of operations of Baseline Schedule.
 - f. Architect will respond within seven (7) days after receipt of the request.
 - g. If Architect considers Baseline Schedule change requested to be a major change, Contractor may be required to submit a revised Baseline Schedule for acceptance, without additional cost to Owner, including reports deemed necessary by Architect to show the probable effect of change on Project.
 - h. Submit proposed schedule revision and required reports within seven (7) days after Architect notifies Contractor that requested revision is a major change.
 - i. Change shall be considered of a major nature if time estimated for activity or sequence of activities is varied from the original plan to the degree there is reasonable doubt that Contract milestones will be met, or if the change impacts the Work of other lower-tier Subcontractors at Site.
 - j. Only upon acceptance of the requested change by the Architect shall it be reflected in the next scheduled update.
 - k. Changes to activities having adequate float shall be considered as minor changes, except that an accumulation of minor changes may be considered a major change when such changes affect the Contract Completion date or milestones.
 - l. Activity that is added or modified by Change Order shall be identified by Change Order code that changed the activity. Activities shall not belong to more than one Change Order. Scope introduced through change orders shall remain independent from the base contract scope.
 - m. Change order requests and Requests for Information shall reference which schedule activity they potentially impact to properly assess time impacts. A time impact analysis shall be required if requested by Architect.
7. Delays and Recovery
- a. If the Architect determines the Contractor is not maintaining anticipated planned progress, the Architect may require a Recovery Schedule from the Contractor.
 - b. Failure to deliver an acceptable Recovery Schedule to the Architect within seven (7) days of written notification may result in Owner withholding progress payments until an acceptable Recovery Schedule is delivered.
 - c. Recovery Schedule is defined as a revised plan of execution supported by a revised schedule, workforce/staffing plan, project calendar, workweek requirements, and graphic analysis that are required to recover from current deficient progress or schedule deficit.
 - d. Whenever it becomes apparent from the Monthly Schedule Update that milestones will not be met, take any or all the following actions:
 - 1) Increase construction workforce in such quantities and crafts as shall eliminate the backlog of the Work.
 - 2) Increase number of working hours per shift, shifts per day, workdays per week, or amount of construction equipment, or combination of foregoing sufficiently to eliminate Work backlog.
 - 3) Reschedule work activities that were scheduled sequentially so that they occur in parallel.
 - e. Under no circumstances shall addition of equipment or construction forces, increasing working hours, or other methods, manner, or procedures shall be considered cause for Contract Modification or treated as acceleration.

- f. Requests for contract timeline extensions due to adverse conditions, delays, events outside the control of Contractor, or for other reason shall be submitted within same pay period in which purported impact was incurred unless otherwise directed by Architect.

3.07 MONTHLY SCHEDULE UPDATE SUBMITTAL

According to the following requirements:

- A. Schedule Update Narrative Report:
 - 1. Include the following:
 - a. Transmittal letter.
 - b. Listing of each activity on the schedule that was completed or in progress during the reporting period, as well as a list of activities scheduled for next reporting period.
 - c. Analysis, by critical path, of each negative path describing nature of critical path, its impact on other activities, milestones, and completion dates; and recommendations for recovery of delay.
 - d. Current and anticipated delays, including cause of delay, corrective action and schedule adjustments to correct delay, and impact of delay on other activities, milestones, and completion dates.
 - e. Description of significant changes in construction sequence, logic changes, relationship changes, or duration changes, and rationale associated with each change.
 - f. List of pending issues and their status including, but not limited to, permits, contract modifications, time extension requests, and long lead procurement items.
 - g. Listing of each Contract milestone showing its planned completion date according to the Baseline Schedule, its current planned completion date, and its status.
- B. Updated Schedule Network Diagram
 - 1. Depict the entire schedule network diagram in Gantt chart format, showing schedule activities grouped according to the WBS and sorted by start date. The diagram shall show activity relationships formatted for tabloid-size paper (11" x 17").
- C. Monthly Updated Schedule
 - 1. In accordance with the section, Monthly Schedule Update Requirements.
 - 2. Submit in XER or MPP format as well as PDF format; include transmittal letter, Monthly Update Schedule Narrative Report, Baseline Schedule Network.

3.08 SUBMITTAL OF FINAL AS DELIVERED SCHEDULE

- A. As a condition precedent to release of retainage, the last update to schedule submitted shall be identified as the As-Delivered Schedule.
- B. Reflect the manner in which Project was actually delivered, including start and finish dates.
- C. Architect will have fourteen (14) days to accept or reject the As-Delivered Schedule. Schedule rejection will be accompanied by instructions on corrective action required for resubmittal.

END OF SECTION 01 32 16

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART ONE – 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.

1.03 GENERAL

- A. General Provisions:
 - 1. Provisions in this section are mandatory procedures for review, approval and submitting samples, shop drawings and product data in accordance with the General Conditions.
 - 2. **Submittals which are received directly from sources other than through the General Contractor's office will be returned to the General Contractor "without action".**
 - 3. Job delays occasioned by requirement of re-submission of samples, shop drawings and product data not in accord with Contract Documents and/or submittals sequenced contrary to the agreed schedule are Contractor's responsibility and will not be considered valid justification for extension of contract time or increase in the contract sum.
 - 4. **All submittals shall be electronic where possible.**

1.04 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. Submittals: General term including samples, shop drawings and product data, as applicable and as defined by the General Conditions.
- D. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- E. 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.

1.05 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 date of fabrication.

1.06 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings via email for use in preparing Shop Drawings and Project record drawings.
 - 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 .DWG format.
 - c. Contractor shall execute a data licensing agreement in the form of the Architect's In-house Digital Data Licensing Agreement.
 - d. The following digital data files will be furnished for each appropriate discipline:
 - 1) Floor plans.
 - 2) Reflected ceiling 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 reserves 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: Allow **15** days for review of each resubmittal.
 4. Consultant Review: Where the Contract Documents indicate that submittals may be transmitted to Architect's consultants via the Architect **ONLY (All submittals must be sent to the Architect; the Architect will in turn distribute to the consultant)**, allow **15** days for review of each submittal. Submittal will be returned to Architect before being returned to the Contractor.
- D. Paper Submittals: NOT ALLOWED.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into **one single** indexed PDF 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 KAI project identifier and three-digit sequential number followed by a decimal point and then the Specification number (e.g., 2012-001.061000).**
 - 1) **Resubmittals shall include the letter "R" followed by the resubmittal number after another decimal point (e.g., 2012-001.061000.R1).**
 - 2) **Color samples of a given section shall include the letter "C" followed by the submittal number after another decimal point (e.g., 2012-001.061000.C1).**
 3. Provide means for insertion to permanently record Contractor's review and approval markings.
 4. Transmittal Form for Electronic Submittals: **Transmit each submittal using a PDF version of the transmittal form located in these specifications (Section 00 62 11),** containing the following filled in information.
 - a. Project name.
 - b. Date.
 - c. Submittal Number, as described above.
 - d. Name and address of Architect.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Related physical samples submitted directly.
 - n. Indication of full or partial submittal.
 - o. Submittal and transmittal distribution record.
 - p. Other necessary identification.
 - q. Remarks
- F. Options: Identify options requiring selection by Architect.
- G. 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.
- H. 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.
- I. 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.
- J. 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 – PROCEDURES

2.1 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/submit electronic submittals as PDF electronic files via email to jack@kingarchitects.net or to electronic project management software/site acceptable to Architect specifically established for Project.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Action Submittals: Submit one electronic copy of each submittal unless otherwise indicated. Architect will return one copy.
 3. Informational Submittals: Submit one electronic copy of each submittal unless otherwise indicated. Architect will not return copies.
 4. 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.
- 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. Standard 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 (215 by 280 mm)**, but no larger than **24 by 36 inches (610 by 915 mm)**.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.

- 1) If it is impracticable to submit a Shop Drawing in PDF format, paper format may be allowed. Submit three opaque copies of each submittal. Architect will retain one copy; remainder will be returned.
- 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.
 3. Provide corresponding electronic submittal of Sample transmittal via email to jack@kingarchitects.net or to electronic project management software/site acceptable to Architect specifically established for Project, 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 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 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 **three (3)** sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
 - 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. Coordination Drawing Submittals: Comply with requirements specified in Section 01 31 00 "Project Management and Coordination."
- F. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 29 00 "Payment Procedures."
- G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 40 00 "Quality Requirements."

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- H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 77 00 "Closeout Procedures."
- I. 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.
- J. 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.
- K. 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.
- L. 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.
- M. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- N. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- O. 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.
- P. 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.
- Q. 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.
- R. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- S. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- 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 of certificate, signed, and sealed by the 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 01 77 00 "Closeout Procedures."
- 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 submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, or the action may be recorded in a separate transmittal.
- B. 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.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals or submittals not following these guidelines are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

KING ARCHITECTS, INC

SECTION 01 41 26

SECTION 01 41 26 – PERMIT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. Each project has varying requirements for permits, inspections, and fees based on scope, size, and location of the project.
- B. The Owner is subject to all permits, inspections and associated fees for construction, demolition, utility connection, storm water management, and other similar requirements that may be required to complete the scope of work associated with these Contract Documents.
- C. The General Contractor (GC) shall be responsible for obtaining all permits, inspections and paying for all associated fees unless specifically identified within this specification.

1.02 REFERENCES

- A. The following references are not intended to be inclusive. It shall be the GC's responsibility to determine all requirements based on the scope of work in the Contract Documents.
- B. Review all ordinances that may require a permit or fee that may related to a required permit. Contact the following agencies to determine that exact requirements during bidding:
 - 1. Building Inspection
 - 2. Zoning
 - 3. Engineering
 - 4. Water Utility
 - 5. Traffic Engineering
 - 6. Others as may be specified by the Contract Documents.
- C. State Statues
- D. Other Regulatory Regulations
- E. Other agencies or companies that may have related requirements:
 - 1. Sewage company
 - 2. Local gas and electric utility companies
 - 3. Other utility companies

1.03 GENERAL CONTRACTOR'S REQUIREMENTS

- A. The GC shall be responsible for all the following:
 - 1. Execute application for all required permits as may be required by the scope of work described within the Contract Documents.
 - 2. Paying all fees associated with the application of any required permits. Exception: fees required for all permits issued by Owner agencies will be paid by internal payment by the Owner, if applicable.
 - 3. Scheduling all required inspections that may be conditions of any required permits.

PART 2 – PRODUCTS *(not applicable)*

PART 3 – EXECUTION *(not applicable)*

END OF SECTION 01 41 26

SECTION 01 42 00 – REFERENCES

PART 1 - GENERAL

1.1 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.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "accepted," "approved," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar subsequent operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities, either exclusively or to be shared with separate Contractors, for performance of work. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
- J. "Installer": Entity (*firm or person*) engaged to install work by Contractor, Subcontractor, or Sub-subcontractor. Installers are required to be skilled and experienced in work they are engaged to install.
- K. "Specification Text Format": Underscoring facilitates scan reading, no other meaning. Imperative language is directed at Contractor, unless otherwise noted.
- L. "Overlapping/Conflicting Requirements": Most stringent (generally most costly) applies and will be enforced, unless more detailed language written directly into contract documents clearly indicates that a less stringent requirement is acceptable. Refer uncertainties to Architect/Engineer for decision before proceeding.

Where optional requirements are specified in a parallel manner, option is intended to be Contractor's unless otherwise indicated.
- M. "Minimum Requirements": Indicated requirements are for a specific minimum acceptable level of quality/quantity, as recognized in the industry. Actual work must comply within specified tolerance or may exceed minimums within reasonable limits. Refer uncertainties within reasonable limits. Refer uncertainties to Architect/ Engineer before proceeding.
- N. "Abbreviations, Plural Words": Abbreviations, where not defined in contract documents, will be interpreted to mean the normal construction industry terminology, determined by recognized grammatical rules, by the Architect/Engineer. Plural words will be interpreted as plural where applicable for context of contract documents.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents.
1. IBC 2018 / ASCE 7-16
 2. IEBC 2018
 3. IFC 2018
 4. IPC 2021
 5. IMC 2021
 6. IFGC 2021
 7. NFPA 101 2021
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	(909) 472-4100
ICC	International Code Council www.iccsafe.org	(888) 422-7233
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543

- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

COE	Army Corps of Engineers www.usace.army.mil	(202) 761-0011
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-7923
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOD	Department of Defense http://dodssp.daps.dla.mil	(215) 697-6257
DOE	Department of Energy www.energy.gov	(202) 586-9220

EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(866) 835-5322
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
GSA	General Services Administration www.gsa.gov	(800) 488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Buildings Service (See GSA)	
PHS	Office of Public Health and Science http://www.hhs.gov/ophs/	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board http://gulliver.trb.org	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USP	U.S. Pharmacopeia www.usp.org	(800) 227-8772
USPS	Postal Service www.usps.com	(202) 268-2000
FEMA	Federal Emergency Management Agency www.fema.gov	(800) 745-0243

- D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(866) 512-1800 (202) 512-1800
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	(215) 697-2664
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil/ Available from Defense Standardization Program www.dsp.dla.mil Available from General Services Administration www.gsa.gov Available from National Institute of Building Sciences www.wbdg.org/ccb	(215) 697-2664 (202) 619-8925 (202) 289-7800
FTMS	Federal Test Method Standard (See FS)	
MIL	(See MILSPEC)	
MIL-STD	(See MILSPEC)	
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	(215) 697-2664
UFAS	Uniform Federal Accessibility Standards Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
ASCE	American Society of Civil Engineers www.asce.org	(800)548-2723
IBC	International Building Code www.codes.iccsafe.org	
IECC	International Energy Conservation Code	

www.codes.iccsafe.org

NEC National Electrical Code
www.nfpa.org

NFPA National Fire Protection Association (NFPA 101 Life Safety Code)) (800) 344-3555
www.nfpa.org

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

OSFM Office of State Fire Marshal
www.sfm.dps.louisiana.gov

LDH Louisiana Department of Health
www.ldh.la.gov

DEQ Louisiana Department of Environmental Quality
www.deq.louisiana.gov

LDI Louisiana Department of Insurance
www.lidi.state.la.gov

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 42 16 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

- 1.01 INDICATED: Shown on drawings by notes, graphics, or schedules, or written into other portions of contract documents. Terms such as "*shown*," "*noted*," "*scheduled*," and "*specified*" have same meaning as "indicated" and are used to assist the reader in locating particular information.
- 1.02 DIRECTED, REQUESTED, APPROVED, ACCEPTED, ETC.: These terms imply "*by the Architect/Engineer*", unless otherwise indicated.
- 1.03 APPROVED BY ARCHITECT/ENGINEER: In no case releases Contractor from responsibility to fulfill requirements of contract documents.
- 1.04 PROJECT SITE: Space available to Contractor at location of project, either exclusively or to be shared with separate Contractors, for performance of the work.
- 1.05 FURNISH: Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar subsequent requirements.
- 1.06 INSTALL: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protection, cleaning, and similar requirements.
- 1.07 PROVIDE: Furnish and install, complete and ready for intended use.
- 1.08 INSTALLER: Entity (*firm or person*) engaged to install work by Contractor, Subcontractor, or Sub-subcontractor. Installers are required to be skilled and experienced in work they are engaged to install.
- 1.09 SPECIFICATION TEXT FORMAT: Underscoring facilitates scan reading, no other meaning. Imperative language is directed at Contractor, unless otherwise noted.
- 1.10 OVERLAPPING/CONFLICTING REQUIREMENTS: Most stringent (*generally most costly*) applies and will be enforced, unless more detailed language written directly into contract documents clearly indicates that a less stringent requirement is acceptable. Refer uncertainties to Architect/Engineer for decision before proceeding.

Where optional requirements are specified in a parallel manner, option is intended to be Contractor's unless otherwise indicated.

1.11 MINIMUM REQUIREMENTS: Indicated requirements are for a specific minimum acceptable level of quality/quantity, as recognized in the industry. Actual work must comply within specified tolerance, or may exceed minimums within reasonable limits. Refer uncertainties within reasonable limits. Refer uncertainties to Architect/Engineer before proceeding.

1.12 ABBREVIATIONS, PLURAL WORDS: Abbreviations, where not defined in contract documents, will be interpreted to mean the normal construction industry terminology, determined by recognized grammatical rules, by the Architect/Engineer. Plural words will be interpreted as plural where applicable for context of contract documents.

PART 2 - PRODUCTS (*not applicable*)PART 3 - EXECUTION (*not applicable*)

END OF SECTION 01 42 16

SECTION 01 45 00 – QUALITY CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED:

- A. General Quality Control
- B. Mock-ups
- C. Manufacturer's Field Services
- D. Testing Laboratory

1.02 RELATED WORK

- A. Requirements, abbreviations and acronyms for reference standard are defined in Division 01.
- B. ASTM C945 - Test for Compressive Strength of Lightweight Insulating Concrete.
- C. ASTM 329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as used in construction.

1.03 QUALITY CONTROL, GENERAL

- A. Maintain quality control over supplies, manufacturers, products, services, site conditions and workmanship to produce work of specified quality.

1.04 MOCK-UP

- A. Erect field samples and mock-ups at project site in accordance with requirements of the applicable specification section.

1.05 MANUFACTURER'S FIELD SERVICES

- A. When specified in respective specification sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable and to make appropriate recommendations.

PART 2 - TESTING LABORATORY

2.01 GENERAL REQUIREMENTS

- A. An independent testing laboratory will be employed by Owner. Owner shall pay for laboratory services to perform specified testing.
 - 1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
 - 2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the work of the Contract.

2.02 QUALIFICATIONS OF LABORATORY

- A. Laboratory shall meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.
- B. Laboratory shall be authorized to operate in the State of Louisiana.

2.03 LABORATORY DUTIES

- A. Cooperate with Architect and Contractor. Provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified reference standards.
 - 2. Ascertain compliance of materials with requirements of contract documents.
- C. Promptly notify Architect of observed irregularities or deficiencies of work.
- D. Promptly submit four copies of written report of each test and inspection to Architect. Each report shall include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing lab name, address and telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Welder's identification number.
 - 6. Date and time of sampling or inspection.
 - 7. Record of temperature and weather conditions.
 - 8. Date of test.
 - 9. Identification of specification section.
 - 10. Location of sample or test in the project.
 - 11. Member tested for structural steel testing.
 - 12. Type of inspection or test
 - 13. Results of tests and compliance with contract documents.
 - 14. Interpretation of test results, when requested by Architect.
 - 15. Perform additional tests as required by Architect.

2.04 LIMITATION OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to release, revoke, alter or enlarge on requirements of contract documents.
- B. Laboratory is not authorized to approve or accept any portion of the work.
- C. Laboratory is not authorized to perform any duties of the Contractor.

2.05 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to the work.
- B. Secure and deliver to the lab adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the lab the design mix proposed to be used for concrete and other material mixes which require control by the testing laboratory.
- D. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To obtain and handle samples at the project site.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- E. Notify laboratory 24 hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When test or inspections cannot be performed after such notice, Contractor shall notify the laboratory.
 - 2. If Contractor does not notify laboratory before laboratory personnel are scheduled for this work, Contractor shall reimburse Owner for laboratory personnel and travel expenses.

END OF SECTION 01 45 00

SECTION 01 45 13 - PROCEDURES AND CONTROLS

PART 1 - GENERAL

- 1.01 SUPERINTENDENT: Provide competent qualified supervision to expedite, coordinate and ensure quality in the work.
- 1.02 REPORTING ACCIDENTS: Prepare and submit reports of significant accidents at site and anywhere else where work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained or property loss of substance is or where the event posed a significant threat of loss or personal injury.
- 1.03 TRADE PERSON AND WORKMANSHIP STANDARDS: Instigate and maintain procedure to ensure that persons performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality levels for workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deterioration by faulty workmanship or its replacement.
- 1.04 INSPECTION, TEST, AND REPORTS: Required inspection and testing services are intended to assist in determination of probable compliance of work with requirements, but do not relieve Contractor of responsibility for those compliance, or for general fulfillment or requirements of contract documents. Specified inspection and test are not intended to limit Contractor's quality control program. Afford reasonable access to agencies performing tests and inspection.
- The Owner has as his option to retain qualified testing laboratory to perform sampling and testing during or after the placement of materials in order to determine the quality of the work. All tests to herein will be paid for by the Owner. All costs of testing, removal and replacement of materials which fail to meet or exceed the limits and a standard specified or referred to herein will be paid for by the Contractor.
- The testing laboratory shall provide the Owner, Contractor, and Architect a copy of all test results as expediently as possible.
- 1.05 INSTALLER'S INSPECTION OF CONDITIONS: Require installer of each major unit of work to inspect substrate to receive work, and conditions under which work will be performed, and to report (*in writing to Contractor*) unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to installer.
- 1.06 MANUFACTURER'S INSTRUCTION: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation to extent these are more explicit or more stringent than requirements indicated in contract documents.
- 1.07 INSPECT EACH ITEM of materials or equipment immediately prior to installation and reject damaged and defective items.
- 1.08 PROVIDE ATTACHMENT and connect devices and methods for securing work properly as it is installed; true to line and level, and within recognized industry tolerances if not otherwise indicated. Allow for expansions and building movements. Provide uniform joint widths in exposed work, organized for best possible visual effect. Refer questionable visual-effect choices to Architect for final decision.
- 1.09 RECHECK MEASUREMENTS and dimensions of the work as in integral step of starting each installation.
- 1.10 INSTALL WORK DURING CONDITIONS of temperature, humidity, exposure, forecasted weather, and status of project completion which will ensure best possible results for each unit of work in coordination with entire work. Isolate each unit of work from non-compatible work as required to prevent deterioration.
- 1.12 COORDINATE ENCLOSURE (*closing-in*) of work with required inspection and tests, so as to minimize necessity of uncovering work for that purpose.
- 1.13 MOUNTING HEIGHTS: Where mounting heights are not indicated, mount individual units of work at industry recognized standard mounting height choices to Architect/Engineer for final decision.

PART 2 - PRODUCTS (*not applicable*)

PART 3 - EXECUTION

- 3.01 STRUCTURAL WORK: Do not cut and patch structural work in a manner resulting in a reduction of load deflection ratio. Submit proposal and request and obtain Architect's/Engineer's approval before proceeding with cut and patch of structural.
- 3.02 OPERATION/SAFETY LIMITATIONS: Do not cut and patch operational elements and safety components in a manner resulting in a decreased performance, shortened useful or increased maintenance. Submit proposals and request and obtain Architect's approval before proceeding with cut and patch.
- 3.03 VISUAL/QUALITY LIMITATIONS: Do not cut and patch work exposed to view (*exterior and interior*) in a manner resulting in noticeable reduction of visual qualities and similar qualities as judged by Architect.
- 3.04 LIMITATIONS ON APPROVALS: Architect's/Engineer's approval to proceed with cutting and patching does not waive right to later require removal replacement of work found to be cut and patched in an unsatisfactory manner, as judged by Architect.
- 3.05 TEMPORARY SUPPORT AND PROTECTION: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work. Provide adequate protection of other work during cutting and patching to prevent damage; and provide protection of the work from adverse weather exposure.
- 3.06 TREE AND PLANT PROTECTION: Install temporary fencing to protect vegetation from damage from construction operations. Protect tree root systems from damage.
- 3.07 CLEANING AND PROTECTION: During handling and installation of work at project site, clean and protect work in progress and adjoining work on a basis of perpetual maintenance. Apply suitable protective covering on newly installed work where reasonable required to ensure freedom from damage or deterioration at time of substantial completion; otherwise, clean and perform maintenance on new installed work as frequently as necessary through remainder of construction period. Adjust and lubricate operable components to ensure operation without damaging effects. To extent possible through reasonable control and protection methods, supervise performance of work in a manner and by means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure to include (*where applicable, but not by way of limitation*) static loading, dynamic loading, internal pressures, external pressures, high or low temperature, thermal shock, high or low humidity, air contamination or pollution, water, ice, solvents, chemicals, light, radiation, puncture, abrasion, heavy traffic, soiling.

END OF SECTION 01 45 13

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the General Conditions cost unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction. Per 3.3.I.1, Hoisting equipment and permanent elevators are exempted from this provision.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- C. 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.
- D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste handling procedures.
 - 5. Other dust-control measures.

1.5 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 the ADA.

1.6 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

2.1 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, lockable entrances, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and 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 10 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- (1.2-m-) square tack and marker boards.
 - 3. Keep in office at all times complete sets of Contract Documents and Architect reviewed submittals.
 - 4. Drinking water and private toilet.
 - 5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
 - 6. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) 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. Provide weatherproof coverage for outdoor storage of materials and equipment needing only limited protection.
 - 3. Shed may be open shelters or fully enclosed spaces.

2.2 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: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 01 77 00 "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.
- D. First Aid Supplies: Comply with governing regulations.

PART 3 - EXECUTION

3.1 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 Section 01 10 00 "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.

3.2 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: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Use of building toilet, wash facilities and drinking water fixtures will not be permitted. 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. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. 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.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

- I. Water Service:
 1. Contractor shall provide piping, hoses, backflow preventers, valves, and other items necessary to conduct water from connection point to the construction location.
 2. Contractor shall supervise use of water to prevent waste and prevent damage due to leaking and uncontrolled discharge.
 3. Contractor shall provide sanitary drinking supply and paper cups for workers.
- J. Lighting: Whenever natural light is inadequate and existing or new overhead lighting is not in operation, provide temporary lighting and local switching as necessary for operations under way.
 1. Install and operate temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
 2. Provide sufficient temporary lighting to ensure proper workmanship. Finishing work will not be permitted in areas which are not adequately lighted.
 3. Provide and maintain lights and signs to prevent damage or injury. Keep safety lights burning from dusk to dawn.
 4. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 5. Install lighting for Project identification sign.
- K. Telephone Numbers:
 1. 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.

3.3 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 (9 m)** 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: Use designated areas of Owner's existing parking areas for construction personnel.
- 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 as indicated in Specification Section 01 58 13.
 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. 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.
- G. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- H. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- I. Temporary Use of Permanent Stairs: Use of stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 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.
- 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.
- 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, 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. Tree and Plant Protection: Install temporary fencing to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. 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. Perform control operations lawfully, using environmentally safe materials.

- 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 workday.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
 - 1. Install a 6' tall temporary construction fence prior to beginning any work, encompassing the entire area of work from adjacent school facilities where students may be present. The fence shall be chain link (orange plastic fencing is not acceptable), free of openings or breaks, with fence posts at 8' O/C maximum. Gates are to be avoided if possible; if not they must be capable of being padlocked from school side. The fence shall be secured to withstand prevailing wind loads. The fence shall be maintained in place throughout the construction phase of the project.
 - a. If physical isolation from students of Work Area(s) by fencing is not attainable, Calcasieu Parish School Board badges must be obtained by Contractor prior to commencing work. For such projects, Contractor and subcontractors will be required to submit list of personnel along with a digital photo of each to Calcasieu Parish School Board (Owner) in order to create badges.
- I. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- J. 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 incomplete, insulate temporary enclosures.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
 - 1. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - 2. Protect air-handling equipment.
 - 3. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 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 Phase: 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 Phase: 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 Phase 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 can not be completely restored to their manufactured moisture level within 48 hours.

3.6 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. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 56 26 – TEMPORARY FENCING

1.01 TEMPORARY FENCING

Install a 6' tall temporary construction fence prior to beginning any work., encompassing the entire area of work from adjacent school facilities where students may be present. The fence shall be chain link (orange plastic fencing is not acceptable), free of openings or breaks, with fence posts at 8' O/C maximum. Gates are to be avoided if possible; if not they must be capable of being padlocked from school side. The fence shall be secured to withstand prevailing wind loads. The fence shall be maintained in place throughout the construction phase of the project.

If physical isolation from students of Work Area(s) by fencing is not attainable, Calcasieu Parish School Board badges must be obtained by Contractor prior to commencing work. For such projects, Contractor and subcontractors will be required to submit list of personnel along with a digital photo of each to Calcasieu Parish School Board (Owner) in order to create badges.

SECTION 01 57 19 – TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contractor shall provide environmental controls consistent with regulatory requirements throughout the duration of the Project.
- B. Full compensation for required compliance and cooperation is considered subsidiary to other items of Work, and no additional compensation will be allowed.

1.02 SUBMITTALS

- A. Dust control agents other than water must be approved by Architect prior to use.
- B. Plan for water control, if requested, prior to beginning any Work.
- C. Stormwater quality management measures, Stormwater Management Plan (SWMP) and methods proposed by Contractor must be in conformance with all applicable permits and approved by Architect prior to installation and prior to moving onto the construction site.
 - 1. Submit the initial phase SWMP at the preconstruction conference. Submit plans for future phases of construction a minimum of 28 days before start of that construction phase to allow review and resubmittal, if necessary.
- D. Prepare schedules to implement stormwater management features, including but not limited to erosion and sediment control work, and submit for acceptance at preconstruction conference.
 - 1. Schedules shall incorporate construction activities, haul roads, borrow pits, storage and plant sites, and the plan for disposal of waste material.
 - 2. Work shall not start until the Architect has approved these schedules.

1.03 RELATED SECTIONS

- A. The following is a list of Specifications, which may be related to this section:
 - 1. Section 00 73 00, Supplementary Conditions
 - 2. Section 00 73 00, Supplementary Conditions, Article 90, Permits.

PART 2 PRODUCTS – *(Not Applicable)*

PART 3 EXECUTION

3.01 DUST CONTROL

- A. Contractor shall minimize dust from construction operations.
- B. During the performance of the Work, whether on right-of-way provided by Owner or elsewhere, Contractor shall furnish labor, equipment, and materials to control dust at all times, including evenings, holidays, and weekends.
- C. Contractor shall be liable for any damage resulting from dust originating from Contractor's operations.

3.02 HOUSEKEEPING

- A. Contractor shall keep the Project neat, orderly, and in a safe condition at all times, and shall store and use equipment, tools, and materials in a manner that does not present a hazard.

- B. Contractor shall provide on-site containers for collection of rubbish and construction waste and dispose of it at frequent intervals during the progress of Work, and whenever directed by Architect.
- C. Contractor shall be responsible for conforming will all elements of the SWMP and other Louisiana DEQ permits, including any requirements addressing storage and disposal of potential stormwater pollutants.

3.03 DISPOSAL

- A. Contractor shall legally dispose of waste materials and materials determined by Architect to be waste in an approved disposal site in a manner meeting all federal, state, local, and Project regulations.
- B. Contractor shall not bury waste unless authorized by the Owner and the Architect.
- C. All costs related to disposal, including but not limited to dump fees, permits, etc., will be the responsibility of Contractor.
- D. Excess excavation shall become the property of Contractor (unless otherwise specified) and be legally disposed of by Contractor outside the limits of construction in an approved disposal site.
- E. Excess excavated material suitable for backfill shall not be disposed of until all backfill operations are complete.
- F. Contractor shall immediately inform Architect of any hazardous materials encountered during construction and legally dispose of such hazardous materials at an approved disposal site.
- G. All debris shall be removed from site and/or burned in accordance with Louisiana DEQ guidelines and procedures.

3.04 WATER CONTROL

- A. Periodic Flooding:
 - 1. The Project may be subject to periodic flooding as a result of rainfall and snowmelt, reservoir or pond releases, flows from adjacent developed areas and stormwater pipes, and groundwater flows from saturated soils or other groundwater sources.
- B. Until final acceptance of the Project by Owner, Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof from any cause, including surface and subsurface water, whether arising from the execution or from non-execution of the Work.
- C. Contractor shall rebuild, repair, restore, and make good injuries or damages to any portion of the Work because of causes beyond the control of and without the fault of negligence of Contractor, including but not restricted to high water, floods, or acts of God, of the public enemy, or of governmental authorities.
- D. Contractor shall be responsible for the Project and shall take such precautions as may be necessary to construct the Project in a dry condition and provide for drainage, dewatering, and control of surface and subsurface water and shall erect any necessary temporary structures or other facilities at Contractor's expense.
- E. Contractor is advised that the Work may occur in a river or drainage channel subject to intermittent and extensive runoff conditions such that, unless the construction area is properly protected, localized flooding and extensive soil erosion may occur.
- F. Owner, at Owner's option, may require Contractor to update the water control plan.
- G. Contractor, at Contractor's expense, shall furnish necessary equipment and materials required to control surface and subsurface water in all areas from start of Work through the completion of the Project. Applicable permits related to specific controls shall be obtained by Contractor and all associated fees shall be borne by the Contractor.
- H. Contractor is responsible for furnishing; transporting; and installing all materials and equipment, well points, pumping, channelization, diversion, damming, or other means of controlling surface water, groundwater, runoff from other drainage tributaries, and pipe effluent as necessary to complete all of the Work in accordance with the Contract

Documents.

3.05 WATER QUALITY CONTROL

- A. Contractor shall comply with the "Louisiana Water Quality Control Regulations", promulgated, certifications issued, and the construction requirements listed below.
 - 1. In the event of conflicts between Federal and State water quality control laws, rules, or regulations, the more restrictive laws, rules, or regulations shall apply.
- B. This Work shall consist of measures needed for the purpose of minimizing water pollution, erosion, and sedimentation during the length of the construction activity.
- C. This Specification shall be followed to minimize the pollution of any watercourse, wetland, or water impoundment area.
- D. Stormwater Management Plan (SWMP):
 - 1. If a SWMP is provided in the Drawings and Specifications, it shall be used by Contractor as a guideline only. The Contractor shall be responsible for the development and implementation of the SWMP.
 - 2. Contractor shall submit SWMP for review by Owner in accordance with the submittal requirements defined in these Specifications. Adjustments to the approved plan may be required by Owner based on actual construction operations. Changes to the plan shall only be made with the written approval of the Owner.
 - 3. The SWMP may include measures for the control of erosion and sedimentation, and measures for stormwater quality management.
 - 4. Contractor shall take the necessary steps to comply with the intent of Owner's SWMP guidance, if it is provided in the Drawings and Specifications, and other applicable standards, permit conditions, and regulations of appropriate agencies.
- E. Contractor shall construct, operate, maintain, and remove in a safe manner temporary erosion and sediment control features described in Owner's SWMP guidance, if it is provided in the Drawings and Specifications.
- F. Contractor shall conduct the Work in such a manner to prevent contamination of adjacent watercourses, wetlands, or water impoundment areas.
- G. Diversion or Bypass around Erosion Control Facilities:
 - 1. Any diversion from, or bypass of water around facilities necessary to maintain compliance with the terms and conditions contained in SWMP is prohibited except:
 - a. Where unavoidable to prevent loss of life or severe property damage.
 - b. Where excessive storm drainage or runoff would damage the facilities.
 - 2. If diversion or bypass of water around the facilities occurs, Contractor shall immediately notify Owner of the occurrence.
 - 3. Contractor, at Contractor's expense, shall repair the breached or bypassed facilities and shall be responsible for the restoration of site drainage to conform to the requirements of the approved SWMP.
- H. Contractor shall provide design and implementation methods for overall site stormwater quality management to prevent contaminated surface runoff from entering the waters of the State and of erosion and sediment control measures for the purpose of correcting conditions unforeseen during the design of the Project, or for emergency situations that develop during construction.
- I. Contractor shall include temporary erosion and sediment control features for construction work outside the right-of-way that is necessary for borrow pits, haul roads, and equipment and material storage sites.
 - 1. Should the inclusion of these additional work areas cause the Project to be subject to Stormwater Discharge Permit(s), it shall be Contractor's responsibility to obtain the necessary permit(s).
- J. Contractor shall continuously maintain stormwater management features from start of Work through the completion of the Project, ensuring proper functionality.
- K. Contractor is responsible for the removal and storage and/or disposal of accumulated sediment.

- L. Any construction waste or salvageable material, excavation excess material, fill material, construction equipment, toxins, fuels, lubricants, and other petroleum distillates shall not be stored or stockpiled within fifty (50) feet of the ordinary high water line of any watercourse, wetland, or water impoundment area or other sensitive areas as identified by the Architect.
- M. Equipment servicing shall occur within Architect approved designated areas.
- N. Spill prevention and containment measures as proposed by Contractor and approved by Architect shall be used at all storage sites.

3.06 NOISE CONTROL

- A. Mechanical equipment shall be equipped with the best available mufflers to reduce noise.
- B. Contractor shall be responsible for obtaining any necessary permits and shall limit noise to the levels established in the permit and in local jurisdiction noise control ordinances, if applicable.
- C. Contractor shall perform noise level monitoring as necessary, or as requested by the Owner, to show that permitted noise levels are not exceeded.
- D. During the performance of the Work, whether on right-of-way provided by Owner or elsewhere, Contractor shall furnish all the labor, equipment, and materials required to reduce the noise nuisance.

END OF SECTION 01 57 19

SECTION 01 58 13 – TEMPORARY PROJECT SIGNAGE

PART 1 – GENERAL

1.1 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.

1.2 SECTION INCLUDES

- A. Official Project Identification Sign.
- B. Project informational signs.

1.3 SUMARRY

- A. The Contractor shall install an official Project Identification Sign at a location, constructed and with the graphic content as directed by the Architect.
- B. The Project Identification Sign shall show the name of the Project, the names of the Owner, Architect, Engineers and General Contractor.
- C. Project informational signs maybe required in order to direct traffic.
- D. Excepting for required signage, no additional Contractor, Subcontractor, or supplier signs may be installed on the site without prior authorization. It is the intent of the Owner to not allow signs that advertise for the Architect, Contractor, Subcontractors or Suppliers.

1.4 QUALITY ASSURANCE

- A. Sign Manufacturer to have experience in manufacturing signage with references on similar projects.
- B. Finishes, (Vinyl): Adequate to withstand weathering, fading, and chipping for duration of construction project.
- C. Excepting for required signage, no additional Contractor, Subcontractor, or supplier signs may be installed on the site without prior authorization. It is the intent of the Owner to not allow signs that advertise for the Architect, Contractor, Subcontractors or Suppliers.

1.5 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures.
- B. Shop Drawing: Show content, layout, lettering styles, color choices, foundation, structure, sizes, and grades of members.

PART 2 – PRODUCTS

2.1 SIGN MATERIALS

- A. Structure and Framing: New, wood, structurally adequate.
- B. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 3/4" thick, standard large sixes to minimum joints.
- C. Rough Hardware: Galvanized.
- D. Material: As selected by Architect.

E. Background: As selected by Architect.

F. Lettering: As selected by Architect.

2.2 PROJECT IDENTIFICATION SIGN

A. One graphic sign, 4' x 8', in the location, constructed and with the graphic content as directed by the Architect.

B. Graphic Design, Colors, Style of Lettering: Designated by Architect.

2.3 PROJECT INFORMATIONAL SIGNS

A. Vinyl informational signs with size lettering to provide legibility at 100-foot distance.

B. Provide at field office, and directional signs to direct traffic into and within the site. Relocate as Work progress requires.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install project identifications sign within 14 days after date fixed by Notice to Proceed.

B. Erect at designated location, as directed by Architect.

C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.

D. Install sign surface plumb and level. Anchor securely.

E. Exposed surfaces of sign, supports and, framing to be treated lumber.

3.2 MAINTENANCE

A. Maintain sign and supports clean, repair deterioration and damage.

3.3 REMOVAL

A. Remove sign, framing, supports, and foundations at completion of Project and restore area.

END OF SECTION 01 58 13

SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 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.

1.2 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 01 21 00 "Allowances" for products selected under an allowance.
 - 2. Section 01 23 00 "Alternates" for products selected under an alternate.
 - 3. Section 01 25 00 "Product Substitution Procedures" for requests for substitutions.
 - 4. Section 01 42 00 "References Standards" for applicable industry standards for products specified.

1.3 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.

1.4 ACTION SUBMITTALS

- A. 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. Note that no substitutions for convenience are allowed per Section 01 25 00.
 - 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 01 33 00 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

1.5 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.

1.6 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.

1.7 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 other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, 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.
- 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 be considered unless otherwise indicated.
 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 be considered 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 and/or products, 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.
- 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 Section 01 25 00 "Product 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.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. Note that substitutions for convenience are not allowed per Section 01 25 00. 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 Applicable)*

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 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.

1.2 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. Coordination of Owner-installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
 - 9. Correction of the Work.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for limits on use of Project site.
 - 2. Section 01 33 00 "Submittal Procedures" for submitting surveys.
 - 3. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 - 4. Section 02 41 19 "Selective Structure Demolition" for demolition and removal of selected portions of the building.
 - 5. Section 07 84 13 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.3 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.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- D. Certified Surveys: Submit two copies signed by land surveyor.
- E. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. 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. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. 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.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. 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

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

- 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.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner 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 Section 01 31 00 "Project Management and Coordination."

3.3 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.

3.4 FIELD ENGINEERING

- A. 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 or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. 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.
 - 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.
- C. 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.
- D. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

3.5 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 (2440 mm) in occupied spaces and 90 inches (2300 mm) 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.

3.6 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. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 10 00 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. 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 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.

- H. 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.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 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 (27 deg C).
 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 01 74 19 "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.

3.9 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements."

3.10 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.

END OF SECTION 01 73 00

SECTION 01 73 29 – CUTTING AND PATCHING

PART 1 - GENERAL

1.01 QUALITY ASSURANCE

- A. Requirements for Structural work: Do not cut and patch structural work in a manner that would result in a reduction of load carrying capacity or load deflection ratio.
- B. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in manner that would result in a reduction in their capacity to perform in the manner intended.
- C. Visual Requirements: Do not cut and patch work exposed on building's exterior or in its occupied spaces in a manner that would, in the architect's opinion, result in lessening the building's aesthetic qualities.

1.02 SUBMITTALS

- A. Procedural Proposal for Cutting and Patching: For prior approval where cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed from the Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

General: Except as otherwise indicated or as directed by the Architect. Use materials for cutting and patching that are identical to existing materials.

PART 3 - EXECUTION

3.01 CLEANING

- A. Thoroughly clean areas and spaces where work is performed or used as access to work.

END OF SECTION 01 73 29

SECTION 01 74 19 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
 - 1. Section 04 20 00 "Unit Masonry" for disposal requirements for masonry waste.
 - 2. Section 04 43 13.13 "Stone Masonry" for disposal requirements for excess stone and stone waste.

1.03 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
 - 1. Demolition Waste:
 - a. Asphalt paving.
 - b. Concrete.
 - c. Concrete reinforcing steel.
 - d. Brick.
 - e. Concrete masonry units.
 - f. Wood studs.
 - g. Wood joists.
 - h. Plywood and oriented strand board.
 - i. Wood paneling.
 - j. Wood trim.
 - k. Structural and miscellaneous steel.

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- l. Rough hardware.
 - m. Roofing.
 - n. Insulation.
 - o. Doors and frames.
 - p. Door hardware.
 - q. Windows.
 - r. Glazing.
 - s. Metal studs.
 - t. Gypsum board.
 - u. Acoustical tile and panels.
 - v. Carpet.
 - w. Carpet pad.
 - x. Demountable partitions.
 - y. Equipment.
 - z. Cabinets.
 - aa. Plumbing fixtures.
 - bb. Piping.
 - cc. Supports and hangers.
 - dd. Valves.
 - ee. Sprinklers.
 - ff. Mechanical equipment.
 - gg. Refrigerants.
 - hh. Electrical conduit.
 - ii. Copper wiring.
 - jj. Lighting fixtures.
 - kk. Lamps.
 - ll. Ballasts.
 - mm. Electrical devices.
 - nn. Switchgear and panelboards.
 - oo. Transformers
 - 2. Construction Waste:
 - a. Masonry and CMU.
 - b. Lumber.
 - c. Wood sheet materials.
 - d. Wood trim.
 - e. Metals.
 - f. Roofing.
 - g. Insulation.
 - h. Carpet and pad.
 - i. Gypsum board.
 - j. Piping.
 - k. Electrical conduit.
 - l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Plastic pails.

1.05 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.06 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
 1. Material category.
 2. Generation point of waste.
 3. Total quantity of waste in tons (tonnes).
 4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
 5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
 6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.07 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

1.08 WASTE MANAGEMENT PLAN

Retain option in "General" Paragraph below if Project requires selective demolition or building demolition.

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. [**Distinguish between demolition and construction waste.**] Indicate quantities by weight or volume but use same units of measure throughout waste management plan.

Select option "site-clearing" below if there is work in the Project.

- B. Waste Identification: Indicate anticipated types and quantities of demolition [**site-clearing**] and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.
- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
1. Total quantity of waste.
 2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
 3. Total cost of disposal (with no waste management).
 4. Revenue from salvaged materials.
 5. Revenue from recycled materials.
 6. Savings in hauling and tipping fees by donating materials.
 7. Savings in hauling and tipping fees that are avoided.
 8. Handling and transportation costs. Include cost of collection containers for each type of waste.
 9. Net additional cost or net savings from waste management plan.

PART 2 – PRODUCTS *(not applicable)*

PART 3 – EXECUTION

3.01 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.”
1. Comply with operation, termination, and removal requirements in Section 01 50 00 "Temporary Facilities and Controls.”
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. **[Coordinator shall be present at Project site full time for duration of Project.]**
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
1. Distribute waste management plan to everyone concerned within three days of submittal return.
 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Section 01 50 00 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 3. Store items in a secure area until installation.
 4. Protect items from damage during transport and storage.
 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- E. Plumbing Fixtures: Separate by type and size.
- F. Lighting Fixtures: Separate lamps by type and protect from breakage.
- G. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

- A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
- B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 1. Pulverize concrete to maximum 4-inch (100-mm) size.
- C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 1. Pulverize masonry to maximum 4-inch (100-mm) size.
 2. Clean and stack undamaged, whole masonry units on wood pallets.
- D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- E. Metals: Separate metals by type.
 1. Structural Steel: Stack members according to size, type of member, and length.
 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
- G. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- H. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- I. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- J. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- K. Carpet Tile: Remove debris, trash, and adhesive.
 1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- L. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- M. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 2. Polystyrene Packaging: Separate and bag materials.
 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.

- 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

3.06 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Recommendation of Acceptance (Substantial Completion) procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Division 01 Specification Sections

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Recommendation of Acceptance (Substantial Completion).
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS (ATTIC STOCK)

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections. Schedule shall include part/product number, manufacturer, contact info, and current cost.

1.6 RECOMMENDATION OF ACCEPTANCE (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 Recommendation of Acceptance (Substantial Completion): Complete the following a minimum of 10 days prior to requesting inspection for determining date of Recommendation 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 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual 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 Recommendation of Acceptance (Substantial Completion): Complete the following a minimum of 10 days prior to requesting inspection for determining date of Recommendation of 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 Recommendation of Acceptance (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 Recommendation of 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 Recommendation of Acceptance (Substantial Completion) 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. Reinspection: Request reinspection 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.

1.7 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 Section 01 29 00 "Payment Procedures."
 2. Punch List: Submit Recommendation of Acceptance (Substantial Completion) and 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. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 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.
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 ceiling, individual walls, floors, equipment, and building systems.
 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. MS Excel electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Recommendation of Acceptance (Substantial Completion) is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. 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.
- C. 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 (215-by-280-mm) 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. **Must provide a scanned or digitally generated copy of the binder in PDF format on medium acceptable to the Owner.**
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 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.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 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 Recommendation of Acceptance (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.
 - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.

- C. Pest Control: Comply with pest control requirements in Section 01 50 00 "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Recommendation of Acceptance (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

KING ARCHITECTS, INC

SECTION 01 78 39

SECTION 01 78 39 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Maintain at the site for the Owner one record copy of **(ALL of which are to be in both physical and locked .pdf formats)**:
 - 1. Drawings (one complete set of stamped prints).
 - 2. Specifications.
 - 3. Addenda, Change Orders and other modifications to the contract.
 - 4. Architect's written instructions.
 - 5. Approved shop drawings, product data and samples.
 - 6. Field test reports.
 - 7. Construction photographs, if applicable.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
 - 1. Provide locked cabinet or secure storage space for storage of samples.
 - 2. File samples in accordance with the numbering system used for specifications.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents and samples available at all times for inspection by Architect and Building Official.

1.03 MARKING DEVICES

- A. Label each document "Project Record" in neat large printed letters.
- B. Record information concurrently with construction progress.
 - 1. Do not conceal any work until the required information is recorded.
 - 2. Project record documents shall be jointly inspected for accuracy and completeness by Architect and Contractor prior to submission of each monthly request for partial payment.
- C. Drawings: Legibly mark the drawings to record actual construction.
 - 1. Indicate depths of various elements of foundation in relation to finish first floor datum.
 - 2. Indicate horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Indicate location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 4. Indicate field changes of dimension and detail.
 - 5. Indicate changes made by Change Order.
 - 6. Indicate details not on original contract drawings.
- D. Specifications and Addenda: Legibly mark each section to record.
 - 1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Change Order.

1.04 REVIEWS AND SUBMITTALS

- A. Architect and Contractor shall jointly review Project Record Documents for accuracy and completeness prior to

submission of each monthly partial payment request.

1. Before final application for payment is submitted, deliver the completed project record documents to Architect upon completion and acceptance of the work and deliver one copy of the project record documents to the Owner.

B. Accompany the submittal with transmittal letter in duplicate containing:

1. Date
2. Project title and number
3. Contractor's name and address
4. Title and number of each Record Document
5. Signature of Contractor or his authorized representative

1.06 ORIGINAL DOCUMENTS

A. There are to be four originals (for the Architect, the Owner (2), and the General Contractor) of the following:

1. Applications for Payment

B. There are to be six originals of the following;

1. 10-day Forms
2. Change Orders
3. Recommendation of Acceptance (and Punch List)

END OF SECTION 01 78 39

SECTION 03 00 00 – CONCRETE WORK

PART 1 – GENERAL

A. NON-SKID BROOM FINISH:

All exterior concrete flatwork subject to foot or vehicular traffic including covered walkways, ramps, parking and assembly areas shall receive a non-skid broom finish. Finish shall be applied perpendicular to the intended traffic flow with a stiff, coarse scrub broom or a brooming rake made for this purpose. Interior slabs will be broom finished only as noted on the drawings. Brooming to commence only after floating and when the water sheen is no longer visible.

B. TROWEL FINISH:

After floating and as soon as moisture sheen has disappeared and concrete has hardened sufficiently to prevent drawing moisture and fine materials to the surface, it shall be steel troweled to a smooth, uniform finish. Perform final troweling until surface is so hard that no mortar accumulates on the trowel when it is manipulated. Power troweling may be used in accordance with manufacturer's directions.

C. NON-SLIP DRY AGGREGATE FINISH:

When specified on the drawings, apply dry shake abrasive aggregate in accordance with the manufacturer's directions immediately prior to troweling. After troweling, finish the surface to a sandy texture.

D. SLABS TO RECEIVE OTHER FINISHES:

The contractor shall familiarize himself with requirements for installing other finish materials over concrete sub-floors and supply the workmanship and concrete finish required by the finish material manufacturer. Such finish materials include but not limited to:

12"x12" Resilient Flooring
Carpet
Sealed Wood Athletic Flooring

24"x24" Porcelain Floor Tile
Stain for Concrete
Existing to Remain (Patch & Repair)

END OF SECTION 03 00 00

KING ARCHITECTS, INC

SECTION 03 10 00

SECTION 03 10 00 - CONCRETE FORMWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.2 RELATED SECTIONS

- A. Section 03 2000 - Concrete Reinforcement.
- B. Section 03 3000 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete.
- C. ACI 347 - Recommended Practice For Concrete Formwork.
- D. ASME A17.1 - Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks
- E. PS 1 - Construction and Industrial Plywood.

1.4 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.5 SUBMITTALS FOR REVIEW

- A. Section 013000 - Submittals: Procedures for submittals.
- B. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.
- C. Product Data: Provide data on void form materials and installation requirements.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 347, 301, and 318.
- B. Design formwork under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for design, fabrication, erection and removal of formwork.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Section 016000 - Material and Equipment: Transport, handle, store, and protect products.

KING ARCHITECTS, INC

SECTION 03 10 00

- B. Deliver void forms and installation instructions in manufacturer's packaging.
- C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

- A. Plywood: Douglas Fir species; solid one side, tight face sheathing grade; sound undamaged sheets with clean, true edges.

2.2 STEEL FORM MATERIALS

- A. Steel: Removable steel forms designed and fabricated for continuous reuse may be used for obtaining concrete sections indicated on the Construction Drawings.

2.3 FORMWORK ACCESSORIES

- A. Form Ties: Removable or Snap-off type, galvanized metal.
- B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.
- C. Corners: Chamfered rigid plastic or wood strip type; maximum possible lengths.
- D. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Flashing Reglets: Galvanized steel 22 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

- A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.3 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members which are not indicated on Drawings.

- F. Provide fillet and chamfer strips on external corners of all concrete members which are to remain exposed.
- G. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- H. Coordinate this section with other sections of work which require attachment of components to formwork.
- I. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

3.4 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are effected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items which will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- D. Position recessed reglets for brick veneer masonry anchors to spacing and intervals specified in Division 04-Masonry
- E. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Install waterstops in accordance with manufacturer's instructions continuous without displacing reinforcement.
- G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- H. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.7 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.
- B. Camber slabs and beams in accordance with ACI 301.

3.8 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Control: Field inspection and testing.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
- C. Do not reuse formwork for concrete surfaces to be exposed to view, if such re-use will have an adverse effect on the appearance of the finished concrete. Do not patch formwork.

3.9 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION 03 10 00

SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

- A. Section 031000 - Concrete Formwork.
- B. Section 033000 - Cast-in-Place Concrete.
- C. Section 033460 - Concrete Floor Finishing: Reinforcement for concrete floor toppings.

1.3 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements For Reinforced Concrete.
- C. ACI SP-66 - American Concrete Institute - Detailing Manual.
- D. ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
- E. ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
- F. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- G. ASTM A496 - Deformed Steel Wire Fabric for Concrete Reinforcement.
- H. ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- I. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- J. ASTM A616 - Rail Steel Deformed and Plain Bars for Concrete Reinforcement.
- K. ASTM A617 - Axle Steel Deformed and Plain Bars for Concrete Reinforcement.
- L. ASTM A704 - Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
- M. ASTM A706 - Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
- N. ASTM A767 - Zinc-Coated (Galvanized) Bars for Concrete Reinforcement.
- O. ASTM A775 - Epoxy-Coated Reinforcing Steel Bars.
- P. ASTM D3963 - Epoxy-Coated Reinforcing Steel.
- Q. AWS D1.4 - Structural Welding Code for Reinforcing Steel.
- R. AWS D12.1 - Welding Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.
- S. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.
- T. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.
- U. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.4 SUBMITTALS FOR REVIEW

- A. Section 013000 - Submittals: Procedures for submittals.
- B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.

1.5 SUBMITTALS FOR INFORMATION

- A. Section 013000 - Submittals: Procedures for submittals.
- B. Submit certified copies of mill test report of reinforcement materials analysis.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice, ACI 301.
- B. Provide Architect/Engineer with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.
- C. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located.
- D. Welders' Certificates: Submit under provisions of Section 014000 Manufacturer's Certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

PART 2 PRODUCTS

2.1 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, unfinished.
- B. Reinforcing Steel Mat: ASTM A704, ASTM A615, 60 ksi yield grade; steel bars or rods, unfinished.
- C. Stirrup Steel: ASTM A82, unfinished.
- D. Welded Steel Wire Fabric: ASTM A185 Plain Type; in flat sheets or coiled rolls; unfinished.
- E. Reinforcing Bar Splice Couplers: Lenton A-2 splice couplers, sized per the Construction Drawings, manufactured by Erico Concrete Products, Inc., Cleveland, Ohio. Couplers shall meet the requirements of ACI 318-95 with a splice strength requirement of 125% of specified yield when using ASTM A 615 Grade 60, steel reinforcing bars.

2.2 ACCESSORIES

- A. Tie Wire: Minimum 16 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.
- C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type; size and shape as required.

2.3 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice ACI 318.
- B. Weld reinforcement in accordance with AWS D1.4.

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SECTION 03 20 00

- C. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Conform to applicable code for concrete cover over reinforcement.
- E. Bond and ground all reinforcement to requirements of Division 26.

3.2 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Control: Field inspection and testing.
- B. Inspect for acceptability.

END OF SECTION 03 20 00

SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General provisions of Contract including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- A. The extent of concrete work is shown on drawings.
- B. Concrete paving and walks are specified in Division 32.

1.03 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with provisions of following codes, specifications and standards except where more stringent requirements are shown or specified:
 - 1. ACI 301 "Specifications for Structural Concrete for Buildings".
 - 2. ACI 318 "Building Code Requirements for Reinforced Concrete".
 - 3. "Concrete Reinforcing Steel Institute Manual of Standard Practice".

1.04 SUBMITTALS:

- A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Engineer.
- B. Shop Drawings: Reinforcement: Submit shop drawings for fabrication bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars and arrangement of concrete reinforcement. Include special reinforcement required and openings through concrete structures.
- C. Samples: Submit samples of materials as specified and as otherwise requested by Engineer including names, sources, and descriptions.
- D. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.
- E. Material Certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted by Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

PART 2 - PRODUCTS

2.01 FORM MATERIALS:

- A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.
- B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely

affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 REINFORCING MATERIALS:

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Steel Wire: ASTM A 82 plain, cold-drawn, steel.
- C. Welded Wire Fabric: ASTM A 185, welded steel wire fabric, smooth.
- D. Welded Wire Fabric: ASTM A 497, welded steel wire fabric, deformed.
- E. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable.
- F. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
- G. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI Class 1) or stainless steel protected (CRSI Class 2).

2.03 CONCRETE MATERIALS:

- A. Portland Cement: ASTM C 150, Type 1, unless otherwise acceptable to Engineer.
- B. Use one brand of cement throughout project, unless otherwise acceptable to Engineer.
- C. Fly Ash: ASTM C 618, Type C or Type F. Limit Fly Ash to 15% by weight of total cement weight.
- D. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source.
- E. Do not use fine or coarse aggregates containing spalling-causing deleterious substances.
- F. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to Engineer
- G. Lightweight Aggregates: ASTM C 330.
- H. Water: Potable.
- I. Air-Entraining Admixture: ASTM C 260.
- J. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
- K. Water-Reducing Admixture: ASTM C 494, Type A, and contain not more than 0.1% chloride ions.
- L. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following
 - 1. "Eucon WR-75"; Euclid Chemical Co.
 - 2. "Pozzolith 344"; Master Builders.
 - 3. "Plastocrete 160"; Sika Chemical Corp.
 - 4. "Chemtard"; Chem-Masters Corp.
- M. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G and contain not more than 0.1% chloride ions.

- N. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following
1. "WRDA 19"; W.R. Grace
 2. "PSP"; Protex Industries Inc.
 3. "Super P"; Anti-Hydro.
 4. "Sikament"; Sika Chemical Corp.
 5. "Mighty 150"; ICI Americas Corp.
 6. "Eucon 37"; Euclid Chemical Co.
 7. "PSI Super"; Gifford-Hill.
 8. "Pozzolith 400"; Master Builders.
- O. Water-Reducing Non-Chloride Accelerator Admixture: ASTM C 494, Type E, and containing not more than 0.1% chloride ions.
- P. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
1. "Accelguard 80"; Euclid Chemical Co.
 2. "Pozzolith 500"; Master Builders.
- Q. Water-Reducing Retarding Admixture: ASTM C 494, Type D, and contain not more than 0.1% chloride ions.
- R. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
1. "Edoco 20006"; Edoco Technical Products.
 2. "Pozzolith 300-R"; Master Builders.
 3. "Eucon Retarder 75"; Euclid Chemical Co.
 4. "Daratard"; W.R. Grace.
 5. "Plastiment"; Sika Chemical Co.
- S. Calcium chloride or admixtures containing more than 0.1% chloride ions are not permitted. Admixtures containing any chloride ions shall not be used for concrete supported by metal deck.

2.04 RELATED MATERIALS:

- A. Rubber Waterstops: Corps of Engineers CRD-C 513.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include; but are not limited to, the following:
 - a. The Burke Co.
 - b. Progress Unlimited.
 - c. Williams Products.
 - d. Edoco Technical Products.
- B. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include; but are not limited to, the following:
 - a. AFCO Products
 - b. The Burke Co.
 - c. Edoco Technical Products.
 - d. Greenstreet Plastic Products.
 - e. Harbour Town Products.
 - f. W. R. Meadows.
 - g. Progress Unlimited.
 - h. Schleigel Corp.
 - i. Vinylex Corp.
- C. Moisture Barrier: Provide moisture barrier cover over prepared base material where indicated. Use only materials as specified in Specification Section 03310 – Vapor Barriers:

1. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.
- D. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
 1. Waterproof paper.
 2. Polyethylene film.
 3. Polyethylene-coated burlap.
- E. Liquid Membrane Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type 1, Class A unless other type acceptable to Architect. Moisture loss not more than 0.055 gr./sq. cm. when applied to 200 sq. ft./gal.
 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include but are not limited to, the following:
 - a. "Masterseal"; Master Builders.
 - b. "A-H 3 Way" Sealer"; Anti-Hydro Waterproofing Co.
 - c. "Ecocure"; Euclid Chemical Co.
 - d. "Clear Seal"; W.R. Grace.
 - e. "J-20 Acrylic Cure"; Dayton Superior.
 - f. "Sure Cure"; Kaufman Products Inc.
 - g. "Spartan-Cote"; The Burke Co.
 - h. "Sealkure"; Toch Div. - Carboline.
 - i. "Kure-N-Seal"; Sonneborn-Contech.
 - j. "Polyclear"; Upco Chemical/USM Corp.
 - k. "L&M Cure"; L & M Construction Chemicals.
 - l. "Klearseal"; Setcon Industries.
 - m. "LR-151"; Protex Industries.
 - n. "Hardtop"; Gifford-Hill.
- F. Bonding Compound: Polyvinyl acetate or acrylic base, rewettable type.
 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
- G. Epoxy Adhesive: ASTM C 881, two component material suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.
 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. "Epoxite"; A. C. Horn.
 - b. "Edoco 2118 Epoxy Adhesive"; Edoco Technical Prod.
 - c. "Sikadur Hi-Mod"; Sika Chemical Corp.
 - d. "Euco Epoxy 463 or 615"; Euclid Chemical Co.
 - e. "Patch and Bond Epoxy"; The Burke Co.
 - f. "Sure-Poxy"; Kaufman Products Inc.

2.05 PROPORTIONING AND DESIGN OF MIXES:

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to Engineer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Engineer.
- B. Submit written reports to Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Engineer.
- C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
 1. 4000 psi 28-day compressive strength; W/C ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).
 2. 3000 psi 28-day compressive strength; W/C ratio, 0.58 maximum (non-air-entrained), 0.46 maximum (air-entrained).

- D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in work.
- E. Admixtures:
1. Use water-reducing admixture or high range water-reducing admixture (super plasticizer) in concrete as required for placement and workability.
 2. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-or- minus 1-1/2% within following limits:

Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or subjected to hydraulic pressure:
 - a. 4.5% (moderate exposure); 5.5% (severe exposure) 1-1/2" max. aggregate.
 - b. 4.5% (Moderate exposure); 6.0% (severe exposure) 1" max. aggregate.
 - c. 5.0% (moderate exposure); 6.0% (severe exposure) 3/4" max. aggregate.
 - d. 5.5% (moderate exposure); 7.0% (severe exposure) 1/2" max. aggregate.
 - e. Other Concrete: 2% to 4% air.
- F. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.
- G. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (WC) ratios as follows:
1. Subjected to freezing and thawing; WC 0.50.
- H. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps, slabs, and sloping surfaces: Not more than 3".
 2. Reinforced foundation systems: Not more than 4".
 3. Concrete containing HRWR admixture (super plasticizer): Not more than 8" after addition of HRWR to verified 2R-3-slump concrete.
 4. Other concrete: Not more than 4".

2.06 CONCRETE MIXES:

- A. Job-Site Mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu.yd., or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd., or fraction thereof.
- B. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity and amount of water introduced.
- C. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.
- D. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.
- E. When air temperature is between 85EF (30EC) and 90EF (32EC), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90EF (32 C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 FORMS:

- A. Design, erect support brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

- B. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- C. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.
- E. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.
- F. Chamfer exposed corners and edges as indicated using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- G. Form Ties: Factory-fabricated, adjustable-length, removable or snapoff metal form ties designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
- H. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is 1" inside concrete and will not leave holes larger than 1" diameter in concrete surface.
- I. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.
- J. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

3.02 PLACING REINFORCEMENT:

- A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
- D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least two full meshes and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction. At areas other than slab on grade, provide mesh in flat sheets.

3.03 JOINTS:

- A. Control joints in Slabs-on-Ground: Place control joints in concrete slabs-on-grade where shown or indicated on drawings. Construction joints shall tongue and groove made by using preformed galvanized steel metal edge forms with a minimum depth of at least the depth of concrete slab at joint location. Floor slabs-on-grade shall be poured in a checkerboard pattern in areas not exceeding 500 square feet. Contractor is to provide plan of pour locations and pattern to engineer for approval prior to commencing concrete placement. In event that control joints are not shown on drawings, contractor shall provide his proposed layout of control joints to engineer for approval. The maximum spacing of joints will not exceed 25 feet in any direction.
- B. Form contraction joints by inserting premolded plastic, hardboard or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.

Contraction joints may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.

- C. Joint sealant material is specified in Division-7 sections of these specifications.

3.04 INSTALLATION OF EMBEDDED ITEMS:

- A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.
- B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

3.05 PREPARATION OF FORM SURFACES:

- A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.
- B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.
- C. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- D. Coat steel forms with a non-staining rust-preventative form oil or otherwise protect against rusting. Rust stained steel formwork is not acceptable.

3.06 CONCRETE PLACEMENT:

- A. Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.
- B. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.
- C. General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.
 - 1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness.
 - 2. If a section cannot be placed continuously, provide construction joints as herein specified.
 - 3. Deposit concrete as nearly as practicable to its final location to avoid segregation.
- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid

- inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- E. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
 - F. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
 - G. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
 - H. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - I. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
 - J. Maintain reinforcing in proper position during concrete placement operations.
 - K. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

When air temperature has fallen to or is expected to fall below 40°F (4°C) uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50°F (10°C) and not more than 80°F (27°C) at point of placement.
 - L. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - M. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.
 - N. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
 - O. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90°F (32°C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
 - 1. Cool steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 - 2. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.
 - P. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.07 FINISH OF FORMED SURFACES:

- A. Rough Form Finish: For formed concrete surfaces not exposed-to view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.
- B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing,

painting, or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

3.08 MONOLITHIC SLAB FINISHES:

- A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.

After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Check and level surface plane so that depressions between high spots do not exceed 5/16" under a 10' straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

- B. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint or other thin film finish coating system.

After floating, begin first trowel finish operation using power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a level surface plane so that depressions between high spots do not exceed 1/4" under a 10' straightedge. Grind smooth surface defects which would telegraph through applied floor covering system.

3.09 CONCRETE CURING AND PROTECTION:

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
 2. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.
- B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.
- C. Provide moisture curing by following methods.
1. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet.
 2. Place absorptive cover to provide coverage of concrete surfaces and edges with 4" lap over adjacent absorptive covers.
- D. Provide moisture-cover curing as follows:
1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive.
 2. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- E. Provide curing and sealing compound to interior slabs with resilient flooring, carpet over cushion, or left exposed; and to exterior slabs, walks, and curbs as follows:
1. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours).
 2. Apply uniformly in continuous operation by powerspray or roller in accordance with manufacturer's directions.
 3. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 4. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring (such as

ceramic or quarry tile, glue-down carpet) painting, and other coatings and finish materials, unless otherwise acceptable to Architect.

- F. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
- G. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of appropriate curing method.

Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover unless otherwise directed.

- H. Sealer and Dustproofer: Apply a second coat of specified curing and sealing compound only to surfaces given a first coat.

3.10 SHORES AND SUPPORTS:

- A. Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified.

3.11 REMOVAL OF FORMS:

- A. Formwork not supporting weight of concrete such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50EF (10EC) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

3.12 RE-USE OF FORMS:

- A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.13 MISCELLANEOUS CONCRETE ITEMS:

- A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades unless otherwise shown or directed, after work of other trades is in place. Mix place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and 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 to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
- D. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout.
- E. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.

3.14 CONCRETE SURFACE REPAIRS:

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.

1. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1".
 2. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush-coat the area to be patched with specified bonding agent.
 3. Place patching mortar after bonding compound has dried.
- B. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- C. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Engineer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- D. Repair concealed, formed surfaces where possible that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
- E. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.
- F. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets and other objectionable conditions.
- G. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
- H. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Engineer.
- I. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- J. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
- K. Perform structural repairs with prior approval of Engineer for method and procedure, using specified epoxy adhesive and mortar.
- L. Repair methods not specified above may be used, subject to acceptance of Engineer.

3.15 QUALITY CONTROL TESTING DURING CONSTRUCTION:

- A. The Owner will employ a testing laboratory to perform tests and to submit test reports.
- B. Sampling and testing for quality control during placement of concrete may include the following, as directed by

Engineer.

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 2. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 3. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each day's pour of each type of air entrained concrete.
 4. Concrete Temperature: Test hourly when air temperature is 40°F (4°C) and below, and when 80°F (27°C) and above; and each time a set of compression test specimens made.
 5. Compression Test Specimen: ASTM C 31; one set of 3 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
 6. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, one specimen tested at 28 days and one specimen retained in reserve for later testing if required.
 - a. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least randomly selected batches or from each batch if fewer than 5 are used.
 - b. When total quantity of a given class of concrete is less than 50 cu. yds., strength test may be waived by Engineer if, in his judgement, adequate evidence of satisfactory strength is provided.
 - c. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 - d. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.
- C. Test results will be reported in writing to Engineer and Contractor within 24 hours that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- E. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

END OF SECTION 03 30 00

SECTION 03 35 00 – CONCRETE FINISHING

PART 1 – GENERAL

1.01 SECTION INCLUDES:

- A. Pigmented interior and exterior wall coating.
- B. Pigmented interior and exterior floor coatings.
- C. Interior and exterior clear floor sealers.
- D. Decorative floor and wall overlay techniques to mimic pattern, texture and color of natural occurring materials and artistic designs.

1.02 RELATED SECTIONS:

- A. Section 03 30 00 - Cast In-Place Concrete: Concrete mix designs and additives.

1.03 REFERENCES

- A. AASHTO T260 - Standard Method of Test for Sampling and Testing for Chloride Ion In Concrete and Concrete Raw Materials.
- B. AASHTO T259 - Standard Method of Test for Resistance of Concrete to Chloride Ion Penetration.
- C. ANSI A 118.4 - Specifications for Latex Portland Cement Mortar.
- D. ASTM C23 - Determination of Particle Size Distribution of Soils in Forensic Science Using Classical and Modern Instrumental Methods.
- E. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
- F. ASTM C78 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
- G. ASTM C97 - Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
- H. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).
- I. ASTM C170 - Standard Test Method for Compressive Strength of Dimension Stone.
- J. ASTM C190 - Method of Test for Tensile Strength of Hydraulic Cement Mortars.
- K. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- L. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.
- M. ASTM C482 - Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement.
- N. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- O. ASTM C666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.

- P. ASTM C880 - Standard Test Method for Flexural Strength of Dimension Stone.
- Q. ASTM C882 Modified - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
- R. ASTM C944 - Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotating-Cutter Method.
- S. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
- T. ASTM C1185 - Standard Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards.
- U. ASTM C1186 - Standard Specification for Flat Non-Asbestos Fiber-Cement Sheets.
- V. ASTM D1849 - Standard Test Method for Package Stability of Paint.
- W. ASTM D3359 - Standard Test Methods for Measuring Adhesion by Tape Test.
- X. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test.
- Y. ASTM D4946 - Standard Test Method for Blocking Resistance of Architectural Paints.
- Z. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- AA. ASTM G53 - Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- 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. Shop Drawings:
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Five years experience.
- B. Installer Qualifications:
 - 1. Five years experience.
- 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, color, and sheen are approved by Architect.

3. Refinish mock-up area as required to produce acceptable work.

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 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.'

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: SureCrete Design Products, which is located at: 15246 Citrus Country Dr. ; Dade City, FL 33523; Toll Free Tel: 800-544-8488; Tel: 352-567-7973; Email: [request info \(jackthomas@surecretedesign.com\)](mailto:request info (jackthomas@surecretedesign.com)); Web: www.surecretedesign.com.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.02 STAMP OVERLAY

- A. Stamp Topping/Overlay: SureStamp by SureCrete Design Products.
 1. Performance:
 - a. Thickness: 1/4 inch to 3/8 inch (6.35 mm to 9.5 mm).
 - b. Compressive Strength (ASTM C109): 7 day 3580 psi (24,683. kPa), 28 day 4350 psi (29,972 kPa).
 - c. Flexural Strength (ASTM C78): 9 day 880.7 psi (6063 kPa), 28 day 1494.3 psi (10,296 kPa).
 2. Pigment Color: Color Packs as manufactured by SureCrete Design Products, with selection from manufacturer's 30 standard colors.
- B. Topping/Overlay Bonding Agent: SureBond as manufactured by SureCrete Design Products.
- C. Tool Release Agent: Liquid Release as manufactured by SureCrete Design Products.
- D. Stamping Tool: Standard and custom fabricated concrete stamping tools to achieve required surface profile, texture and design required. Urethane materials compatible with products as manufactured by SureCrete Design Products.

2.03 SPRAY TEXTURES

- A. Copolymer Modified Cementitious Spray Texture Finish: SureCrete SureTex as manufactured by SureCrete Design Products:
 1. Performance:
 - a. Compressive Strength (ASTM C109): 28-day 3965 psi (27319 kPa).
 - b. Abrasion Resistance, Modified Taber: 28 days percent loss - 500 cycles - <1 percent.
 - c. Tensile Strength (ASTM C190): 28-day 390 psi (2687 kPa).
 - d. Flexural Strength (ASTM C348): 28-day 885 psi (6098 kPa).
 - e. Mosaic Shear (ANSI A 118.4): 28-day 268 psi (1847 kPa).
 - f. Density: 126.10 lb/cf (2020 kgm/cu. m).
 2. Base Coat Tint: As selected from manufacturer's standard tints.
 3. Finish Coat Tint: As selected from manufacturer's standard tints.

4. Finish Coat Texture: Trowel.
- B. Copolymer Modified Cementitious Spray Texture Finish:
1. Performance:
 - a. Abrasion Resistance, Modified Taber: 28 days percent loss - 500 cycles - < 0.40 percent.
 - b. Tensile Strength (ASTM C190): 28-day 430 psi (2963 kPa).
 - c. Flexural Strength (ASTM C48): 28-day 980 psi (6752 kPa).
 - d. Mosaic Shear (ANSI A 118.4): 28-day 275 psi (1895 kPa).
 - e. Density: 126.10 lb/cf (2020 kgm/cu. m).
 2. Product: SureCrete SureSpray as manufactured by SureCrete Design Products.
 - a. Base Coat Tint:
 - b. Finish Coat Tint:
 - c. Finish Coat Texture: Trowel.
 - d. Finish Coat Texture: Knock-down.
 - e. Finish Coat Texture: Bubble texture.

2.04 CONCRETE RESTORATION PRODUCTS

- A. Copolymer Modified Cementitious Topping: SureBroom as manufactured by SureCrete Design Products. Trowelable or squeegee applied cementitious topping for leveling and retexturing interior and exterior concrete surfaces.
1. Performance:
 - a. Compressive Strength (ASTM C-109): 7-day 3750 psi (25,838 kPa), 28 day 6100 psi (42,029 kPa).
 - b. Abrasion Resistance (ASTM C-944): 1 day 1 gram lost, 7 day 1 grams lost.
 - c. Tensile Strength (ASTM C-190): 1 day 280 psi (1929 kPa), 7-day 560 psi (kPa), 28 day 890 psi (6132 kPa).
 - d. Flexural Strength (ASTM C-78): 7-day 850 psi (5857 kPa), 28 day 1500 psi (10335 kPa).
 - e. Shear Bond (ASTM C-882 Modified): 7-day 1100 psi (7579 kPa), 28 day 1650 psi (11,369 kPa) (Mortar scrubbed into substrate).
 2. Finish: Texture that resembles freshly poured and broomed concrete.
- B. Acrylic Modified Micro-Topping: Product: SureCrete Feather Finish as manufactured by SureCrete Design Products. Base and topcoat system to achieve predictable results.

2.05 SEALERS / ANTI-SLIP / FINISH

- A. Waterborne Epoxy Sealer: Water based epoxy sealer/primer for vertical or horizontal cementitious surfaces.
1. Performance:
 - a. Appearance (cured): Clear sheen.
 - b. Water Resistance: Excellent, Beads water.
 - c. Mechanical Stability: Excellent.
 - d. Light Stability: Yellows.
 - e. Solids: 52 percent.
 - f. VOC content: 175 gm/L.
 - g. Set to Touch: 5 to 8 hours.
 - h. Pot life: Approx. 20 minutes.
 - i. Chemical Resistance: Refer to manufacturer's data.
 2. Product: SureCrete Dura-Kote WB Color Epoxy as manufactured by SureCrete Design Products.
 - a. Color: As selected by Architect.
 3. Product: SureCrete Dura-Kote WB Epoxy as manufactured by SureCrete Design Products.
- B. Color: Clear.

2.06 CRACK TREATMENT

- A. Epoxy Kit
- B. 2-part Urethane

2.07 MAINTENANCE FLOOR SYSTEM

- A. Maintenance Solution: SureFinish as manufactured by SureCrete Design Products. Diethylene glycol monoethyl ether in suspension.

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 the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Prepare exterior surfaces with chemical cleaner/profiler followed by rinsing with 3000-psi (20670 kPa) (minimum) pressure washer equipped with a turbo-tip to remove loose surface matrix and loose aggregate.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.04 SEALERS

- A. Surface Preparation: Surface shall be dry and clean of dust, dirt, oils, and other surface contaminants. Provide surface profiling on concrete deck surfaces that are smooth, hard, and dense per manufacturer's recommendations.
 - 1. Provide chemical profiling with products compatible and manufactured by sealer manufacturer.
- B. Coverage Verification:
 - 1. Coverage is dependent upon porosity of substrate. Provide RILEM and similar test to verify application to achieve stated product performance. Adjust application, coverage, and methods to comply with manufacturer's product specifications.
- C. Application: Apply when air and surface temperatures are between 60° F (16° C) and 90° F (32° C) with relative humidity below 85 percent during application and cure time. High humidity (above 75 percent) will slow cure rates and affect gloss. Substrate shall be a minimum of 5 degrees above dew point.
- D. Abrasive Agent: Broadcast between coats of sealer on a deck surface at coverage rate recommended by manufacturer.

3.05 CONCRETE RESTORATION / CONCRETE REPAIR

- A. Remove all laitance, efflorescence, chemical contaminants, grease, oil, old paint, and other foreign matter. The surface shall require profiling. Sand blasting, grinding or abrasive blasting may be necessary achieve bare concrete.

- B. The prepared surface shall be clean and structurally sound.
- C. Substrate must be 40° F (4° C) and rising before installation. Surface at 90° F (32° C) and above shall be cooled before installation. Dampen area with fog tipped sprayer before using, leaving no puddles.
- D. Mix consistency shall be maintained throughout application process. Do not apply in layers greater than 2 inches (51 mm). No tempering with additional water is allowed. Begin application immediately after mixing with water and work thoroughly into surface of area to be filled. Do not overwork. Minimize troweling.

3.06 CONCRETE RESTORATION / CEMENTITIOUS TOPPING

- A. Base Coat: Mix product with water per manufacturer's instructions. Mechanically mix to a lump-free consistency.
 - 1. Begin by saturating area to be covered with water. Before application of base coat, remove any excess water leaving no puddles. The surface shall be saturated, surface dry (SSD).
 - 2. Place the base coat with a brush, broom, or squeegee and force into surface completely covering existing concrete. Lightly broom to obtain profile.
- B. Finish Coat: Mix finish coat same as the base coat mix ratios.
 - 1. Begin by saturating the base coat with water, leaving no standing puddles, SSD.
 - 2. Place material with steel squeegee and lightly broom. As product dries, scrape and use leaf blower to remove loose material.
- C. Apply two coats of selected sealer.
- D. Curing: Allow to air cure after application.
 - 1. Prevent the overlay from drying out too quickly. Provide favorable application conditions by working during cooler hours, keeping all materials shaded prior to mixing and setting up plastic or temporary walls to block wind.

3.07 STAMP OVERLAY / CEMENTITIOUS TOPPING

- A. Bond Coat: Begin by saturating area to be covered with water. Before application of bond coat, remove any excess water leaving no puddles. The surface should be saturated, surface dry (SSD). Place the bond coat with a squeegee and force into surface completely covering existing concrete with this slurry. Apply only in sections that may be covered with stamp mix while maintaining a wet edge.
- B. Stamp Coat: While the bond coat is still wet apply stamp coat. Mix water and integrally tint if required. Mechanically mix to a lump-free consistency. Use a gauge rake to apply stamp coat at 1/4 to 3/8 inch (6 mm to 9.5 mm), then steel trowel, fresno, or steel squeegee to a smooth and slick surface. Use surface retarder in hot and/or windy conditions to slow initial evaporation of surface. Allow stamp coat to set until material does not stick easily to the finger when touched but yields to pressure.
- C. Apply stamps, texture to affect pattern desired. Use clear liquid release agent.
- D. Clean-up and detail double lines from stamping tools.
- E. Apply secondary coloring and 2 coats of selected sealer.

3.08 SURFACE TREATMENTS

- A. Dry Shake Surface Hardeners:
 - 1. Hand broadcast evenly to the surface of freshly placed concrete when the concrete reaches the point where no bleed water remains on the surface.
 - 2. Do not spray water on the treated substrate.

3. Apply in two shakes, with two-thirds being applied in the first shake and one-third in the second shake (holding back a small amount for touch up work).
4. After the first shake, the surface is floated. Do not trowel between applications.
5. Apply the second shake perpendicular to the first application in a uniform manner. Float in and trowel to the final finish desired.
6. Install construction or control joints as soon as possible. Prevent trowel burns, especially at tooled joints and edges, when hard steel troweling.

3.09 STAMPED CONCRETE

- A. Place concrete, screed, float with magnesium or wood according to industry standards. Allow bleed water to disappear and trowel with steel fresno.
- B. Apply stamps, texture to affect pattern desired. Use release agents.
- C. After the slab is sufficiently cured, carefully sweep up and contain excess powder release. Rinse the remaining excess with hose equipped with trigger nozzle and soft broom. Keep masking in place during clean-up. Best results are achieved by leaving the release color in the lower recesses of patterns, especially grout lines. Release shall be removed to allow the subsequent sealer to adhere to the finished product.

3.10 STAINING

- A. Eco-Stain Application:
 1. Apply first coat with SP sprayer on dry surface using caution to avoid track lines from the spray pattern. A circular motion with the wand is desired. Eco-Stain may be applied full strength or diluted with water to desired rate.
 2. Applying additional coats is optional. Supplementary colors may be combined at desired rates and number of coats. Customarily apply lighter colors first. In addition to spraying some contractors employ mopping, sponging, and ragging, especially for accenting.
 3. No clean-up or neutralization is required prior to sealing.
- B. Earth Tone Application:
 1. Apply first coat with SP sprayer on dry surface using caution to avoid track lines from the spray pattern. A circular motion with the wand is desired. Earth Tones may be applied full strength or diluted with water to desired rate. The first coat may be brushed or brushed into the surface. Use color-fast, acid resistant brushes or brooms. If stain is brushed, maintain a wet edge, never allow a wet broom to drag across a dry slab, as it may leave a permanent streak or brush stroke.
 2. Areas that may call for brushing are sloped surfaces, slabs with "bird baths," stamped concrete, and overlays. Do not walk on the wet surface. Footprints will appear darker than the adjacent areas. If stepped on by accident, the footprints should be brushed out immediately. Allow the first coat to dry to the touch.
 3. Apply second coat in the same manner as the first coat, as described above. Do not brush the second coat. Allow to dry overnight.
- C. Multiple Colors:
 1. Colors may be layered or alternated as desired. For crisp, distinct, and separate color changes, a score line should be utilized. Chemical stain will bleed across traditional masking. Shielding or masking at a score line will prevent the bleeding of colors as long as the stain is not puddled heavily at score lines.
 2. Where both Earth Tones and Vivid Tones are part of the same application, apply Earth Tones first and complete cleanup before applying Vivid Tones.
- D. Translucent Highlighting Application:
 1. Allow stamp overlay or stamped to cure for a minimum of 12 hours before the application of highlighting. In cooler temperatures below 50 degrees F (10 degrees C) cure times may have to be extended. After drying sufficiently to be tack-free highlighting shall be sealed as scheduled.

2. Thoroughly mix pigment to maintain suspension. Highlighting may be sprayed from a solvent resistant (Viton seals) pump-up sprayer. For very small areas, vertical surfaces, or intricate tight work highlighting may be brushed or sponged.
- E. Sealer:
 1. Two coats of sealer are required. The surface shall be clean, completely dry and at least 40 degrees F (4 degrees C) during the sealing application. To apply with roller use an appropriate roller sleeve. Apply one thin coat forcing the sealer into the surface. Allow sealer to dry, and then repeat the process with a second coat of sealer.

3.11 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 03 35 00

SECTION 04 05 13 – MASONRY MORTARING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Mortar for masonry work specified in Section 04 21 13.

1.02 REFERENCES

- A. Industry Standards: The Industry Standards listed below refer to the latest date of issue or edition, unless otherwise indicated.
- B. Requirements, abbreviations and acronyms for reference standards are defined in Section 01 42 19.
- C. ASTM C91 - Masonry Cement
- D. ASTM C144 - Aggregate for Masonry Mortar
- E. ASTM C150 - Portland Cement
- F. ASTM C207 - Hydrated Lime for Masonry Purposes
- G. ASTM C270 - Mortar for Unit Masonry
- H. ASTM C387 - Packaged, Dry, Combined Materials for Mortar and Concrete
- I. ASTM C476 - Grout for Reinforced and Non-Reinforced Masonry

1.03 SUBMITTALS

- A. Submit product data in accordance with Section 01 33 23.
- B. Include design mix, environmental conditions, and admixture limitations.
- C. Submit manufacturer's installation instructions in accordance with general conditions.

PART 2 – PRODUCTS

- A. MATERIALS:
 - 1. Portland Cement: ASTM C150, Type I. (Type III may be used for cold weather laying.)
 - 2. Masonry Cement: ASTM C91, Type II.
 - 3. Sand: ASTM C144, standard masonry type; clean natural sand; dry; protected against dampness, freezing, and foreign matter; well graded from coarse to fine; containing 5 to 15% of fines
 - 4. Portland Cement Grout Aggregate:
 - a. ASTM C33
 - b. Coarse Aggregate: Pea gravel uniformly graded from 3/8 inch to 1/2 inch.
 - 5. Lime: ASTM C207, Type S, Hydrated or quick lime, slaked to form lime putty conforming to ASTM C5.
 - 6. Water: Clean and free from injurious amounts of oil, alkali, organic matter or other deleterious material.
 - 7. Calcium Chloride: Not permitted
- B. MIXES
 - 1. Mortar for exterior work: ASTM C270, Type S.
 - 2. Mortar for interior work: ASTM C270, Type N.
 - 3. Pointing Mortar: ASTM C270, Type N, 750 PSI at 28 days with maximum 2 percent ammonium stearate or calcium stearate per cement weight.
 - 4. Mortar for masonry below grade and/or in contact with earth: ASTM C270, Type M.

5. Mortar shall be pre-mixed by manufacturer and shall be complete except for sand and water. Job mixing of mortar shall not be allowed.
 6. Mortar color: Standard gray.
- C. GROUT FILL
1. For Lintels: Transit or job mixed, to produce minimum 2,500 PSI strength at 28 days, 7-8 inches slump.

PART 3 – EXECUTION

- A. MORTAR MIXING
1. Thoroughly mix mortar ingredients in quantities needed for immediate use. Use approved measuring box method.
 - a. Measure and batch materials either by volume or weight such that the required proportions for mortar can be accurately controlled and maintained. Measurement of materials exclusively by shovel will not be permitted.
 - b. Mix mortar ingredients for a minimum of 5 minutes in a mechanical batch mixer.
 - c. Place two-thirds of the required mixing water and one-half of the sand in the mixer. Next, add the masonry cement. Then add the remaining sand. Allow to mix for two minutes to permit the fluidizing effect of the air-entraining agent to become effective. Then add remaining water to obtain the desired flow.
 - d. At no time should the amount of material in the mixer cover the top two inches of the mixer blades when they are at the apex of their travel.
 - e. Mix mortars with the minimum amount of water, consistent with workability to provide maximum tensile strength within the capacity of the mortar.
 2. Do not use anti-freeze compounds to lower the freezing point of mortar or grout.
- B. RETEMPERING
1. To minimize re-tempering, do not mix mortar more than 15 minutes prior to use.
 2. If water is lost by evaporation, retemper within one hour of mixing. Do not use or retemper mortar more than one hour after mixing. Do not use mortar which has begun to set.
- C. INSTALLATION
1. Refer to Section 04 21 13, Brick Masonry

END OF SECTION 04 05 13

SECTION 04 21 13 – BRICK MASONRY

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Modular face brick.
 - 2. Standard concrete masonry units.
 - 3. Reinforcement, anchorage, and accessories.
 - 4. Thru-wall flashings.
- B. Products installed but not supplied under this section:
 - 1. Section 04 05 13 - Mortar and Grout: Testing Requirements
 - 2. Section 05 50 00 - Metal Fabrications: Loose steel lintels
- C. Related sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete: Reinforcing bars
 - 2. Section 05 12 00 - Structural Steel: Steel Shelf Angles
 - 3. Section 05 31 33 - Cold-Formed Metal Framing: Metal Stud Back-Up for Brick Veneer
 - 4. Section 07 19 00 - Water Repellents: Water Repellents Applied to Face Brick and Exterior Split Face CMU Surfaces.
 - 5. Section 07 92 00 - Joint Sealers: Backer Rod and Sealant at Control Joints
 - 6. Section 08 41 13 - Aluminum Entrances and Storefronts: Storefront System.

1.02 REFERENCES

- A. Industry Standards: The Industry Standards listed below refer to the latest date of issue or edition, unless otherwise indicated.
 - 1. ASTM A82 - Cold-Drawn Steel Wire for Concrete Reinforcement.
 - 2. ASTM C216 - Facing Brick (Solid Masonry Units Made From Clay or Shale).
 - 3. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
 - 4. ASTM A615 - Deformed and Plain Billet Steel bars for Concrete Reinforcement.
 - 5. ASTM C90 - Hollow Load Bearing Concrete Masonry Units.
 - 6. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

1.03 QUALITY ASSURANCE

- A. Single-Source Responsibility: Each type of unit masonry shall be obtained from one manufacturer.
- B. Qualifications of Workmen: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.
- C. Supervision: At least one skilled journeyman mason shall be present at all times during masonry work to personally supervise all work of this Section.

1.04 SUBMITTALS

- A. Product Data: Submit product data for all masonry units and fabricated wire reinforcements and accessories.
- B. Samples: Submit four samples of each type of masonry unit to illustrate color, texture and extremes of color range.
 - 1. Color shall match Architect's control sample.
- C. Shop Drawings: Submit drawings showing locations of all masonry control and expansion joints.
- D. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

1.05 MOCK-UP

- A. Mock-Up: Provide a 4' x 6' Mock-up of a typical masonry veneer wall system.
 - 1. Mock-up shall illustrate veneer wall system showing typical control joints, insulation, damp proofing, masonry ties, column ties, shelf-angles, thru-wall flashings, sealants, weep holes and accessories.
 - 2. Verify actual configuration and components with Architect prior to construction of mock-up.
 - 3. When accepted, mock-up will demonstrate minimum standard for the Work Mock-up may NOT remain as part of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect mortar materials in accordance with manufacturer's recommendations.
 - 1. Maintain temperature and humidity within ranges required by manufacturer's instructions.
 - 2. Maintain cementitious materials and aggregates clean, dry and protected against dampness, freezing and foreign matter.

1.07 PROTECTION

- A. Protection During Erection: Maintain protective boards at exposed external corners which may be damaged by construction activities. Provide such protection without damaging completed work.
 - 1. At end of each day's work, cover top of walls with heavy waterproof sheets. Extend sheets 24 inches on each side of walls. Secure in place.
 - 2. Cover partially completed structures when work is not in place.
- B. Cold Weather Protection for Work in Progress:
 - 1. When air temperature is from 40°F to 32°F, heat sand and mixing water to produce mortar temperature between 40°F and 120°F.
 - 2. When air temperature is from 32°F to 20°F, heat sand and mixing water to produce mortar temperature between 40°F and 120°F. Maintain temperature of mortar on boards above freezing.
- C. Cold Weather Protection for Completed Work: Provide protection as required to maintain minimum 32°F for a minimum of 24 hours.
- D. Frozen Units: Remove all masonry units determined to be frozen or damaged by freezing conditions.
- E. Hot Weather Construction: When air temperature exceeds 100°F (or 90°F with wind over 8 mph), do not spread mortar more than 4 feet ahead of masonry, and set units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.01 BRICK UNITS

- A. Modular Face Brick: ASTM C216, Type FBS, Grade SW modular velour brick.
 - 1. Description: Standard modular, 3-5/8" x 7-5/8" x 2-1/4"
 - 2. Color: Match existing buildings. Final determination of match by Architect.

2.02 STANDARD CONCRETE MASONRY UNITS

- A. Concrete Masonry Units: ASTM C90, Grade N, Type I for hollow load bearing.
 - 1. Size: Nominal 8" x 16" x thicknesses as indicated; center scored.
 - 2. Weight: Lightweight classification
 - 3. U.L. Rated C.M.U.: 2 or 4 hour as required, see Drawings for locations.
- B. Solid Load-Bearing Concrete Masonry Units: ASTM C145, Grade N.
- C. Concrete Building Brick: ASTM C55
- D. Provide special units for bond beams, lintels, corners, jambs, control joints, headers, bonding, and other special conditions.

2.03 HORIZONTAL JOINT REINFORCEMENT

- A. General: Horizontal joint reinforcement specified below shall be prefabricated for embedment in horizontal mortar joints of masonry, manufactured and welded in 10 foot lengths from cold-drawn steel wire conforming with ASTM A82 requirements.
 - 1. Prefabricated Corners and Tees: Required for each type of wall reinforcing.
- B. Single-Wythe CMU Walls:
 - 1. Reinforcement Type: 2-wire system, truss design; "D/A 310, Truss" as manufactured by DUR-O-WAL, INC. or approved equal.
 - 2. Wire Gage/Size: Standard 9 gage side rods, 9 gage cross rods, width 2" less than wall thickness.
 - 3. Finish at Exterior Walls: Hot-dipped galvanized after fabrication, ASTM A153 Class B2.
 - 4. Finish at Interior Walls: Mill-galvanized, ASTM A641 Class 3.
- C. Face Brick/CMU Cavity Walls:
 - 1. Reinforcement Type: 2-wire system, truss design, with adjustable tab ties at 16" o.c.; "D/A 370, Dur-O-Eye" as manufactured by DUR-O-WAL, INC. or approved equal.
 - 2. Wire Gage/Size: Standard 9 gage side rods, 9 gage cross rods, width 2" less than concrete block thickness.
 - 3. Finish: Hot-dipped galvanized after fabrication, ASTM A153 Class B2
- D. Substitutions: (Upon compliance with all requirements)
 - 1. AA Wire Products, Co.
 - 2. Heckman Building Products, Inc.
 - 3. Hohmann & Barnard, Inc.
 - 4. Masonry Reinforcing Corp. of America
 - 5. National Wire Products Corp.

2.04 COLUMN TIES

- A. Column Ties: 3/16" diameter, hot-dipped galvanized triangular ties with 5/16" x 5" long hot-dipped galvanized column anchors welded to steel columns for anchorage of C.M.U. walls. Provide sizes to fit field conditions. Refer to Drawings.
 - 1. Heckman, Inc. - #316
 - 2. Hohmann & Barnard, Inc. - #VWT.
 - 3. Dur-O-Wal - #D/A 701

2.05 COLUMN ANCHORS

- A. Column Anchors: 1 1/4" wide x 12 gauge thick, hot-dipped galvanized column anchors for anchoring masonry to structural column when masonry is perpendicular to column flange. Provide flange widths and lengths to fit field conditions. Refer to Drawings.
 - 1. Heckman, Inc. - #197
 - 2. Hohmann & Barnard, Inc. - #353
 - 3. Dur-O-Wal - #D/A 606

2.06 NOTCHED COLUMN ANCHORS

- A. Notched Column Anchors (Corrugated Type): 1½" wide x 12 gauge thick, hot-dipped galvanized column anchors for anchoring masonry to structural column when masonry is parallel to column flange. Provide flange widths and lengths to fit field conditions. Refer to Drawings.
 - 1. Heckman, Inc. - #189 L-type.
 - 2. Hohmann & Barnard, Inc. - #354
 - 3. Dur-O-Wal - #D/A 601

2.07 JOINT STABILIZATION ANCHORS

- A. Joint Stabilization Anchors: Used for bridging vertical control joints; Dur-O-Wal - #D/A 2200 or approved equal. Space at 16" o.c. maximum.

2.08 THRU-WALL FLASHINGS

- A. Copper-Fabric Laminate Flashing: 5 ounce copper sheet bonded with asphalt between two layers of glass-fiber cloth.
 - 1. Manufacturers/Products:
 - a. Cop-A-Cote; AFCO Products, Inc.
 - b. Type ACC-Asphalt Bituminous Coated; Phoenix Building Products.
 - c. Coated Copper Flashing; Sandell Manufacturing Co., Inc.
 - d. Copperseal; York Manufacturing, Inc.

2.09 RIGID ANCHORS (As Required)

- A. Fabricate from steel bars as follows:
 - 1. 1½" (38 mm) wide by ¼" (6.4 mm) thick by length required with ends turned up 2" (50 mm) or with cross pins. Refer to drawings for locations and sizes.

2.10 ACCESSORIES

- A. Preformed Control Joints (where applicable): Extruded rubber conforming to ASTM D-2000 2AA-805 with 80 durometer conforming to ASTM D2240, designed for use in control joints in solid or cavity wall construction to provide resilient resistance to cracking under stress of expansion and contraction.
 - 1. Size and Configuration: As required for compliance with drawings.
- B. Horizontal (Soft Joint) Expansion Joint: ¼" x 2 ¾" adhesive on one side with compression up to 35%, closed cell neoprene per ASTM D-1056, Class RE41.
- C. Vertical Expansion Joint: ¾" x 3", no adhesive with compression up to 35%, closed cell neoprene conforming to ASTM D-1056, Class RE41.
- D. Mortar/Grout Screen: ¼ square monofilament screen fabricated from high-strength, non-corrosive polypropylene polymers; 4", 6", or 10 widths, as required.
- E. Sealant and Backer Rods: Exterior quality in accordance with Section 07900.
 - 1. Color: To be selected by Architect.
- F. Sealant: Sonneborn Hydrocide Black Damp Proofing No. C.S. 2-5 applied to cover total wall surface without voids in accordance with manufacturer's recommendations.
- G. Weep Holes: ¾" braided cotton sash cord; run up 16" high over flashing membrane.
- H. Cleaning Solutions: As recommended by manufacturer of masonry units.

2.11 LINTELS

- A. Steel Lintels:
 - 1. Type: Loose type steel angles as specified in Section 05500.
 - 2. Size: As indicated on Drawings.

PART 3 - EXECUTION:

3.01 EXAMINATION

- A. Field Conditions: Verify that field conditions are acceptable and are ready to receive work.
- B. Other Work: Verify items provided by other Sections of work are properly sized and located.
- C. Built-in Items: Verify that built-in items are in proper location, and ready to roughing into masonry work.

1. Confirm that steel shelf angles are NOT continuous masonry control and expansion joints.

3.02 PREPARATION

- A. Metal Anchors: Direct and coordinate placement of metal anchors supplied to other Sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Bond, CMU: Lay concrete masonry units in running bond. Course one unit and one mortar joint to equal 8 inches.
 1. Typically, form concave mortar joints in all areas.
- D. Bond, Brick Units: Lay brick units in running bond. Course three brick units and three mortar joints to equal 8 inches.
 1. Form concave mortar joints.

3.04 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- D. Remove excess mortar as work progresses.
- E. Interlock intersections and external corners.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Job site cutting: Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- I. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with a compressible joint filler.

3.05 WEEPS

- A. Install weep holes in veneer at 24" on center horizontally above through-wall flashing, and at bottom of walls.

3.06 CAVITY WALLS

- A. Mortar Droppings: Do not permit mortar on drop or accumulate into cavity air space or to plug weep holes.

3.07 REINFORCEMENT AND ANCHORAGES - SINGLE WYTHE MASONRY

- A. Install horizontal joint reinforcement 16" o.c.
- B. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16" each side of opening.

- C. Place joint reinforcement continuous in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6". Extend minimum 16" each side of openings.
- E. Embed anchors attached to structural steel members in every second block joint.
- F. Prefabricated Corners: Reinforce joint corners and intersections with prefabricated corners and ties.

3.08 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

- A. Install horizontal joint reinforcement 16" o.c.
- B. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16" each side of opening.
- C. Place joint reinforcement continuous in first joint below top of walls. Lap joint reinforcement ends minimum 6". Extend minimum 16" each side of openings.
- D. Embed anchors attached to structural steel members in every second block joint.
- E. Strap Anchors: Reinforce joint corners and intersections with strap anchors 16" o.c.

3.09 MASONRY FLASHINGS

- A. Extend flashings through veneer, turn up minimum 8" and bed into mortar joint of masonry or seal to sheathing over steel stud back-up.
- B. Lap end joints minimum 6" and seal watertight.
- C. Flashing Adhesive: Use flashing manufacturer's recommended adhesive and sealer.

3.10 LINTELS

- A. Install loose steel lintels over window and door openings.
- B. Install reinforced unit masonry lintels over openings where steel lintels are not scheduled.
- C. Openings up to 78" Wide: Place two, No. 4 reinforcing bars 1" from bottom web, unless otherwise indicated.
- D. Openings over 78": Reinforce openings as detailed.
- E. Reinforcing: Use single piece reinforcing bars only.
- F. Support and secure reinforcing bars from displacement. Maintain position with 1/2" of dimensioned position.
- G. Grout Fill: Place and consolidate grout fill without displacing reinforcing.
 - 1. Allow masonry lintels to attain specified strength before removing temporary supports.
- H. Maintain minimum 8" bearing on each side of opening.

3.11 GROUTED COMPONENTS

- A. Bond Beam Reinforcement: Reinforce bond beam with 2, No. 5 bars.
- B. Bar Splices: Lap splices minimum 24 bar diameters.
- C. Support and secure reinforcing bars from displacement. Maintain position with 1/2" of dimensioned position.

- D. Place and consolidate grout fill without displacing reinforcing.
 - 1. Place grout fill in maximum 4 foot lifts.
- E. Openings: At bearing locations, fill masonry cores with grout for a minimum 12" either side of opening.
 - 1. Provide one, No. 5 bar full height in first cell unless noted otherwise.

3.12 CONTROL AND EXPANSION JOINTS

- A. Control/Expansion Joints: Do not continue horizontal joint reinforcement through control and expansion joints.
- B. Form control joints with a preformed control joint material as specified in Part 2 using sash block. Rake joint at exposed unit faces for placement of backer ord and sealant.
- C. Control Joints: Size control joint in accordance with Section 07900 for sealant performance.
- D. Form expansion joints as detailed.

3.13 BUILT-IN WORK

- A. Built-In Items: As work progresses, build in metal door frames, fabricated metal frames, window frames, anchor bolts, plates and other items furnished by other Sections.
- B. Build in items plumb and level.
- C. Door Jambs: Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12" from framed openings.
- D. Do not build in organic materials subject to deterioration.

3.14 PARTITION IDENTIFICATION

- A. Stenciling: Stencil the wall rating on each side of wall above the ceiling. Letters shall be minimum 2" high and labeled at 20-foot centers.
 - 1. Label as "FIRE", "SMOKE", and "NO. OF HOURS"
 - 2. Non-rated walls which extend to deck shall be labeled "NO WALL RATING REQUIRED".

3.15 TOLERANCES

- A. Maximum Variation From Alignment of Columns: 1/4"
- B. Maximum Variation From Unit to Adjacent Unit: 1/32"
- C. Maximum Variation From Plane of Wall: 1/4" in 10 feet and 1/2" in 20 feet or more.
- D. Maximum Variation From Plumb: 1/4" per story non-cumulative; 1/2" in two stories or more.
- E. Maximum Variation From Level Coursing: 1/8" in 3 feet and 1/4" in 10 feet and 1/2" in 30 feet.
- F. Maximum Variation of Joint Thickness: 1/8" in 3 feet.
- G. Maximum Variation From Cross Sectional Thickness of Walls: 1/4"

3.16 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other Sections of work to provide correct size, shape and location.
- B. Obtain Architect's approval prior to cutting or fitting masonry work not indicated or where appearance or strength of

masonry work may be impaired.

3.17 CLEANING

- A. Remove excess mortar and mortar smears.
- B. Clean soiled surfaces with cleaning solution.
- C. Use non-metallic tools in cleaning operations.

3.19 PROTECTION OF FINISHED WORK

- A. Protection: Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

END OF SECTION 04 21 13

SECTION 06 10 00 – ROUGH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Definition: Carpentry includes carpentry work, which is generally not exposed, except as otherwise indicated on the drawings.

1.02 REFERENCES

- A. Lumber Standards: Comply with *PS 20* and with applicable rules of the respective grading and inspecting agencies and products indicated.
- B. Plywood Products Standards: Comply with *PS 1* (ANSI A 199.1) or, for products not manufactured under *PS 1* provisions, with applicable *APA* Performance Standard for type of panel indicated.

1.03 PRODUCT HANDLING

- A. Delivery and Storage: Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation with stacks.

1.04 JOB CONDITIONS

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate tight fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Lumber, General: Factory mark each piece of lumber with type, grade, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual size as required by *PS 20* for moisture content specified for each use. Provide dressed lumber with 15% maximum moisture content at time of dressing.
- B. For structural framing, provide the following grade and species or approved equal by Architect in writing.
 - Select Structural Grade
 - No.2 grade or better
 - Southern Pine (SPIB)
 - Fb (minimum extreme fiber stress in bending): 1500 PSI
 - E (minimum modulus of elasticity); 1,500,000
- C. Miscellaneous Lumber: Provide wood for support or attachment or other work including cant strips, bucks, nails, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shape shown and as follows:
 - Moisture Content: 19% maximum for lumber items not specified to receive wood preservative treatment. Grade No. 2 S.Y.P. or better
- D. Plywood: Trademark: Identify each plywood panel with appropriate *APA* trademark. All plywood to be a face grade on exposed surface and have exterior glue rating.

2.02 MISCELLANEOUS MATERIALS

- A. Fasteners and Anchorages: Provide size, type, materials, and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, and washer and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommending nails. Where rough carpentry work is exposed to weather, in

ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).

- B. Building Paper: Asphalt saturated felt, non-perforated, ASTM 226.

2.03 WOOD TREATMENT

- A. Preservative Treatment: Where lumber or plywood is indicated as "Treated" or is specified herein to be treated, comply with the applicable requirements of *AWPA Standard C2 (lumber) and C9 (plywood) and of AWPB Standards* listed below. Mark each treated item with *AWPB Quality Mark Requirements*.
1. Pressure-treat above-ground items with water-borne preservatives complying with *AWPB LP-2*. After treatment, kiln-dry to a maximum moisture content of 15%. Treat indicated items and the following:
 - a. Wood cants, nailers, curbs, blocking, stripping and similar concealed members in contact with masonry or concrete.
 - b. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.
 2. Pressure-treat the following with water-borne preservatives for ground contact use complying with *AWPB LP-22*.
 - a. Wood members in contact with ground.
 - b. Wood members in contact with fresh water.
 3. Complete fabrication of treated items prior to treatment where possible. If cut after treatment, coat cut surfaces with heavy brush coat of some chemical used for treatment. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.
- B. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

PART 3 - EXECUTION

3.01 GENERAL

- A. Discard units of materials with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
- B. Set carpentry work accurately to require levels and lines, with members plumb, and true and accurately cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by required by recognized standards. Countersink nail heads and exposed carpentry work and fill holes. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners or size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood, pre-drill as required.

3.02 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS

- A. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level or work to be attached. Coordinate location with other work involved.
- B. Attach to substrate as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry work. Where possible, anchor to form-work before concrete placement.
- C. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

3.03 WOOD FURRING

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished

work.

- B. Furring: Unless otherwise shown, provide 1"x 4" furring at 16" o.c. maximum spacing.
- C. Suspended Furring: Provide size and spacing shown, including hangers and attachment devices. Level to a tolerance of 1/8" in 10'.

3.04 WOOD, FRAMING, GENERAL

- A. Provide framing members of sizes and on spacing shown, and frame openings as shown, or if not shown, comply with recommendations of "Manual for House Framing" of National Forest Products Association. Do not splice structural members between supports.
- B. Anchor and nail as shown, and to comply with "Recommended Nailing Schedule" of "Manual for House Framing" and other recommendations of *NFPA*.
- C. Fire stop concealed spaces with wood blocking not less than 2" thick, if not blocked by other framing members. Provide blocking at third points of and at each building story level and at ends of joist spans.

3.05 JOIST FRAMING

GENERAL:

- A. Provide framing of sizes and spacing shown. Install with crown edge up and support ends of each member with not less than 1-1/2" of bearing members by toe nailing or metal, or 3" on masonry. Attach to wood bearing members by toe nailing or metal connectors; frame to wood supporting members with wood ledgers as shown, or if not shown, with metal connectors. Fire-cut members built into masonry (*if any*). Frame opening with headers and trimmers where span or headers exceeds 4". Do not notch in middle third of joist; limit notches to 1/6 *depth of joist*; 1/3 *at ends*. Do not bore holes larger than 1/3 *depth of joist* or located closer than 2" from top or bottom. Provide solid blocking (2" *thick by depth of joist*) at ends of joists unless nailed to header or brand member.
- B. Lap members framing from opposite sides of beams, girders or partitions not less than 4" or securely tie opposing members together. Provide solid blocking (2" *thick by depth of joist*) over supports.
- C. Under jamb studs at openings, provide solid blocking between joist.
- D. Under non-load bearing partitions, provide double joists separated by solid blocking equal to depth of studs above. Provide triple-joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures, unless otherwise shown.
- E. Provide bridging between joists where nominal depth-to-thickness ratio exceeds 4' at intervals of 8'. Use bevel cut 1"x 4" or 2"x 3" wood bracing, double-crossed and nailed both ends to joists or use solid wood bridging 2" thick by depth of joist, end nailed to joist.

3.06 SUB-FLOORING

- A. Install boards with end joints staggered over supports, and with each piece extending over at least *two (2) spaces* between supports. Nail with 8d common nails, space *two (2) per* support for board widths of 6" and less, *three (3) per* support for widths of 8" or more.
- B. Cover sheathing with building paper, lapped and nailed with roofing nails.

3.07 INSTALLATION OF PLYWOOD

GENERAL: Comply with applicable recommendations contained in *Form No. E 304*, "APA Design/Construction Guide-Residential and Commercial", for types of plywood products and applications indicated.

- A. Fastening Methods: Fasten panels as indicated below:

1. Subflooring: Staple or nail to framing
2. Plywood Backing Panels: Nail to supports

END OF SECTION 06 10 00

SECTION 06 17 53 – FABRICATED WOOD TRUSSES

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Fabricate, supply and erect wood trusses as shown on the drawings and as specified. Work to include anchorage, blocking, curbing, miscellaneous framing, and bracing.

1.02 DEFINITIONS

- A. TRUSS: The terms "truss" and "wood truss component" refer to open web load carrying assemblies suitable for support of roof decks or floors in buildings.
- B. MANUFACTURER: A manufacturer who is regularly engaged in design and fabrication of wood truss components.
- C. TRUSS INSTALLER: Builder, contractor or sub-contractor who is responsible for the field storage, handling and installation of trusses.

1.03 DESIGN

- A. Trusses shall be designed in accordance with these specifications and where any applicable design feature is not specified herein, design shall be in accordance with applicable provisions of latest edition of National Design Specifications for Wood Construction (NDS) of the American Forest and Paper Association (AF & PA), and Design Specifications for Metal Plate Connected Wood Trusses (ANSI/TPI 1) of the Truss Plate Institute (TPI), and code of jurisdiction.
- B. Manufacturer shall furnish design drawings bearing seal and registration number of a civil or structural engineer licensed in state where trusses are to be installed. Drawings shall be approved by Architect prior to fabrication.
- C. Truss design drawings shall include as minimum information:
 - 1. Span, depth or slope and spacing of trusses;
 - 2. required bearing width;
 - 3. design loads, as applicable:
 - a. top chord live load;
 - b. top chord dead load;
 - c. bottom chord live load;
 - d. bottom chord dead load;
 - e. concentrated loads and their points of application; and
 - f. wind and seismic criteria;
 - 4. adjustment to lumber and plate design loads for condition of use;
 - 5. reactive forces, their points of occurrence and direction;
 - 6. ALPINE plate type, gauge, size and location of plate at each joint;
 - 7. lumber size, species and grade for each member;
 - 8. location of any required continuous later bracing;
 - 9. calculated deflection ratio and/or maximum deflection for live and total load;
 - 10. maximum axial compressive forces in truss members;
 - 11. location of joints;
 - 12. connection requirements for:
 - a. truss to truss girders;
 - b. truss ply to ply; and
 - c. field splices.

PART 2 – MATERIALS

2.01 MATERIALS

A. Lumber:

1. Lumber used for truss members shall be in accordance with published values of lumber rules writing agencies approved by the Board of Review of American Lumber Standards Committee. Lumber shall be identified by Grade mark of a lumber inspection bureau or agency approved by that Board, and shall be as shown on design drawings.
2. Moisture content of lumber shall be no greater than 19 percent at time of fabrication.
3. Adjustment of values for duration of load or conditions of use shall be in accordance with National Design Specifications for Wood Construction (NDS).
4. Fire retardant treated (FRT) lumber, if applicable, shall meet specifications of truss design, use category UCFA as specified by the American Wood Protection Association, section 2303.2 of the International Building Code from the International Code Council, and ANSI/TPI 1, par 6.4.9 and NDS par 2.3.4. Lumber treater shall supply certificate of compliance including specified design values and use conditions, including minimum acceptable galvanizing level for galvanized steel fasteners used with their FRT lumber.

B. Metal connector plates:

1. Metal connector plates shall be manufactured by ITW Building Components Group Inc. (ITW BCG) and shall be not less than .0356 inches in thickness (20 gage) and shall meet or exceed ASTM A653 grade 37, and shall be hot dipped galvanized according to ASTM A653, coating designation G60. Design values shall be determined in accordance with ANSI/TPI 1.
2. In highly corrosive environments, special applied coatings or stainless steel may be required.
3. At the request of Architect, ITW BCG shall furnish a certified record that materials comply with steel specifications.

2.02 FABRICATION

- A. Trusses shall be fabricated in a properly equipped manufacturing facility of a permanent nature. Trusses shall be manufactured by experienced workmen, using precision cutting, jigging and pressing equipment meeting requirements of ANSI/TPI 1, Section 3. Truss members shall be accurately cut to length angle and true to line to assure proper fitting joints within tolerances set forth in ANSI/TPI 1, Chapter 3, and proper fit with other work.

PART 3 – EXECUTION

3.01 HANDLING, INSTALLATION AND BRACING

- A. Trusses shall be handled during fabrication, delivery and at jobsite so as not to be subjected to excessive bending.
- B. Trusses shall be unloaded on smooth ground to avoid lateral strain. Trusses shall be protected from damage that might result from on-site activities and environmental conditions. Prevent toppling when banding is removed.
- C. Handle during installation in accordance with latest version of Building Component Safety Information (BCSI 1) from TPI, and ANSI/TPI 1. Installation shall be consistent with good workmanship and good building practices and shall be responsibility of Truss Installer.
- D. Apparent damage to trusses, if any, shall be reported to Manufacturer prior to installation.
- E. Trusses shall be set and secured level and plumb, and in correct location. Trusses shall be held in correct alignment until specified permanent bracing is installed.
- F. Cutting and altering of trusses is not permitted.
- G. Concentrated loads shall not be placed atop trusses until all specified bracing has been installed and decking is permanently nailed in place. Specifically avoid stacking full bundles of decking or other heavy materials onto unsheathed trusses.

- H. Erection bracing is always required. Professional advice should always be sought to prevent toppling or dominoing of trusses during installation.
- I. The Contractor is responsible for obtaining and furnishing the materials used for installation and permanent bracing.

END OF SECTION 06 17 53

SECTION 06 20 00 – FINISH CARPENTRY

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Finish carpentry work.
- B. Millwork items, other than modular laminate casework specified in Division 12.
- C. Shelving other than for modular casework.
- D. Laminate Clad windowsills.

1.02 REFERENCE STANDARDS

- A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01 42 16.
- B. AWI Quality Standards
- C. FS L-P-508 Plastic Sheet, Laminated, Decorative and Non-Decorative
- D. FS MMM-A-130A Adhesive, Contact
- E. PS1 Construction and Industrial Plywood
- F. PS 20 American Softwood Lumber Standard.
- G. NFPA National Forest Products Association National Design Specification for Stress Grade Lumber and Its Fastening.
- H. PS 51 Hardwood and Decorative Plywood
- I. PS 58 Basic Hardwood

1.03 QUALITY ASSURANCE

- A. Millwork to be in accordance with AWI Quality Standards - Section 400, custom grade, except as modified herein.

1.04 SHOP DRAWINGS

- A. Submit shop drawings in accordance with Section 01 33 23.
- B. For millwork: Indicate materials and wood species, thicknesses of materials, component profiles, fastening, jointing details, finishes and accessories to a minimum scale of 3/4 inch to one foot.
- C. For finish carpentry items: Indicate materials, component profiles, fastening methods, joining details, finishes and accessories, to a minimum scale of 1½ inch to one foot.
- D. Submit manufacturer's instructions for use of adhesive and hardware.

1.06 DELIVERY AND STORAGE

- A. Deliver materials in accordance with Section 01 60 00.
- B. Store indoors, in ventilated areas with constant but minimum temperature of 16°C and maximum relative humidity of 25 to 55%.

1.07 GUARANTEE / WARRANTY

- A. Provide a written guarantee in accordance with Section 01 33 00.
- B. Guarantee shall provide for making good or replacing, at no cost to the Owner, millwork and finish carpentry items specified herein which exhibit defects in material and workmanship within a minimum period of 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MILLWORK

- A. Quality of Fabrication: AWI's Custom Grade construction - Section 400
 - 1. Provide plastic laminate clad shelving units where indicated on drawings.
- B. Framing: C and better #2 Southern or Parana Pine, S4S.
- C. Shelving Units: B-D interior DFPA covered with 1/16" thick plastic laminate of type specified. Splash and edges to be covered with same material as top.
 - 1. Provide heavy duty shelving supports.
 - 2. Provide 3mm plastic molded edge banding at all edges for shelving.

2.02 WINDOW SILLS

- A. Provide 3/4" thick plastic laminate clad windowsills.
- B. Provide 3mm plastic molded edge banding at all edges of windowsills.
- C. Fabrications shall comply with AWI's custom grade construction Section 400

2.03 WOOD FOR HANDRAILS

- A. Solid stock select white oak handrail with matching plugs at fasteners where indicated.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with approved shop drawings.
- B. Set and secure materials and components in place rigid, plumb and square.
- C. Verify mechanical, electrical and building items affecting this Section are placed and ready to receive this work.
- D. Prime paint surfaces or items of assemblies in contact with cementitious materials.
- E. Fit exposed edges of plywood and particle board shelving and site-made millwork with 3/8" thick hardwood edging. Width is thickness of plywood or particle board.
- F. Apply plastic laminate finishes where indicated. Adhere with adhesive over entire surface. Make joints and corners hairline. Match pattern. Slightly bevel arises. Cap exposed edges with plastic trim. Apply laminate backing on reverse side of plastic laminate finished surfaces.
- G. Trim and Moldings: Install in single, unjointed lengths for openings and for runs less than maximum length of lumber available. For longer runs, use only one piece less than maximum length available in any straight run. Stagger joints in adjacent members cope at returns and miter at corners.

3.02 HANDRAIL INSTALLATION

- A. Drill holes for fasteners using forstner-type drill bit.
- B. Cut plugs from surplus handrail. Match grain and color of handrail.
- C. Install plugs flush with top of handrail. Align grain.
- D. Secure handrail to steel wall bracket at 4'0" o.c. max spacing.

3.03 HARDWARE INSTALLATION

- A. Install finish hardware in accordance with manufacturer's instructions. Adjust hardware to ensure smooth and correct operation.
- B. Finish hardware of all types shall be fitted and secured to prevent looseness and rattle but shall not be fitted so tightly as to result in binding.
- C. In fitting hinges, locks, etc. allow for thickness of finishes.
- D. Set all hinges, lock plates, and other similar elements exactly so as to be flush with surrounding surfaces.
- E. Drive pilot holes so as to avoid loosely set screws.

3.04 PREPARATION OF FINISHING

- A. Sand work smooth and set exposed rails and screws. Apply wood filler in exposed nail and screw indentations.

END OF SECTION 06 20 00

SECTION 07 14 16 – WATERPROOFING

PART 1 - GENERAL

- 1.01 Scope: Apply waterproofing at near exterior concrete block walls prior to installation of face brick. Apply to exterior face of interior wythe of masonry.
- 1.02 Materials: Sealant shall be Sonneborn Hydrocide Black Damp Proofing No. C.S. 2-5. Sealant shall be applied to cover total wall surface without voids in accordance with manufacturer's recommendations.

END OF SECTION 07 14 16

SECTION 07 19 23 – SILOXANE WATER REPELLENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This section covers the preparation, materials, services, and equipment required in conjunction with the application of a clear water repellent on all above grade, vertical, exterior exposed surfaces of masonry, concrete, brick, or stucco.

1.02 RELATED SECTIONS

- A. Section 03 01 30.91 - Concrete Restoration & Cleaning.
- B. Section 03 30 00 - Cast In Place Concrete.
- C. Section 03 40 00 - Precast Concrete.
- D. Section 04 01 20.91 - Masonry Restoration & Cleaning.
- E. Section 04 20 00 – Unit Masonry.
- F. Section 04 40 00 – Stone Assemblies.
- G. Section 07 18 00 - Traffic Coatings.
- H. Section 09 63 00 - Masonry Flooring.
- I. Section 09 91 00 - Painting.
- J. Section 09 93 0 – Stains and Transparent Finishing.
- K. Section 09 96 00 - High Performance Coatings.
- L. Section 09 97 23 –Concrete and Masonry Coatings.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 - Submittals.
- B. Product Specification Data: Submit manufacturer's technical literature, specifications, and application instructions for the specified clear water repellent material.
- C. Samples: Obtain liquid samples of the specified clear water repellent for sample application. Sample application is covered in section

1.04 QUALITY ASSURANCE

- A. Manufacturer: A firm with no less than ten (10) years experience in manufacturing the products specified in this section.
- B. Applicator Qualification: A firm with no less than three (3) years experience in the application of the products specified in this section. In addition, applicator must state the intended use of the proper application equipment and that it has been well maintained.
- C. Mock-Up:

1. Apply water repellent per manufacturer's application instructions as directed by the Architect to substrate material that matches actual job conditions. Determine the acceptability of appearance and optimum coverage rate required for application.
 2. After sample treatment has cured in accordance with manufacturers recommendations, water test to verify that substrate is coated with sufficient water repellent to effectively repel liquid water from the surface.
 3. Obtain Architect and/or Project Owner approval prior to full scale application of water repellents.
- D. Pre-Application Meeting: Convene a pre-application meeting prior to the start of application of the specified material. Attendance by a representative of each of the following organizations is requested; the application firm, the architectural firm, and the water repellent manufacturer. Notify each of the attendees at least three (3) days prior to the meeting time.

1.05 PRODUCT DELIVERY

- A. Material Delivery: Deliver materials to the job site in original sealed containers, clearly marked with manufacturer's name, brand name, and type of material. Verify the product matches that of the original sample applied on the mock-up wall.
- B. Record Keeping: Contractor / applicator shall record product batch number or lot number for warranty purposes.
- C. Storage & Protection: Store materials inside if possible, away from sparks and open flame. Store in a secure area to avoid tampering and contamination. Water based materials must be kept from freezing. Store and handle in accordance with manufactures written instructions.

1.06 PROJECT CONDITIONS

- A. Surface Preparation: Surface must be free of cracks, dirt, oils, paint or other contaminants which may affect the appearance or performance of the water repellent material.
- B. Environmental Requirements:
1. Air and substrate temperature must be above 45° F (7° C) or below 95° F (35° C) unless otherwise specified by manufacturer.
 2. Do not proceed with application if the substrate is wet or contains frozen water.
 3. Do not apply material when rain is predicted within 48 hours; or earlier that five (5) days after the substrate became wet.
 4. Do not apply materials in high or gusty winds.
- C. Protection:
1. Special precautions should be taken to avoid vapor transmission (fumes) from entering the building being treated. Ventilation systems and fresh air intakes should be turned off and closed.
 2. Protect shrubs, metal, wood trim, glass, asphalt and other building hardware during application from over-spray.
 3. Do not permit spray mist or liquid to drift onto surrounding properties.

1.07 SCHEDULING

- A. Architect shall be notified not less than 48 hours before each application of water repellent is scheduled.

1.09 PERFORMANCE REQUIREMENTS

- A. Provide water repellents with the following properties based on testing manufacturer's standard products, according to test methods indicated, applied to substrates simulating Project conditions using same materials and application methods to be used for Project.
1. Water-Vapor Transmission: Maximum 8 percent reduction in rate of vapor transmission in comparison of treated and untreated specimens, per ASTM E-96.
 2. Water Penetration and Leakage through masonry: Minimum 90 percent reduction in leakage rate in comparison of treated and untreated specimens, per ASTM E-514.

3. Durability Maximum 5 percent loss of water repellency after 2500 hours of weathering in comparison to specimens before weathering, per ASTM G-53.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Chemprobe Coating Systems, L.P.
Masonry Division of Tnemec Company, Inc.
2805 Industrial Lane
Garland, TX 75041
PH: 800/760-6776
PH: 972/271-5551
FX: 972/271-5553
- B. Or approved equal.

2.02 WATER REPELLENT

- A. GENERAL: All products shall be carried in solvent and contain siloxane and hydrophobic fumed silica (defused quartz carbide). No fillers, sterates, or paraffins. Products shall be a minimum of seven (7) percent solids.
 1. PRIME A PELL 200: Solvent based 7% solids siloxane coupled with diffused quartz carbide.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify the following:
 1. The required joint sealants have been installed.
 2. New masonry and mortar have cured a minimum of twenty-eight (28) days.
 3. Surface to be treated is clean, dry and contains no frozen water.
 4. Environmental conditions are appropriate for application.

3.02 PREPARATION

- A. Protection:
 1. Special precautions should be taken to avoid vapor transmission (fumes) from entering the building being treated. Ventilation systems and fresh air intakes should be turned off and closed.
 2. Protect shrubs, metal, wood trim, glass, asphalt and other building hardware during application from over-spray.
 3. Do not permit spray mist or liquid to drift onto surrounding properties or parking lots.
- B. Other:
 1. Verify lawn sprinklers are turned off, where applicable, so as to avoid water contact prior to cure times required by the manufacturer.

3.03 APPLICATION

- A. Apply specified water repellent at a rate in accordance with manufacturer's written application instructions.
- B. Material must be applied using solvent resistant, low-pressure application equipment designed for water repellent application.
- C. Apply material as shipped by the manufacturer. Do not dilute or thin.
- D. Apply a saturating application of the product working from the bottom up. On porous substrates such as concrete masonry units, allow a slight rundown (less than three inches). On high density materials such as pre-cast concrete

panels or GFRC, do not allow any run-down. On all substrates allow the product to penetrate the substrate for approximately 5 - 7 minutes, then apply again in the same manner. This second pass will require less material.

3.04 FIELD QUALITY CONTROL

- A. The architect shall be contacted 48 hours prior to application so as to provide supervision as required. The architect or the architect's representative shall inspect the progress as the work proceeds. Do not apply any water repellent that is not specified by the architect.
- B. After water repellent has cured for six (6) days at low humidity and temperature between 70°-90° F or eight (8) days at high humidity and low temperature between 50°-69° F, all surfaces shall be tested with a light water spray. Recoat any area that indicates water absorption after the water test has completely dried.

3.05 CLEANING

- A. Remove protective coverings from adjacent surfaces and other protected areas.
- B. Immediately clean water repellent coating from adjoining surfaces and surfaces soiled by water-repellent application as work progresses.
- C. At completion, remove from the job site, all excess material, debris, and waste resulting from this work. Dispose of water repellent containers according to state and local environmental regulations.

END OF SECTION 07 19 23

SECTIONS 07 21 00 – THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Batt and Roll Insulation.
- B. Blanket Insulation.
- C. Vapor Retarder.

1.02 RELATED SECTIONS

- A. Section 07 10 00 - Damp proofing and Waterproofing: Insulation installed with waterproofing systems.
- B. Section 07 26 00 - Vapor Retarders: Vapor retarder materials to adjacent insulation.
- C. Section 07 27 00 - Air Barriers: Air seal materials to adjacent insulation.
- D. Section 07 24 00 - Exterior Wall Assemblies: Exterior Insulated Finish Systems EIFS.
- E. Section 07 80 00 - Fire and Smoke Protection: Insulation installed in conjunction with firestopping or smoke containment systems.
- F. Section 09 20 00 - Plaster and Gypsum Board: Insulation installed in conjunction with interior wall and ceiling finish systems.
- G. Section 23 31 00 - Ducts: Insulation to surround HVAC ductwork.

1.03 REFERENCES

- A. ASTM C 423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- D. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- E. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- F. ASTM C 764 - Standard. Specification for Mineral Fiber. Loose-Fill Thermal Insulation.
- G. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- J. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- K. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- L. Federal Specification HH-I-521F: Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures).
- M. Federal Specification HH-I-558B: Insulation, Blocks, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe

fitting Covering, Thermal (Mineral Fiber, Industrial Type)

- N. National Fire Protection Association (NFPA) Life Safety Code
- O. Underwriters Laboratories (UL) - UL 2079 Standard test method for fire resistance of Building Joint Systems.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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.

1.05 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.

1.06 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, free from water, and in such a manner to permit easy access for inspection and handling.
- C. Handling: Handle materials to avoid damage.

1.07 SEQUENCING

- A. Coordinate with the installation of vapor retarders and air seal materials specified in Section 07260 and Section 07270.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

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.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: CertainTeed Corp., Insulation Group, which is located at: 20 Moores Road, Malvern, PA 19355; Toll Free Tel: 800-233-8990; Email: [request info](mailto:requestinfo@certainteed.com); Web: certainteed.com/CertainTeed/Pro/Design+Professional/Insulation
- B. Substitutions: Submit in accordance with Section 01 33 00 Substitution Procedures.

2.02 APPLICATIONS

- A. Exterior Stud Walls: Batt type.
 - 1. Thickness: As indicated on the Drawings.
 - 2. Thickness: 6".
 - 3. R-Value: 19.
 - 4. Vapor Retarder: Separate.
- B. Above Interior Ceilings: Batt type.
 - 1. Thickness: As indicated on the Drawings.
 - 2. Thickness: 12".
 - 3. R-Value: 38.

2.03 BATT AND ROLL INSULATION (SECTION 07 21 00)

- A. Thermal Batt Insulation: CertainTeed Fiber Glass Building Insulation and High Density Fiber Glass Building Insulation. Fiber glass building insulation for walls, ceilings, attics and floors. Complies with ASTM C 665; preformed glass fiber batt insulation:
 - 1. Facing: ASTM C 665 Type I Unfaced.
 - a. Thermal Resistance: R of 19 (RSI 3.3).
 - 1) Thickness: 6-1/4 inches (159 mm).
 - 2) Width: 11-1/4 inches (286 mm).
 - 3) Width: 15 inches (381 mm).
 - 4) Width: 15-1/4 inches (387 mm).
 - 5) Width: 16 inches (406 mm).
 - 6) Width: 19-1/4 inches (489 mm).
 - 7) Width: 23 inches (584 mm).
 - 8) Width: 23-1/4 inches (591 mm).
 - 9) Width: 24 inches (610 mm).
 - 10) Width: 30 inches (762 mm).
 - 11) Width: 48 inches (1219 mm).
 - 12) Width: 60 inches (555 mm).
 - 13) Width: 72 inches (1829 mm).
 - b. Thermal Resistance: R of 38 (RSI 6.7).
 - 1) Thickness: 12 inches (305 mm).
 - 2) Width: 16 inches (406 mm).
 - 3) Width: 19-1/4 inches (489 mm).
 - 4) Width: 24 inches (610 mm).
- B. Acoustical/Thermal Unfaced Batt Insulation, CertainTeed CertaPro Partition Batts. Complies with ASTM C 665; preformed glass fiber batt insulation.
 - 1. Unfaced: ASTM C 665, Type 1,.
 - a. Fire Hazard Classification: ASTM E 84:
 - 1) Maximum Flame Spread Index; 5.
 - 2) Maximum Smoke Developed Index; 5.
 - b. Noncombustibility: ASTM E 136, passes.
 - c. Size:
 - 1) Thermal Resistance: R of 5.8 (RSI 1.02).
 - a) Thickness: 1-1/2 inches (38 mm).
 - b) Width: 24 inches (610 mm).

2.04 VAPOR RETARDER; SECTION 07 26 00

- A. Sheet Retarder: CertainTeed MemBrain, The SMART Vapor Retarder. Polyimide film vapor retarder for use with unfaced, vapor permeable glass fiber and mineral wool insulation in wall and ceiling cavities. Material has a permeance

of 1 perm or less when tested to ASTM E 86, dry cup method and increases to greater than 10 perms using the wet cup method.

1. Water Vapor Permeance:
 - a. ASTM E 86, dry cup method: 1.0 perms (57ng/Pa*s*m2).
 - b. ASTM E 86, wet cup method: 10.0 perms (1144ng/Pa*s*m2).
2. Fire Hazard Classification: ASTM E 84:
 - a. Maximum Flame Spread Index; 20.
 - b. Maximum Smoke Developed Index; 55.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that all exterior and interior wall, partition, and floor/ceiling assembly construction has been completed to the point where the insulation may correctly be installed.
- C. Verify that mechanical and electrical services in ceilings, walls and floors have been installed and tested and, if appropriate, verify that adjacent materials are dry and ready to receive insulation.
- D. 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 the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in exterior spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.
- E. Install insulation with vapor barrier installed facing the warm side. Seal or tape joints as required.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 21 00

KING ARCHITECTS, INC

SECTION 07 25 00 - WEATHER BARRIERS

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. Commercial weather barrier assemblies.
 - 2. Flexible flashing.
 - 3. Weather barrier flashing.
 - 4. Fluid-applied flashing.
 - 5. Weather barrier accessories.
 - 6. Drainage material.
- B. Related Requirements:
 - 1. Section 072100 "Thermal Insulation" for installation of exterior insulation.
 - 2. Section 072413 "Polymer-Based Exterior Insulation and Finish System (EIFS)" for installation of exterior insulation and finish system.
 - 3. Section 072419 "Water-Drainage Exterior Insulation and Finish System (EIFS)" for installation of exterior insulation and finish system.
 - 4. Section 074646 "Fiber-Cement Siding" for installation of fiber-cement board siding.

1.3 DEFINITIONS

- A. Weather Barrier: A combination of materials and accessories that do the following:
 - 1. Prevent the accumulation of water as a water-resistive barrier.
 - 2. Minimize the air leakage into or out of the building envelope as a continuous air barrier.
 - 3. Provide sufficient water vapor transmission to enable drying as a vapor-permeable membrane.
- B. Water-Resistive Barrier: A combination of materials and accessories that prevent the accumulation of water within the wall assembly per International Building Code Section 1403.2.
- C. Continuous Air Barrier: The combination of interconnected materials, assemblies, and sealed joints and components of the building envelope that minimize air leakage into or out of the building envelope per ASHRAE 90.1 section 5.4.3.1.
- D. Vapor Diffusion: A slow movement of individual water vapor molecules from regions of higher to lower water vapor concentration (higher to lower vapor pressure).
- E. Vapor Permeable Membrane: The property of having a water-vapor permeance rating of 10 perms (575 ng/Pa x s x sq. m) or greater, when tested in accordance with the desiccant method using Procedure A of ASTM E96 per definition in International Building Code. Vapor permeable material permits the passage of moisture vapor through vapor diffusion.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For weather barrier, include data on air and water-vapor permeance based on testing in accordance with referenced standards.
- B. Sustainable Design Submittals:
 - 1. Test Reports: Envelope testing and verification of the following:
 - a. Water-Spray Test.
 - b. Air Infiltration Test.
 - c. Water Penetration Test.
 - 2. Product Data: Including the following information:

- a. Provide Environmental Product Declarations (EPDs)
- b. Provide SDS (formerly MSDS), third-party certifications, or product technical data confirming that systems meet or exceed emissions guidelines for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), as follows:
 - 1) Commercial weather barrier complies with California Department of Public Health (CDPH) Standard.
 - 2) Adhesives and sealants wet-applied on-site are to meet/exceed VOC content requirements for wet-applied products and comply with SCAQMD Rule 1168.
 - 3) Flashing systems comply with SCAQMD Rule 1168 on VOC limits.

C. Shop Drawings: Show details of weather barrier at terminations, openings, and penetrations. Show details of flexible flashing applications.

D. Preconstruction Laboratory Mockup Testing Submittals:

- 1. Owner will engage in a third-party testing program: Develop[ed] specifically for Project.
- 2. Test Reports: Prepared by a qualified preconstruction testing agency for each mockup test.
- 3. Record Drawings: As-built drawings of preconstruction laboratory mockups showing changes made during preconstruction laboratory mockup testing.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For weather barrier, from ICC-ES.
- B. Manufacturer's Instructions: For installation of each product specified.
- C. Qualification Data: For Installer field testing agency.
- D. Sample Warranty: For manufacturer's warranty.
- E. Reports: Field test and inspection reports.
- F. Installer's weather barrier manufacturer-training certificate.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is certified by weather barrier system manufacturer to install manufacturer's product.
- B. Laboratory Mockup Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement in compliance with ISO/IEC 17025.
- C. Manufacturer's Field Service: Register Project with weather barrier manufacturer prior to installation of weather barrier and comply with weather barrier manufacturer's Project registration and observation process.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store near heat source or open flame.

1.8 WARRANTY

- A. Manufacturer's Product Warranty: To repair or replace weather barrier product that fails in materials within specified warranty period.
 - 1. Warranty Period: 10 years from date of purchase.
- B. Manufacturer's Product and Labor Warranty: Manufacturer agrees to repair or replace weather barrier that fails in materials within specified warranty period, including removal and replacement of affected construction up to manufacturer's limits.
 - 1. Warranty Period: 10 years from date of purchase.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain weather barrier assembly components, including weather barrier flashing and foam insulation from same manufacturer as weather barrier.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed weather barrier and accessories shall withstand specified wind pressures, liquid water penetration, and water vapor pressures without failure due to defective manufacture of products.
- B. High-Performance Installations:
 - 1. For installation with one of the following building envelope performance or structural characteristics:
 - a. Exceeding 65 mph (100 km/h) equivalent structural load.
 - b. Exceeding 15 mph (24 km/h) equivalent wind-driven rainwater infiltration.
 - c. Buildings with 60 ft. (18 m) or more total height above grade plane, as defined in the International Building Code.
 - d. Construction with gypsum or cement-based exterior sheathing.
 - e. Non-wood based primary structure such as steel, light gage steel, masonry, or concrete.

2.3 WEATHER BARRIER

- A. Commercial Building Wrap: ASTM E2357 passed, ABAA (Air Barrier Association of America) evaluated air barrier assembly, and assembly water resistance per ASTM E331; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance with ASTM E84; UV stabilized for nine-month exposure; and acceptable to authorities having jurisdiction.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; **Tyvek CommercialWrap D** or comparable product by one of the following:
 - a. Or approved equal.
 - 2. System Description, Single-Layer Weather Barrier: Single-layer weather barrier, including flashing and sealing of penetrations and seams.
 - 3. System Description, Single-Layer Drainable: Single-layer weather barrier with integral drainage, including flashing and sealing of penetrations and seams.
 - 4. System Description, Double-Layer Drainable: Double-layer weather barrier, including flashing and sealing of penetrations and seams, arranged as follows:
 - a. Primary Layer: Commercial building wrap with integral drainage installed closest to building interior.
 - 5. Drainability: 98 percent or greater when tested in accordance with ASTM E2273.
 - 6. Air Permeance, Product: Not more than 0.004 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.02 L/s x sq. m at 75 Pa) when tested in accordance with ASTM E2178.
 - 7. Air Permeance, Assembly: Not more than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 PA) when tested in accordance with ASTM E 2357 and evaluated by ABAA.
 - 8. Water Penetration Resistance, Product: Hydrostatic head resistance greater than 7.7 ft. (2.35 m) in accordance with AATTC 127.
 - 9. Water Penetration Resistance, Assembly: Assembly wall specimen described in ASTM E2357 to water resistance in accordance with ASTM E331 to [2.86 lbf/sq. ft. (137 Pa)] [6.24 lbf/sq. ft. (300 Pa)] [10.4 lbf/sq. ft. (500 Pa)] [12.5 lbf/sq. ft. (575 Pa)] [15 lbf/sq. ft. (718 Pa)].
 - 10. Water-Vapor Permeance: Not less than 23 perms (1300 ng/Pa x s x sq. m) per ASTM E96/E96M, Desiccant Method (Procedure A) or not less than 28 perms (1600 ng/Pa x s x sq. m) per ASTM E96/E96M, Water Method (Procedure B).
 - 11. Water-Vapor Permeance: Not less than 30 perms (1700 ng/Pa x s x sq. m) per ASTM E96/E96M, Desiccant Method (Procedure A) or not less than 46 perms (2600 ng/Pa x s x sq. m) per ASTM E96/E96M, Water Method (Procedure B).
 - 12. Allowable UV Exposure Time: Not less than nine months when tested in accordance with ASTM G155 (Accelerated Weathering).
 - 13. Flame Propagation Test: Materials and construction shall be as tested in accordance with NFPA 285.
 - 14. Heat and Visible Smoke Release Rates: Maximum rates in accordance with NFPA 285.
 - a. Peak Heat Release: 13,217 Btu/sq. ft. (150 kW/sq. m).
 - b. Total Heat Release: 1762 Btu/sq. ft. (20 MJ/sq. m)
 - c. Effective Heat of Combustion: 7744 Btu/lb (18 MJ/kg)
 - 15. Weather barrier system to have a VOC content of 30 g/L or less.

2.4 WEATHER BARRIER ACCESSORIES

- A. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by weather barrier manufacturer for sealing joints and penetrations in commercial building wrap.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; Tyvek Tape or comparable product.
- B. Closed-Cell Polyurethane Foam Insulation: Low-pressure, low-expansion, single-component polyurethane foam, with maximum flame-spread and smoke-developed indexes of 15 and 25, respectively, per ASTM E84.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; GS Pro or comparable product.
- C. Fasteners with Self-Gasketing Washers: Commercial building wrap manufacturer's recommended pneumatically or hand-applied fasteners with **1-inch- (25-mm-)** diameter, high-density polyethylene cap washers with UV inhibitors.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; Tyvek Wrap Caps or comparable product.
- D. Primer for Flashings: Synthetic rubber-based product; spray applied. Strengthen adhesive bond at low temperature applications between weather products such as self-adhered flashing products, commercial building wraps, and common building sheathing materials.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; DuPont Adhesive Primer or comparable product.
 - 2. Peel Adhesion Test: Passes in accordance with ASTM D3330, Test Method F, for the following.
 - a. Peel Angles: 0, 25, 72, and 180 degrees.
 - b. Substrates: Concrete masonry units (CMUs), exterior gypsum sheathing, oriented strand board (OSB), aluminum, and vinyl.
 - 3. Chemical Compatibility: Pass; AAMA 713.
 - 4. Flame Spread Index: 5; ASTM E84.
 - 5. Smoke Development Index: 0; ASTM E84.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements.
- B. Verify that substrate and surface conditions are in accordance with commercial weather barrier manufacturer recommendations prior to installation.
 - 1. Verify that rough sill framing for doors and windows is sloped downwards towards the exterior and is level across width of the opening.
- C. Verify that surfaces to receive weather barrier flashing are clean, dry, and free of frost.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Direct water onto an acceptable weather barrier drainage plane with an unobstructed path to exterior of wall.
 - 1. Provide a drainage path for water intrusion through window and door attachment system that collects at window and door sills and directs water to the exterior or weather barrier.

3.3 COMMERCIAL BUILDING WRAP INSTALLATION

- A. General: Comply with weather barrier manufacturer's written installation guidelines and warranty requirements.
- B. Cover exposed exterior surface of sheathing with weather barrier securely fastened to framing immediately after sheathing is installed.
 - 1. Maintain continuity of air and water barrier assemblies.

2. Start weather barrier installation at a building corner, leaving 12 inches (300 mm) of weather barrier extended beyond corner to overlap.
3. Install weather barrier horizontally starting at lower portion of wall surface.
4. Provide minimum 6 inches (150 mm) overlap at horizontal- and vertical-wrap seams in a shingle manner to maintain continuous downward drainage plane and air and water barrier.

C. Seams: Seal seams with building wrap tape per manufacturer's recommended installation instructions.

1. Shiplap horizontal seams in weather barrier to facilitate proper drainage.

D. Fasteners: Use weather barrier manufacturer's recommended fasteners to secure weather barrier and install fasteners according to weather barrier manufacturer's installation guidelines.

1. Do not use temporary fasteners to permanently attach weather barrier.
2. Do not place fasteners with gasketing washers where weather barrier flashing will be installed.
3. Install fasteners with gasketing washers through flashing where recommended by manufacturer.

E. Openings: Completely cover openings with weather barrier, then cut weather barrier membrane to openings in accordance with weather barrier manufacturer's installation guidelines.

1. Provide head and jamb flaps and seam overlaps to maintain continuous drainage.
2. Repair damage to weather barrier using method recommended by weather barrier manufacturer.
3. Install flashing in accordance with weather barrier manufacturer's installation guidelines.

3.4 DRAINAGE MATERIAL INSTALLATION

A. Install drainage material with grooves or channels running vertically in compliance with manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to train installers and observe subject test-wall areas and installations.

B. Testing Agency: Owner will engage a qualified third-party testing agency to perform tests and inspections.

C. Test Area: Perform tests on one bay at least 30 ft. (9.15 m), by one story.

D. Field Quality Control Testing: Perform the following test on representative areas of structural-sealant-glazed curtain walls:

1. Air Infiltration Whole Building: ASTM E779 at not more than 0.40 cfm/sf (2.00 L/s per sq. m).
2. Water Penetration: ASTM E1105 at a minimum uniform static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft. (300 Pa). No water penetration shall occur as defined in ASTM E1105.
 - a. Perform a minimum of two tests in areas as directed by Architect.
 - b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 30, and 70 percent completion.

E. Prepare test and inspection reports.

3.6 CLEANING

A. Immediately remove release paper and scrap from work area and dispose of material in accordance with requirements of Section 017300 "Execution" and Section 017419 "Construction Waste Management and Disposal."

3.7 PROTECTION

A. Protect installed weather barrier from the following:

1. Damage from cladding, structure, or a component of the structure (for example, window, door, or wall system).
2. Contamination from building site chemicals, premature deterioration of building materials, or nonstandard use or application of products.
3. Foreign objects or agents, including the use of materials incompatible with weather barrier products.
4. UV exposure in excess of products' stated limits.

END OF SECTION 07 25 00

SECTION 07 31 13 – ARCHITECTURAL ASPHALT SHINGLES

PART 1- GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, equipment, and materials to install the roof system over the properly prepared substrate.
- B. The asphalt shingle system shall not consist of no less than one layer of the specified underlayment and 20 year, algae resistant, laminated shingles.
- C. Fabricate and install new drip edge and related sheet metal flashings.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.3 REFERENCE STANDARDS

- A. Asphalt Roofing Manufacturer's Association (ARMA)
- B. American Society for Testing Materials (ASTM) ASTM D 3018- Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
- C. National Roofing Contractor's Association (NRCA) Roofing and Waterproofing Manual-Steep Roofing
- D. Underwriters' Laboratories (UL):
 - 1. UL-263 Fire Tests of Building Constructions and Materials.
 - 2. UL-580 Tests for Uplift Resistance of Roof Assemblies.
 - 3. UL-790 Tests for Fire Resistance of Roof Covering Materials.

1.4 SUBMITTALS

- A. Underwriter's Laboratories (UL) Certification UL 790: The test report shall clearly show a rating of Class A roofing material.
- B. Certificates. Evidence of acceptance of shingle manufacturer stating their acceptance of the specification for compliance with their shingle system.
- C. Product Data. Indicate shingles, underlayment and accessory materials or other proposed materials.
- D. Manufacturer's Installation Manual: Including installation sequence, special instructions, and Material Safety Data Sheets (MSDS).
- E. Samples: Provide full-scale samples of the following materials and system components. Samples shall be of identical material type, thickness, width, and material grade as the system specified for this project. Sample shall be the color chosen for the project.

1.5 INSTALLER QUALIFICATIONS

- A. Successful contractor is required to maintain a full-time supervisor/foreman who is on the job-site at all times during installation of new roof system. Foreman must have a minimum of five (5) years experience with the installation of system similar to that specified.
- B. If required, fabricator/installer shall submit work experience and evidence of adequate financial responsibility. The owner's representative reserves the right to inspect fabrication facilities in determining qualifications.

1.5 DELIVERY, STORAGE, AND HANDLING.

- A. Manufacturer's responsibility:
 - 1. Deliver the products in manufacturer's original containers, with wrappers in a dry undamaged condition with seals and labels intact. Include test report data necessary.
- B. Installer's responsibility:
 - 1. Store materials in weather protected environment clear of the ground and moisture.
 - 2. Store rolled goods on end on a clean, sound pallet. Materials shall be protected against moisture.
 - 3. Do not store more materials on the roof than can be installed within two days.
 - 4. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

1.7 WARRANTIES.

- A. Owner shall receive ONE (1) WARRANTY from manufacturer of shingles covering ALL of the following criteria. Multiple warranties are NOT acceptable.
 - 1. Installer's 2-year warranty covering workmanship from deck to underlayment to shingles.
 - 3. Manufacturer's Limited Warranty: Shingles shall come with and be warranted by the material manufacturer for a period of 20 years.
 - 4. Warranties shall commence on date of substantial completion.

PART 2- PRODUCTS

2.1 PREMIUM GRANULAR SHINGLES

- A. Twenty year, Architectural, algae resistant laminated shingle. Color to be Weatherwood.

2.2 RELATED MATERIALS

- A. Hip and Ridge: Shingles shall come pre-cut from factory.
- B. Underlayment: Underlayment shall be a synthetic base sheet as provided by shingle manufacturer.
- C. Ice and Water Shield: Modified Membrane, 60 mil thick, 100% SBS rubber with 90-day exposure.
- D. Nails. Nails shall be 11-gauge wire minimum, 5/16-inch head minimum and length to give proper penetration. (Longer nails will be necessary for hip and ridge application).
- E. Flashing Cement. Trowel grade asphalt-based roof cement for use as edge and valley sealant.
- F. Eave Metal/Drip Edge: Style DL Long. 24-gauge, Prefinished standard metal color to be determined by Owner.

PART 3- EXECUTION

3.1 PREPARATION

- A. Pre-roofing conference: Prior to beginning shingle roofing work, a pre-roofing conference shall be held to review work to be accomplished.
 - 1. Owner, Contractor and all other subcontractors who have equipment penetrating roof or whose work involves access to roof shall be present.

3.2 ROOFING INSTALLATION.

- A. Prepare roof for the installation of asphalt shingles, including:
 - 1. Protect all building surfaces against damage from roofing work.
 - 2. Clean roof deck and maintain free from all deleterious material during roofing application.
 - 3. Verify deck surface to be flat and joints tight. All rotten decking shall be replaced.
- B. Underlayment

1. Install specified underlayment. Ice and Water Shield shall be installed in all valleys, at all eaves and at the ridge (minimum 18" cut in these areas).

C. Shingle Installation

1. General. Application shall be in accordance with the approved shingle manufacturer's latest printed specification and installation guides.
2. Starter Course. Before applying the first course of shingles, a row of shingles with the tabs removed should be applied along the eaves as the starter strip. Align starter course with the outer edge of the building, gutters or eaves as necessary and set in flashing cement.
3. The nails used in the starter strip shall also penetrate the eave metal/drip edge.
4. Apply the first course of shingles flush with the starter course (end of tab) but without open tab joints overlapping starter joints (stagger). Nail shingles in accordance with the Manufacturer's printed instructions. In any event, a minimum of six nails is required. Be sure it is laid perfectly straight, checking it regularly during application against a horizontal chalk line.
5. The shingles shall be overlapped so that there is a 5" exposure and shall remain constant throughout the entire application.
Stapling is NOT permitted.

D. Hip and Ridge

1. Install hip and ridge flashing according to current Manufacturer's printed instruction.

3.2 SHEET METAL INSTALLATION.

- A. Install new metal flashing at base of walls and on to the roof surface. Metal flashing to be set in mastic. Metal flashing shall be fabricated with a mechanical break "V" to help minimize oil canning.
- B. Fabricate and install new 24-gauge Pre-finished D-Long drip edge and water diverter at opening as indicated on drawing.
- C. Fabricate and install new lead soil stacks.

END OF SECTION 07 31 13

SECTION 07 42 93.16 – VINYL SOFFITS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Vinyl soffits.
- B. Vinyl trim and accessories.

1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

- A. ASTM D 635 - Test Method for Rate of Burning and/or Extent and Time of Burning of Self- Supported Plastics in a Horizontal Position.
- B. ASTM D 638 - Test Method for Tensile Properties of Plastics.
- C. ASTM D 648 - Test Method for Deflection Temperature of Plastics Under Flexural Load.
- D. ASTM D 696 - Test Method for Coefficient of Linear Expansion of Plastics.
- E. ASTM D 1929 - Test Method for Ignition Properties of Plastics.
- F. ASTM D 2843 - Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
- G. ASTM D 3679 - Specification for Rigid Poly Vinyl Chloride (PVC) Siding.
- H. ASTM D 4226 - Test Methods for Impact Resistance of Rigid Poly Vinyl Chloride (PVC) Building Products.
- I. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
- J. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- K. CAN/CGSB 41-24-95 - Rigid Vinyl Siding, Soffits and Fascia

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 – Submittals 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. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Maintain rigorous production quality control standards to ensure that vinyl siding will perform as expected for its intended use. Products meet or exceed the requirements of ICC and VSI and listed by ICC International Code Council and VSI Vinyl Siding Certification Programs

- B. Regulatory Requirements:
 - 1. International Building Code (IBC) - ESR 1656 - 2006, 2009, 2012 and 2015
 - 2. International Residential Code (IRC) - ESR 1656 - 2006, 2009, 2012 and 2015
 - 3. Florida Building Code- FL# 15935, FL# 13139

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Pack siding and soffits two squares per carton and clearly mark each carton with manufacturer's name, siding style, color, identifying lot number, and VSI Certification Stamp.
- C. Store vinyl siding, soffits, and accessories in clean, dry area, out of direct sunlight.
- D. Handle material to prevent damage. Do not allow cartons to crease.

1.7 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.

1.8 WARRANTY

- A. Provide manufacturer's lifetime non-prorated transferable limited warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Royal Building Products - Siding & Trim Board, which is located at: 91 Royal Group Crescent; Woodbridge, ON, Canada L4H 1X9; Toll Free Tel: 800-387- 2789; Tel: 905-850-9700 ; Fax: 905-850-9184 ; Email: chris.j.johnson@royalbuildingproducts.com; Web: www.royalbuildingproducts.com
- B. Or approved equal.
- C. Requests for substitutions will be considered in accordance with provisions of Section 0160 00 - Product Requirements.

2.2 MATERIALS

- A. Typical Physical Properties:
 - 1. Tensile Strength: Greater than 6000 PSI, per ASTM D 638.
 - 2. Modulus of Elasticity: Greater than 365,000 PSI, per ASTM D 638.
 - 3. Deflection Temperature Under Load: 165 degrees F (77 degrees C) @ 264 Psi per ASTM D 648.
 - 4. Coefficient of Linear Expansion: Less than 3.5 x 10-5 in/in/degrees F, per ASTM D 696.
 - 5. Impact Resistance: > 60 in-lbs. at 73 degrees F (23 degrees C) when tested in accordance with ASTM D 4226.
 - 6. Low Temperature Flexibility: passed CAN/CGSB 41-24-95.
 - 7. Surface Distortion (oil can): No distortion at 120 degrees F when tested in accordance with ASTM D 3679.
- B. Fire Properties: Meets UBC 42-1:
 - 1. Flame Spread Index: Less than 25 when tested in accordance with ASTM E 84.
 - 2. Fuel Contribution: 0 when tested in accordance with ASTM E 84.
 - 3. Smoke Developed Index: 510.2 when tested in accordance with ASTM E 84.
 - 4. Self-ignition temperature: 810 degrees F when tested in accordance with ASTM D 1929.
 - 5. Smoke Density Rating: 42.1 percent when tested in accordance with ASTM D 2843.
 - 6. Maximum smoke density: 56.0 percent when tested in accordance with ASTM D 2843.

7. Visibility of exit sign: Good when tested in accordance with ASTM D 2843.
8. Total burn time: Less than 5 seconds when tested in accordance with ASTM D 635.
9. Extent of burning: Less than 10 mm when tested in accordance with ASTM D 635.
10. Fire resistance rating: 1 hour when tested in accordance with ASTM E 119.

2.3 SOFFITS

- A. Designer Soffit: Designer Beaded Panel Profile.
 1. Each 9.880-inch (251 mm) wide beaded panel nominally configured as three 2.272 inch (58 mm) panels.
 2. Single nail hem.
 3. Non-vented.
 4. Vented.
 5. Length: 12 feet 6 inches (3.81 m). 6. Width: 9.880 inch (251 mm).
 7. Thickness: 0.042 inch (1.07 mm).
 8. Color: As selected by Architect from manufacturer's standard colors.

2.4 ACCESSORIES

- A. Standard Siding Accessories: Provide inside corners, outside corners, j-channels, finish trim, etc as indicated on the Drawing or as required for the project.
 1. Color: As selected by Architect from manufacturer's standard colors.
 2. Produced from the same compound materials and with comparable properties as the siding.
- B. Standard Soffit Accessories: Provide frieze trim, T-Trim, 3/8-inch, Designer Crown J- channels, J-channels, etc as indicated on the Drawing or as required for the project.
 1. Color: As selected by Architect from manufacturer's standard colors.
 2. Produced from the same compound materials and with comparable properties as the siding.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Confirm that all critical dimensions are as specified on the drawings.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Repair substrate flaws or defects before applying siding or soffits.
- C. Where necessary, fur surfaces to an even plane and free from obstructions before application.
- D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install siding and soffits in accordance with the latest edition of the manufacturer's Installation Instructions.
- B. Install vinyl siding, soffits, and accessories in accordance with best practice, with all joint members plumb and true.
- C. Securely attach siding using methods and materials recommended by siding/soffit manufacturer for wind load conditions at project site.

- D. Install vinyl siding and accessories with all joint members plumb and true.

3.4 FIELD QUALITY CONTROL

- A. After installation of siding and soffits, check entire surface for obvious flaws or defects.
- B. Replace and repair any problem areas, paying close attention to the substrate for causes of the problem.

3.5 CLEANING

- A. After application of siding and soffits, clean as necessary to remove all fingerprints and soiled areas.
- B. Upon completion of siding application, clean entire area, removing all scrap, packaging, and unused materials related to this work.

3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 42 93.16

SECTION 07 60 00 – FLASHING AND SHEET METAL

PART 1- GENERAL

1.01 DESCRIPTION

- A. Related Work:
 - 1. Section 07 92 00: Joint Sealants
- B. American Society of Testing and Materials (ASTM):
 - 1. 176-77, Stainless and Heat Resistant Chromium Steel Plate, Sheet and Strip.
 - 2. A 526-71 (R1965), Steel Sheet, Zinc-Coated (Galvanized by the Hot-Dip Process).
 - 3. B 32-76
 - 4. D 412-75 Rubber Properties in Tension
 - 5. D 624-73 Rubber Property - Tear Resistant
 - 6. D 746-73, Brittleness Temperature of Plastics and Elastomers by Impact.
 - 7. D 2240-75, Rubber Property - Durometer Hardness
- C. Federal Specifications (FS):
 - 1. SS-C-00253A, Cement, Bituminous, Plastic.
 - 2. TT-P-645, Primer, Paint Zinc Chromate, Alkyd Type

1.02 SUBMITTALS

- A. Submit shop drawings for each shop or field fabricated item showing joints, types and locations of fasteners, and special shapes.
- B. Submit manufacturer's installation and welding instructions for manufactured items.
- C. Submit in accordance with Section 01 33 00 – Submittal Procedures.

1.03 GUARANTEE

- A. Unless other guarantee requirements are specified, furnish written guarantee for materials and workmanship for two (2) year period signed by installer and Contractor.

PART 2- PRODUCTS

2.01 SHEET METAL

- A. Galvanized Sheet Steel: ASTM A 526, commercial quality, paint grip type.
 - 1. Where flashing type and gauge is not indicated, use 24 gauge minimum (.0239") galvanized sheet steel.
- B. Stainless Steel: ASTM A 176, Type 302/304 soft temper.
- C. Lead:
 - 1. Antimony 4 to 6% remainder lead.
 - 2. Weight: 3 pounds / square feet

2.02 PRE-FINISHED GALVANIZED SHEET METAL

- A. 24 gauge hot-dipped galvanized steel (G90), commercial quality, primed and finished on finish side with fluoropolymer coating.
 - 1. Dry film thickness of coating 1 mil (+0.1 mil).
 - 2. Protect finished side with factory installed strippable film.
 - 3. Apply wash coat of .3 to 4 mil dry film thickness to the reverse side.
 - 4. Color to be selected from manufacturer's standards.
 - 5. Provide a written 20-year non-prorated warranty covering fade, chalking, and coating integrity. Warranty

shall include cost of labor and materials.

- B. Manufacturers / Products:
 - 1. Foremost Manufacturing Co., Livonia, MI, "Kynar 500 Sheet Stock"
 - 2. Petersen Aluminum Corporation, Elk Grove, IL, "PAC-CLAD Steel"
 - 3. Vincent Metals, Building Products Group, Minneapolis, MN, "ColorKlad".

2.03 PRE-FINISHED METAL COLUMN COVERS

- A. Exterior column covers in 1/8" aluminum 3003-H14 with a standard one color, two coats Kynar Painted finish.
- B. Interior column covers in .063" aluminum 3003-H14 with standard one color, two coats Kynar painted finish.
- C. Approved Manufacturer / Product:
 - 1. Baker Metal Products Inc./N gauge system 4000 or approved equal.

2.04 ACCESSORIES

- A. Solder: 50% tin and 50% lead, ASTM B32
- B. Flux: Rosin, cut muriatic acid, or commercial preparation for materials to be soldered.
- C. Neutralizer: 5% to 10% washing soda solution.
- D. Fasteners:
 - 1. Barbed roof nails, clips, or self-tapping sheet metal screws.
 - 2. Metal compatible with sheet metal or flashing material shall be stainless steel or hot dipped galvanized steel.
- E. Adhesive: As recommended by elastomeric manufacturer for bonding to substrate and for waterproof sealing of flashing seams.

2.05 SEALANTS

- A. Type: Acrylic Polymer Sealant
- B. Acceptable Manufacturers / Products:
 - 1. Pecora Corp., Harleysville, PA, "60+ Unicrylic"
 - 2. Tremco, Cleveland, OH, "Mono"
- C. Location: In contact with roofing or waterproof materials.

PART 3- EXECUTION

3.01 INSPECTION

- A. Inspect surfaces for conditions detrimental to work.
- B. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 FABRICATION

- A. Form sheet metal on bending brake.
- B. Do shaping, trimming, and hand seaming on bench as far as practicable.
- C. Make angle bends and folds for interlocking metal with full regard for expansion and contraction to avoid buckling or fullness in metal after installation.

- D. Fabricate supplemental parts necessary to complete each item of work.
- E. Form materials with straight lines, sharp angles, and smooth curves.

3.03 INSTALLATION

- A. General
 - 1. Comply with SMACNA "Architectural Sheet Metal Manual" recommendations for installation of work.
 - 2. Provide for thermal expansion of exposed sheet metal work exceeding 15 feet running length maximum.
 - 3. For flashing and trim, space expansion joints maximum of 10 ft. located 2 feet from corners and intersections.
 - 4. Conceal fasteners and expansion provisions wherever possible.
 - 5. Fold back edges of concealed side of exposed edge to form hem.
 - 6. Insert metal flashings into reglets, anchor with fasteners and wedges, and seal joints.
 - 7. Set sheet metal items level, true to line, and plumb.
 - 8. Secure to wood with screws or nails and washers.
 - 9. Set metal already partly formed in place and fasten by means of cleats.
 - 10. Where flashing type and gage is not indicated, use 24 ga. minimum galvanized sheet steel.
- B. Pre-finished galvanized sheet metal
 - 1. Exercise care during fabrication and erection to avoid damage to finish coat.
 - 2. Use color matched touch-up paint and rivets where exposed to view or otherwise required.
 - 3. Mechanically remove coating if soldering is necessary.
 - 4. Fabricate and install with strippable film in place. After installation is complete, immediately remove strippable film to avoid damage to paint coating underneath due to ultraviolet light.
- C. Curb Flashing
 - 1. Flash roof curbs with 26 ga. pre-finished metal.
 - 2. Seam and solder joints.
 - 3. Extend flashing down over curb 4" minimum over base flashing.
- D. Roof Counterflashing
 - 1. Overlap base flashing 4" minimum.
 - 2. Install bottom edge tight against base flashing.
 - 3. Lap seam vertical joints 3" minimum and apply sealant.
 - 4. Miter, lap seam, and close corner joints with solder or sealant.
- E. Gutters, Downspouts, and Leaderheads
 - 1. Fabricate with minimum amount of joints. Provide closure pieces at ends.
 - 2. Fabricate downspout in one piece, without seams.
 - 3. Fabricate gutters and downspouts out of 24 ga. pre-finished sheet metal. Gutter and downspout shall be "box-type". Downspout shall be 5" x 7" minimum.
- F. Column Covers
 - 1. Install pre-finished metal column covers as recommended by manufacturer.
 - 2. Provide reveal at top and bottom of column.

END OF SECTION 07 60 00

SECTION 07 71 23 – GUTTERS AND DOWNSPOUTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Gutters and Downspouts.
- B. Related Accessories.

1.2 RELATED SECTIONS

- A. Section 07 61 13 – Standing Seam Metal Roof.
- B. Section 07 21 00 – Insulation.
- C. Section 07 60 00 – Sheet Metal Flashing and Trim.
- D. Section 07 92 00 – Joint Sealers

1.3 REFERENCES

- A. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- B. SMACNA - Architectural Sheet Metal Manual.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Conform to applicable code for size and method of rainwater discharge.
- B. American Architectural Manufacturers Association (AAMA) Specification 1405.1 "Specification for Aluminum Raincarrying Systems".
- C. FHA Minimum Property Standard 4900.1 for One- and Two-Family Dwellings.
- D. FHA Minimum Property Standard 4910.1 for Multi-Family Dwellings.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 – Submittal Procedures.
- B. Product Data: Manufacturer's catalog data, detail sheets, and specifications.
- C. Shop Drawings: Prepared specifically for this project; showing dimensions of metal gutters and accessories, fastening details and connections and interface with other products.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Manufacturer's warranties.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
- B. Installer Qualifications: Certified and approved installer of the sheet metal roofing manufacturer Englert, Inc.
- C. Perform Work in accordance with SMACNA Manual or CDA Handbook.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products to prevent twisting, bending, and abrasion, and to provide ventilation. Slope stored materials to drain.
- C. During storage prevent contact with materials capable of causing discoloration, staining, or other damage.

1.8 PROJECT CONDITIONS

- A. Coordinate installation with installation of adjacent roofing, siding, and related materials.

1.9 WARRANTY

- A. Provide the Manufacturer's Limited 20-Year, pro-rated and non-transferable Warranty covering labor materials.

1.10 COORDINATION

- A. Coordinate Work with other operations and installation of floor finish materials to avoid damage to installed underlayment and membrane materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Englert, Inc., which is located at: 1200 Amboy Ave. ; Perth Amboy, NJ 08861; Toll Free Tel: 800-364-5378; Tel: 732-826-8614; Fax: 732-826-8865; Email: request info; Web: www.englertinc.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.2 COMPONENTS

- A. Gutters: Aluminum sheet, ASTM B 209, Alloy 3105-H24. Minimum tensile strength 26,000 psi, minimum yield strength 25,000 psi or equivalent. Continuous and seamless sheet aluminum, roll formed.
 - 1. Thickness:
 - a. 0.027 inch (0.69 mm).
 - b. 0.032 inch (0.81 mm).
- B. Downspouts: Aluminum sheet, ASTM B 209, Alloy 3105-H24. Minimum tensile strength 26,000 psi, minimum yield strength 25,000 psi or equivalent.
 - 1. Thickness:
 - a. 0.019 inch (0.48 mm).
 - 2. Size:
 - a. 3 inches by 4 inches (76 mm by 102 mm).
 - b. 2 inches by 3 inches (51 mm by 76 mm).
- C. Endcaps: Aluminum sheet, ASTM B 209, Alloy 3105-H24, thickness 0.027 inch (0.69 mm).
- D. Inside and Outside Mitres: Aluminum sheet, ASTM B 209, Alloy 3105-H24, thickness 0.027 inch (0.69 mm).
- E. Gutter Hangers and Anchors: Aluminum sheet, ASTM B 209, Alloy 3105-H24, thickness 0.063 inch (1.60 mm). Provide types required to suit project requirements.
- F. Downspout Anchors: Aluminum. Provide types required to suit project requirements.
- G. Elbows: Aluminum sheet, ASTM B 209, Alloy 3105-H24. Minimum tensile strength 26,000 psi, minimum yield strength 25,000 psi or equivalent.
 - 1. Thickness:
 - a. 0.019 inch (0.48 mm).
 - 2. Size: To match downspouts.
- H. Gutter Guard:

1. Size:
 - a. Aluminum mesh, 5 inch (127 mm) by 3 foot (914 mm).
 - b. Aluminum mesh, white, 5 inch (127 mm) by 3 foot (914 mm).
 - c. Aluminum mesh, 6 inch (152 mm) by 3 foot (914 mm).
- I. Gutter Screen:
 1. Size:
 - a. Aluminum screen, brown, 5 inch (127 mm) by 3 foot (914 mm).
 - b. Aluminum screen, white, 5 inch (127 mm) by 3 foot (914 mm).
- J. Aluminum Finish: CastleClad, two-coat system applied in a continuous baked-on process in a single operation, comprising of an acid-based primer and baked-on high performance linear polyester topcoat on exposed surfaces. Concealed surfaces finished with a polyester gold backer or wash coat.
 1. Color: To be selected by Architect.
- K. Sealant: Provide as specified in Section 07 92 00 – Joint Sealers.
- L. Fasteners: Same material and finish as gutters and downspouts.

2.3 FABRICATION

- A. Continuously form seamless gutters to the profiles and sizes specified.
- B. Form downspouts of profiles and sizes specified.
- C. Hem exposed edges of metal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify governing dimensions at building.
- C. Verify surfaces are ready to receive gutters and downspouts.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Clean and repair if necessary, any adjoining work on which this work is in any way dependent for its proper installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install gutters using appropriate hangers to allow normal expansion and contraction.
- C. Install gutter hangers using two 1-1/4-inch (32 mm) screw shank nails and fastened into solid lumber.
- D. All gutters shall be in continuous length for each elevation (run). No end laps are allowed.
- E. Exercise care in placing aluminum in contact with other dissimilar metals or materials that are not compatible with aluminum.
- F. Providing adequate insulation/separation wherever necessary, such as by painting or otherwise protecting when they

are in contact with aluminum or when drainage from them passes over aluminum surfaces.

- G. Install sealants where indicated to clean dry surfaces only without skips or voids.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 71 23

KING ARCHITECTS, INC

SECTION 07 72 00 – ROOF ACCESSORIES

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Provide roof scuttles for access to roof where indicated on drawings.

1.02 SUBMITTALS

- A. Submit shop drawings for roof scuttle. Indicate profiles, dimensions, and method of anchorage. Include manufacturer's specifications and installation instructions.

PART 2 – PRODUCTS

2.01 ROOF SCUTTLE AND LADDER

- A. For ladder access. Complete with integral curb and counter-flashing, and pre-drilled roof flange.
- B. 14-gauge galvanized steel cover and curb, with 22-gauge galvanized steel cover liner. 1" insulation at cover and curb.
- C. Size: 2'-6" x 3'-0"
- D. Provide positive latching device for inside and outside operation, and for locking from the inside.
- E. Provide aluminum ladder with extra heavy duty 3" I-beam extensions.
- F. Manufacturers / Products:
 - 1. The Bilco Co., New Haven, Conn., "No S-20"
 - 2. Dur-Red Products, Cudahy, CA, "Type LH"

PART 3 – EXECUTION

3.01 PREPARATION

- A. Examine surfaces and conditions to receive roof scuttle. Do not begin installation of scuttle if unsatisfactory conditions are present.

3.02 INSTALLATION

- A. Install scuttle and aluminum ladder according to manufacturer's recommendations, detail drawings, and shop drawings.
- B. Anchor scuttle to roof securely to withstand 31 p.s.d. uplift load.

END OF SECTION 07 72 00

SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The extent of standard doors and frames is shown and schedule on drawings.

1.02 QUALITY ASSURANCE

- A. Provide door and frames complying with Steel Door Institute specified. "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein.
- B. Manufacturer: Provide standard steel doors and frames by a single firm specializing in production of this type of work. Provide steel doors and frames by one of the following:
 - 1. Amweld Building Products Div.
 - 2. Ceco Corp.
 - 3. Republic Builders Prod. Corp.
- C. Fire-Rated Assemblies: Provide fire-rated doors and frames investigated and tested as fire door assemblies, complete with type of hardware to be used. Identify each fire door and frame with recognized UL testing laboratory labels, indicating applicable fire rating of steel doors and frames, construct and install assemblies to comply with NFPA Standard No 80, and as herein specified.
- D. Temperature Rise Rating: At stairwell enclosure provide door which have Temperature Rise Rating of 450 degrees F. (232 degrees C.) maximum in 30 minutes of fire exposure.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications for fabrication and installation, including data substantiating those products comply with requirements.
- B. Shop Drawings: Submit for fabrications and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcement, and details of joints and connections. Show anchorage and accessory items.
- C. Provide schedule of doors and frames using some reference numbers for details and opening as those on contract drawings.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver hollow metal work packed in a carton or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.
- B. Inspect hollow metal work upon delivery for damage. Minor damage may be repaired provided finish items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units wood sills at least 4" high, or otherwise store on floors in a manner that will prevent rust and damage. Avoid use of vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4" spaces between stacked doors to permit air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

- B. Cold Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366, and ASTM A 568.
- C. Galvanized Steel Sheets: (Exterior doors and frames) Zinc coated carbon steel sheets of commercial quality, complying ASTM A 536, with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphating.
- D. Supports and Anchors: Fabricate not less than 18 gage galvanized sheet steel.
- E. Inserts, bolts, and Fasteners: Manufacturer's standard units except hot-dip galvanized items to be built into exterior wall complying with ASTM A 153, Class C or D as applicable.
- F. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

2.02 FABRICATION, GENERAL

- A. Fabricate steel door and frame units to be rigged, neat in appearance and free from defects, warp, or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at project site.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, from only cold-rolled steel.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold-rolled or hot-rolled steel (at fabricator's option).
- D. Fabricate exterior doors, panels, and frames from galvanized sheet steel. Close top and bottom edges of exterior doors as integral part of door construction or by addition of inverted steel channels.
- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

2.03 FINISH HARDWARE PREPARATION

- A. Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirement of ANSI A 115 series specifications for door and frame preparation for hardware.
- B. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.
- C. Locate finish hardware as shown on final shop drawings or, if not shown in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.

2.04 SHOP PAINTING

- A. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
- B. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
- C. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

2.05 STANDARD STEEL DOORS

- A. Heavy Duty 1 3/4" Thick (Type III) (Style 3):
- B. Stile and Panel Construction: Minimum 20-gauge stiles are butted against a full 16-gauge panel. Panels interlock with stiles or are joined to the stiles by internal welding. Stiles and panels closed at top and bottom of door with recessed end channels. Door face sheet are formed from one sheet of metal with no seams on door fascias or vertical edges. Doors to receive closures shall have 12-gauge reinforcement, 6-gauge hinge reinforcements and 14-gauge lock reinforcements.

- C. Provide metal doors indicated on drawings and/or schedules.

2.06 STANDARD STEEL FRAMES

- A. Provide 16-gauge metal frames for doors, transoms, sidelights, borrowed lights, and other openings of types and styles as shown on drawings and/or schedules. Conceal fastenings unless otherwise indicated.
 - 1. Fabricate frames for masonry construction with mitered and welded corners.
 - 2. Fabricate frames for dry wall construction with mitered corners knocked down for field assembly.
- B. Form exterior frames of hot dip galvanized steel.
- C. Door Silencers: Except on weather-stripped frames, drill stops to receive 2 silencers on strike jams of single-swing frames and 2 silencers on heads of double-swing frames.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Installer must examine substrate and conditions under which steel doors and frames are to be installed and must notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION

- A. Install standard steel doors, frames, and accessories in accordance with final shop drawings and manufacturer's data, and as herein specified.

3.03 PLACING FRAMES

- A. Comply with provision of SDI-105 "Recommended Erection Instructions for Steel Frames" unless otherwise indicated. Except for frames located in-place concrete or masonry and at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
- B. In plaster or masonry walls constructed with antifreeze additives, protect inside (concealed) faces of door frames using fibered asphalt emulsion coating. Apply approximately 1/8" thick over shop primer and allow to thoroughly dry before handling.
- C. In masonry construction, locate 3 wall anchors per jamb at hinge and strike levels. Building-in of anchors and grouting of frames is required.
- D. At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.
- E. Install fire-rated frames in accordance with NFPA std. No. 80.
- F. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In open steel stud partitions, place studs in wall anchor notches and wire tie. In closed steel stud partitions, attach wall anchors to studs with tapping screws.

3.04 DOOR INSTALLATION

- A. Fit hollow metal doors accurately in frames, within clearances specified in ADI-100.
- B. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

3.05 ADJUST AND CLEAN

- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from pre-finished doors.
- C. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION 08 11 13

SECTION 08 14 00 – WOOD DOORS

PART 1 - GENERAL

- 1.01 EXTENT AND LOCATION of each type of wood door is shown on drawing and in schedules.
- 1.02 FACTORY FITTING to frame (pre-fitting) and factory preparation for hardware (pre-matching) for wood doors is included in this section.
- 1.03 QUALITY ASSURANCE
- A. General: Comply with requirements of the following standard unless otherwise indicated.
 - B. Non-Fire-Rated Wood Doors: NWMA Industry Standard I.S.-1 "Wood Flush Doors" of the National Woodwork Manufacturer's Association. Stile and rail doors quality standards of A.W.A
 - C. Fire-Rate Wood Doors: Where fire-resistance classifications are shown or scheduled for wood door assemblies, provide doors which comply with requirements of NFPA NO.80 "Standard for Fire Doors and Windows" and which have been tested and rated with single point hardware by UL. Provide UL label on each door and panel.
- 1.04 SUBMITTALS
- A. Product Data: Submit door manufacturer's product data, specifications, and installation instructions for each type of wood door. Include details of core and edge construction, trim for openings and louvers (if any) and similar components. Include certifications as may be required to show compliance with specifications.
 - B. Shop Drawings: Submit shop drawings indicating locations and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.
 - C. Specific Product Warranty: Submit written agreement indoor manufacturer's standard form signed by Manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup, or twist) or which show photographing of construction below in face veneers, or do not conform to tolerance limitations of NWMA. The warranty shall also include refinishing and reinstallation which may be required due to repair or replacement of defective doors. Warranty shall be in effect during following period of time after date of substantial completion.
 - 1. Solid Core Flush Interior Doors: Five years
 - 2. Solid Core Flush Exterior Doors: Five years
 - 3. Hollow, Core Flush Interior Doors: Two years
 - a. Solid Wood Stile and Rail Doors: One year
 - D. Submit in accordance with Section 01 33 00 – Submittal Procedures.
- 1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

Product wood doors during transit, storage, and handling to prevent damage, soiling and deterioration. Comply with the "On-Site Care" recommendations of NWMA pamphlet. "Care and Finishing of Wood Doors" and with manufacturer's installations.

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS

General: Provide wood doors complying with applicable requirements of VWMA I.S.-1 for kinds and types of doors indicated and as specified.

- A. Face Panels: Manufacturer's standard 2 or 3 ply face panels, unless otherwise indicated.
- B. Exposed Surfaces: Provide kind shown or scheduled and as further specified. Provide same exposed surface material on both faces of each door, unless otherwise indicated.

- C. Fire-rated Doors: Provide exposed faces and edges to match none fire-rated doors in same area of building, unless otherwise indicated. Provide trim for openings (if any) which have been tested and listed for kind of door and rating indicated.
- D. Metal Louvers: Size, type, and profile shown and fabrication from 20 gauge, galvanized and factory primed for paint finish.

2.02 GENERAL FABRICATION REQUIREMENTS

- A. Transom and Slide Panels: Wherever transom panels or side panels of wood are shown in same framing systems as wood doors, provide panels which match quality and appearance of associated wood doors, unless otherwise indicated. Fabrication matching panels with same construction, exposed surfaces and finish as specified for associated doors.
- B. Openings: Cut and trim openings through doors and panels as shown. Comply with applicable requirements of referenced standard for kind(s) of doors required.
 - 1. Light openings: Factory cut openings. Trim openings for non-fire-rated doors with solid wood moldings.
 - 2. Metal Louvers: Factory cut openings. When standard service of door manufacturer, factory install metal louvers in prepared openings; otherwise install only flush wood beads in prepared openings.

2.03 EXTERIOR FLUSH WOOD DOORS

- A. Solid Core Wood Doors: Where shown or scheduled, provide exterior solid core wood doors complying with applicable requirements of referenced standards and as follows:
 - 1. Type 1 adhesive bond
 - 2. Core Type: At contractor's option, provide continuous wood block, stile and rail block, of particle board, as required by manufacturer to meet specified warranty period.
- B. Preservative Treatment: Dip-treat exposed wood for not less than 3 minutes in a 5% solution of pentachlorophenol with water repellent added.
- C. Flashing: Flash bottom of light openings (if any) and top of out-swinging doors (if any) with flexible non-corrosive metal set in white lead.
- D. Exposed Surfaces for Paint Finish: Where exterior flush wood doors are shown or scheduled for paint finish, provide standard thickness rotary cut birch complying with NWMA I.S.-1 good grade, or medium density overlay (MDO) applied over standard thickness hardwood face veneers, and any close-grain hardwood for exposed edges and other solid wood components, as required by manufacturer to meet specified warranty period.

2.04 INTERIOR FLUSH WOOD DOORS

- A. Solid Core Wood Doors:
 - 1. Type II water resistant bond.
 - 2. Core Construction: Solid wood block, wood particle board, or mineral with wood lock blocks, as required by door manufacturer to comply with specified warranty period.
 - 3. Face Panels Manufacturer's standard 2-or 3-ply face panels.
 - 4. Exposed Surfaces for Paint Finish where solid core interior wood doors are shown or scheduled to receive paint finish, provide either medium density overlay (MDO) complying with PS-1 applied over manufacturer's standard thickness hardwood face veneers; or standard thickness, rotary-cut birch face veneers complying with NWMA I.S.-1, good grade. Provide any close-grain hardwood for exposed edges and other exposed solid wood components. Standard thickness, rotary-cut birch complying with NWMA I.S.-1, sound grade for face veneers any species of wood for exposed edges and other exposed solid wood components.
 - 5. Exposed Surface for Transparent Finish: Where solid core interior wood doors are shown or scheduled to receive a transparent finish, provide manufacturer's standard thickness face veneers of NWMA I.S.-1, good grade face veneers of the species scheduled. #1 Sharp contrast not permitted at veneer joints. Provide exposed edges and other exposed solid wood components of any species of wood.
 - #1 If species is not scheduled, supply natural Birch, rotary cut.

- B. Hollow Core Wood Doors:
 - 1. Core Construction: As required by manufacturer to meet warranty period.
 - 2. Core Construction: Any type of core complying with the requirements of NWMA I.S.-1 for hollow core flush doors.
 - 3. Face Panels: Manufacturer's standard 2-or 3-ply face panels.
 - 4. Exposed Surfaces for Paint Finish: Where hollow core interior wood doors are shown or scheduled to receive a paint finish, provide standard thickness, rotary-cut birch face veneer complying with NWMA I.S.-1 good grade face veneers and any species of wood for exposed edges and other exposed solid wood components.
 - 5. Exposed Surface for Transparent Finish: Where hollow core interior wood doors are shown or scheduled to receive a transparent finish, provide manufacturer's standard thickness face veneers of NWMA I.S.-1 good grade face veneers of species scheduled. #1 Sharp contrast not permitted at veneer joints. Provide exposed edges and other solid wood components of any species of wood.

2.05 PRE-FITTING AND PREPARATION FOR HARDWARE

- A. Pre-fit and pre-machine wood doors at factory.
- B. Comply with tolerance requirements of NWMA for prefitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware. Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining in factory.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Installer must examine door frames and verify that frames are correct type and have been installed as required for proper hanging of corresponding doors and notify Contractor in writing of conditions detrimental to proper and timely installation of wood doors. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to Installer. Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.

3.02 INSTALLATION

- A. Condition doors to average prevailing humidity in installation area prior to hanging.
- B. Hardware: For installation see Division 8 "Builders Hardware" section of these specifications.
- C. Manufacturer's Instructions: Install wood doors in accordance with manufacturer's instructions and as shown.
- D. Job Fit Doors: (Only if approved in writing by Architect) Align doors to frames for proper fit and uniform clearance at each edge and matching for hardware. Seal cut surfaces after fitting and machining.
 - 1. Bevel non-fire rated doors 1/8" in 2" at lock and hinge edges.
 - 2. Bevel fire-rated doors 1/16" in 2" at lock edge.
- E. Pre-fit Doors: Fit to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each.
- F. Clearance: For non-fire doors provide clearances of 1/8" at jambs and head; 1/8" at meeting stiles for pairs of doors; and 1/2" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.
 - 1. For fire-rated doors, provide clearances complying with the limitations of the authority having jurisdiction.
- G. Job Site Finished Doors: See painting sections in Division 9 of these specifications for requirements for finishing wood doors.

3.03 ADJUST AND CLEAN

- A. Operation Rehang or replace doors which do not swing or operate freely, as directed by Architect.
- B. Finished Doors: Refinish or replace doors damages during installation, as directed by Architect.
- C. Protection and Completed Work: Advise Contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance work.

END OF SECTION 08 14 00

SECTION 08 41 13 – ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Extent of aluminum entrances and storefronts as indicated on drawings and schedules.
- B. Manually operated aluminum/glass doors, complete with glass, glazing and finish hardware.
- C. Aluminum framing for exterior windows.
- D. Aluminum casement windows with all related hardware.
- E. Aluminum framing for interior openings as indicated on drawings and schedules.
- F. Sealant work required for watertight installation.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 08 80 00, "Glass and Glazing"
- B. Section 08 70 00, "Finish Hardware"

1.03 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including the General and Supplementary Conditions and Division No. 1 Specifications, apply to work of this section.

1.04 REFERENCE STANDARDS

- A. Requirements for reference standards are defined in Sections 01 42 00 and 01 42 16.

1.05 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
 - 1. Doors shall meet a minimum of 140 mph rating.
 - 2. Impact Resistance shall be in compliance with IBC 2021, ASCE 7-16, Risk Category III.

1.05 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Section 01 33 00. Indicate complete elevations of doors, framing, assemblies, installation and assembly conditions, details of construction; finishes, location, and installation of hardware; size, shape and thickness of materials, joints and connections, and details of joining with other work. Indicate hardware types, styles, finish, and shape.
- B. Submit manufacturer's product data for doors and framing system with shop drawings indicating complete instruction for installations.
- C. Provide certified test results showing that entrance and storefront systems have been tested by a recognized testing laboratory or agency and comply with specified performance characteristics.
- D. Must be stamped/sealed by an independent Engineering firm.

1.06 QUALITY ASSURANCE

- A. Provide entrances doors and storefront framing system by a single manufacturer capable of showing prior production

of units similar to those required.

- B. Provide doors and framing systems produced by a single manufacturer with not less than 5 years successful experience in the fabrication of assemblies of the type and quality required.
- C. Entrances and storefront shall be installed by a firm that has not less than 5 years successful experience in the installation of systems similar to those required.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Aluminum Members: Provide alloy and temper recommended for strength, corrosion resistance, and applications of required finish; comply with ASTM B221 for extrusions and ASTM B209 for sheet or plate.
- B. Fasteners: Provide fasteners of aluminum, non-magnetic stainless steel, or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum components, hardware, anchors, and other components.
- C. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125" thick reinforce the interior with aluminum or non-magnetic stainless steel to receive screw threads or provide standard non-corrosive pressed-in splinted grommet nuts.
- D. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For the application of hardware, use fasteners that match the finish of member or hardware being fastened.
 - 1. Provide Phillips flat-head screw for the exposed fasteners.
- E. Concealed Flashing: Provide 26 gauge minimum dead-soft stainless-steel or 0.026" minimum extruded aluminum alloy and type selected by manufacturer for compatibility with other components.
- F. Brackets and Reinforcement: Provide high-strength aluminum brackets and reinforcements; otherwise provide non-magnetic steel or hot dip galvanized steel complying with ASTM A386.
- G. Concrete/Masonry Inserts: Provide concrete and masonry inserts fabricated from cast-iron, malleable iron, or hot-dip galvanized steel complying with ASTM A386.
- H. Compression Weather Stripping: Provide the manufacturer's standard replaceable compressible weather stripping gaskets of molded neoprene complying with ASTM D2000 or molded PVC complying with ASTM D2287.
- I. Sliding Weatherstripping: Provide the manufacturer's standard replaceable weatherstripping of wool, poly propylene, or nylon woven pile, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.
- J. Sill Flashing: Provide .040 aluminum brake metal sill flashing.

2.02 FABRICATION

- A. General: Sizes of doors, windows, framing systems, etc. are indicated on drawings. All dimensions shall be field verified.
- B. Prefabrication: Before shipment to the project site, complete fabrication, assembly, finishing, hardware application, and other work to the greatest extent possible.
 - 1. Do not drill and tap for surface mounted hardware until time of installation at project site.
- C. Welding: Comply with AWS recommendations; grind exposed welds smooth and restore mechanical finish.
- D. Reinforcing: Install reinforcing as required for hardware and necessary for performance requirements, sag resistance and rigidity.

- E. Dissimilar Metals: Separate dissimilar metals with zinc chromate primer, bituminous paint, or other separator that will prevent corrosion.
- F. Fasteners: Conceal fasteners wherever possible.
- G. Weatherstripping: For exterior doors, provide compression weatherstripping against fixed stops, at other edges, provide sliding weatherstripping retained in adjustable strip mortises into door edge.
 - 1. Provide EPDM in vinyl blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.
- H. Aluminum pocket filler: for exterior frames with no glass.

2.03 FINISHES

- A. Clear Anodized Finish: Provide NAAMM AA-M12 C22 A31, Class I (Non-specular as fabricated mechanical finish; chemical etch, medium matte, min. thickness 0.7 mil) clear anodized finish.

2.04 ALUMINUM STOREFRONT SYSTEM

- A. Storefront Framing System: Provide inside outside matched resilient flush-glazed storefront framing systems with provisions for glass replacement. Shop fabricate and preassemble frame components where possible.
- B. Glazing: Provide 1" thick insulated unit in accordance with Section 08800.
- C. Manufacturers
 - 1. United State Aluminum Corporation; 450 Flush Glazing System
 - 2. Kawneer Company, Inc. Niles, MI, "Tri-FAB" 450 for 1" Glazing.

2.05 ALUMINUM ENTRANCE DOORS

- A. Type: Medium STILE, manually operated, finish to match aluminum glass wall system.
- B. Provide manufacturer's standard threshold at exterior doors and where so noted on drawings.
- C. Manufacturer (must be same as for storefront system)
 - 1. United States Aluminum Corp.
 - 2. Kawneer Company, Inc.

2.06 ALUMINUM CASEMENT WINDOWS

- A. Type: Aluminum commercial grade casement windows as indicated on drawings. Aluminum finish to match storefront framing.
- B. Windows shall be provided with a full egress arms to open 90 degrees.
- C. Window units shall be provided with necessary accessories to provide a complete and weatherproof installation.
- D. Qualifications: Window manufacturer shall have been regularly engaged in fabrication of windows of this type for not less than 10 years. Windows shall conform to AAMA P-C50 specs.

2.07 HARDWARE

- A. General: Refer to hardware (Section 08700) for requirements for hardware items other than those indicated to be provided by aluminum entrance manufacturer.
- B. Provide manufacturer's heavy-duty hardware units as indicated, scheduled, or required for operation of each door, including the following items of sizes, number and type recommended by manufacturer for service required; finish and color to match door.

- C. Offset Pivot Sets: Provide offset pivot assemblies complying with ANSI A456.4, Grade 1; provide exposed parts of cast aluminum alloy; provide intermediate pivot for doors over 7'-6" high.
- D. Surface Mounted Overhead Closers: Provide surface-mounted overhead closure, modern type with cover, for hinge side installation; comply with ANSI A156.4, Grade 1. Comply with manufacturer's recommendations for size closer, depending on door size, exposure to weather and anticipated frequency of use. Comply with ADA requirements. Include the following:
 - 1. Hold-Open arm
 - 2. Delayed-Action closing
- E. Deadlocks: Provide max. security type deadlocks with min. 1" pivoted bolt and stainless steel, strike boss; Comply with ANSI A156.5, Grade 1 with thumb turn latch. Rim cylinder by others.
- F. Panic Hardware: Provide heavy-duty concealed rod type flush bolts complying with UL 305. Von DuPrin 3547. Exit Device shall match style used on all other doors.
- G. Flush bolts: Provide standard edge mortised lever extension type flush bolts complying with ANSI A156.16 for inactive leaves of pairs of doors. Provide flush bolts at both the top and bottom of doors.
- H. Pull handles: Provide 1" diameter, 3-1/4" projection extruded aluminum pull handle with stanchions spaced 18" apart.
- I. Thresholds: Provide extruded aluminum threshold in mill finish, complete with anchors and clips, coordinated with pivots.

2.08 SEALANT

- A. Type: Of exterior quality specified in Section 07 92 00.

PART 3 - EXECUTION

3.01 PROJECT CONDITIONS

- A. Field Measurements: Check openings by field measurements before fabrication to ensure proper fitting of work: show measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in the work. Where necessary, proceed with fabrication without field measurements, coordinate fabrication tolerances to ensure proper fit.

3.02 INSTALLATION

- A. Install aluminum framing, windows, and doors in accordance with manufacturer's recommendations and approved shop drawings. Ensure assemblies are plumb, level and free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- B. Use sufficient anchorage devices to securely and rigidly fasten door and frame assemblies to building.
- C. Coordinate glass and glazing work with Section 08800.
- D. Install hardware in accordance with manufacturer's recommendations using proper templates. Coordinate this work with Section 08 70 00 - Finish Hardware.
- E. Install about insulation in slim spaces around perimeter of door and frame assemblies to maintain continuity of thermal barrier.
- F. Install perimeter sealant and related backing materials in accordance with workmanship and installation requirements indicated in Section 07 92 00.
- G. Install aluminum pocket filler in exterior frames with no glass.

3.03 PROTECTION

- A. Protect aluminum surfaces that will abut masonry, concrete, wood, or steel from contact by neoprene gaskets or bituminous paint to prevent galvanic or corrosive action. Protect as recommended by door manufacturer. Comply with requirements specified under "Dissimilar Materials" in the Appendix of AAMA 101-85.

3.04 TOUCH UP PAINT

- A. Upon completion of the work, deliver to the Owner a minimum of one pint of paint of type and quality especially formulated to touch up the specified metal and finish.

END OF SECTION 08 41 13

SECTION 09 21 16 – GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Interior gypsum board sheathing.
- B. Metal framing required for interior gypsum board walls.
- C. Thermal and acoustical batt insulation - Refer to Division 07 - Insulation.
- D. Installation of all blocking concealed in metal stud/gypsum board walls as required for items which required blocking.
- E. Exterior gypsum board sheathing.
- F. Dry wall finishing.

1.02 QUALITY ASSURANCE

- A. Keep most current copy of Gypsum Association GA-216 in field office for duration of project.

1.03 REFERENCE STANDARDS

- A. Requirements for reference standards are defined in Sections 01 42 00.

PART 2 - PRODUCTS

2.01 METAL FRAMING FOR WALLS

- A. Provide metal framing materials in accordance with Gypsum Association GA 216.
- B. Interior Studs: All interior studs to be C-Shaped galvanized steel.
 - 1. Studs for interior walls: 24 gauge to height allowed and recommended by manufacturer.
 - 2. Studs for rough openings at door 36" and smaller:
 - a. For jamb framing: two (2), 18-gauge studs at each jamb from floor to structure.
 - b. For header framing: two (2), 18-gauge studs.
 - 3. Studs for rough openings at door 42" and wider:
 - a. For jamb framing: two (2), 14-gauge studs at each jamb from floor to structure.
 - b. For header framing: two (2), 14-gauge studs.
- C. Runners for Wall Studs: Match gauge of studs.
- D. Furring members: Hat-shaped, 24-gauge, electro galvanized, 1-3/8" face width, 7/8" furring depth, 2-3/4" overall width. Fasteners to be 2" cut nails for application to masonry walls.

2.02 METAL FRAMING FOR SUSPENDED GYPSUM BOARD CEILINGS

- A. Main Channels: 1-1/2" cold-rolled steel, rust resistant coated, spaced 4' o.c.
- B. Cross Furring Channels: Metal furring channels attached to main channels with metal furring clips or 18-gauge galvanized wire tie spaced 16" o.c.
- C. Hanger Wires: Galvanized, of size in compliance with recommendations of GA-216.
- D. Control Joint: Same as Part B of this section.

2.03 INTERIOR GYPSUM BOARD

- A. Provide gypsum wallboard materials in accordance with recommendations of GA-216.
- B. Acceptable Manufacturers:
 - 1. Genstar Gypsum Products Co., Irving, TX.
 - 2. Gold Bond Building Products, Charlotte, NC.
 - 3. U.S. Gypsum Co., Chicago, Ill.
- C. Fire Rated Gypsum Board: Maximum permissible lengths, tapered edges (noted on Drawings as "Type X").
 - 1. Thickness: As indicated on drawings.
 - 2. Manufacturers/Products:
 - a. Gold Bond, "Fire-Shield".
 - b. U.S. Gypsum, "Firecode "C".
- D. Moisture Resistant Gypsum Board: Chemically treated multi-layered face and back paper and water resistant gypsum core, maximum permissible lengths.

2.04 SHAFT WALLS

- A. Type: Shaft wall systems made up of steel and fire-resistant gypsum board.
- B. Fire Rating: As required to comply with design requirements.
- C. Acceptable Manufacturers:
 - 1. Goldbond.
 - 2. U.S. Gypsum.

2.05 GYPSUM BOARD ACCESSORIES FOR INTERIOR WORK

- A. Provide gypsum wallboard accessories in accordance with Gypsum Association GA-216.
- B. Screws: Self-drilling, self-tapping, Type S. Size as recommended by gypsum manufacturer for wall and ceiling applications.
- C. Corner Beads: Galvanized steel with paper tape wings 1-3/4" wide.
- D. Edge Trim: Galvanized metal.
- E. Reinforcing tape, joint compound, adhesive, water, fasteners: In accordance with Gypsum Association GA-216.
- F. Acoustical Sealant: Water-base, non-bleeding, non-staining, pumpable, applicable in beads.

2.06 ACOUSTICAL ACCESSORIES

- A. Acoustical Insulation: Semi-rigid spum mineral fiber blankets without membrane covering, 3 pcf density, 1-1/2" thick.
 - 1. Manufacturers/Products:
 - a. U.S. Gypsum "Thermafiber".
 - b. Owens-Corning Fiberglass Corp., Toledo, Ohio, "Noise Barrier Batt Insulation".
 - c. Manville, Denver, Co., "Pyro-Fiber Sound Control Blankets".
- B. Acoustical Sealant: Water-base, non-bleeding, non-staining, pumpable, applicable in beads.
 - 1. Manufacturers/Products:
 - a. U.S. Gypsum "Acoustical Sealant".
 - b. Ohio Sealants, Inc., Mentor, Oh., "Sound Sealant (Water Base)".

PART 3 - EXECUTION

3.01 METAL FRAMING ERECTION

- A. Install members true to lines and levels to provide surface flatness with maximum variation of 1/8 inch in 10 feet in any direction.
- B. Stud Spacings: As indicated on drawings. Where not indicated on drawings, space studs 16" on centers maximum.
- C. Securely attach floor and ceiling runners.
- D. Anchor studs together at partition intersections and corners with metal fastener or with screw through each stud flange and runner flange.
- E. Where necessary to splice studs, nest studs together with minimum 8 inch and insert two (2) screws in each flange.
- F. Locate studs no more than 2" from door frame jambs, abutting partitions, partition corners and other construction.
- G. Opening for Fire Extinguisher Cabinets:
 - 1. Provide rough openings for fire extinguisher cabinets of types specified in Section 10 44 16.
 - 2. In fire-rated walls, the openings shall be closed in or boxed in with same type construction as wall. The fire rating shall be maintained.
- H. Blocking: Install and secure blocking metal stud/gypsum board walls for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories and for other items which require blocking.
- I. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work which is to be placed in or behind partition framing. Allow such items to be installed after framing is complete.
- J. Items built into fire rated walls: Items built into fire rated walls shall be boxed in or enclosed with the same construction as the rated walls.

3.02 INSTALLATION OF WALL FURRING TO MASONRY WALLS

- A. Space furring channels on masonry walls maximum 16 inches on center not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flange at maximum 24 inches on center.

3.03 INSTALLATION OF METAL FRAMING FOR SUSPENDED GYPSUM BOARD CEILINGS

- A. Coordinate location of hangers with other work.
- B. Install ceiling furring independent of walls, columns, and above ceiling work.
- C. Space main carrying channels at maximum 48 inches on center, not more than 6 inches from perimeter walls. Lap splices minimum 12 inches and secure together 2 inches from each end of splice.
- D. Place furring channels perpendicular to carrying channels at 24 inches on center not more than 12 inches from perimeter walls. Lap splices 8 inches and secure together one inch from each end of splice.
- E. Reinforce openings in ceiling suspension system which interrupts main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each end of opening.
- F. Laterally brace entire suspension system where required.

3.04 INSTALLATION OF INTERIOR GYPSUM BOARD

- A. Install gypsum board in accordance with recommendations of Gypsum Association GA-216.
- B. Install 1/2" gypsum board on 20-gauge 7/8" hat channels at 16" o.c. on bottom of pre-engineered steel trusses. Tape and float to provide sealed separation from attic.

- C. Install gypsum board (5/8") on hat channels to meet UL assembly at fire rated ceiling assemblies identified on plans.
- D. Erect single layer standard gypsum board (non-rated walls) in direction most practical and economical, with ends and edges occurring over firm bearing.
- E. Extend top of edge of gypsum board up tight against roof deck at exterior walls. Cut top edge to conform to opening in roof deck. Seal exterior & interior gypsum board to roof deck as required to stop any outside air from entering the building envelope.
- F. For Fire Rated Walls and Ceiling Partitions:
 - 1. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
 - 2. For double layer applications, erect first layer vertically, with edges and ends occurring over firm bearing. Place second layer perpendicular to first layer. Stagger edges of sheets with those of adjacent layer.
 - 3. Items built into fire rated walls shall be boxed in or enclosed with the same construction as the rated wall.
 - 4. Provide UL design number to verify compliance with required rating.
 - 5. Fire rated partitions shall be permanently identified with letting no smaller than 4" high to indicate type and rating of wall. Signage shall be located above ceiling systems and in other concealed spaces.
 - 6. Provide fire-rated sealant, dampers, protections, etc. as required to maintain partition fire rating.
- G. Use screws when fastening gypsum board to metal furring or framing.
- H. Treat cut edges and holes in moisture resistant and exterior gypsum board with approved sealant.
- I. Place control joints where scheduled or 30'-0" o.c. max. Verify layout of control joints with Architect.
- J. Place corner beads at external corners. Use longest practical lengths. Place edge trim where gypsum board abuts dissimilar materials.
- K. Tape, fill and sand exposed joints, edges, corners, openings, and fixings, to produce surface ready to receive surface finishes. Feather-coat onto adjoining surfaces so that camber is maximum 1/16".
- L. Remove and Re-do defective work.
- M. Place acoustical sealant in accordance with manufacturer's recommendations and recommended guidelines of GA216 to achieve a minimum STC rating of 39 as tested per ASTM E90-75.
- N. Seal gypsum board interior and exterior wall sheathing at top of wall to seal off building envelope from outside.

3.05 INSTALLATION OF ACOUSTICAL ACCESSORIES

- A. Acoustical Insulation: Place acoustical insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items, within or behind partition and tight to items passing through partitions.
- B. Acoustical Sealant: Place acoustical sealant within partitions in accordance with manufacturer's recommendations.

3.06 INSTALLATION OF MOISTURE RESISTANT GYPSUM BOARD

- A. Install Hi-Abuse Moisture Resistant Gypsum Board at all plumbing walls behind fixtures.

3.07 INSTALLATION OF EXTERIOR GYPSUM BOARD SHEATHING

- A. Install exterior gypsum board sheathing as recommended by manufacturer.
- B. Seal all joints in exterior sheathing. Seal exterior sheathing at top of wall as required to prevent any air infiltration.
- C. Cover exterior gypsum board sheathing with 15 lb. felt paper as recommended by manufacturer.

3.08 GYPSUM DRYWALL FINISHING

- A. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for painting or wall coverings. Pre-fill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer.
- B. Apply joint tape between gypsum board, except where trim accessories are indicated.
- C. Apply joint compound in 3 coats and sand between last 2 coats and after last coat. Feather-coat onto adjoining surfaces so that chamber is maximum 1/16".]

3.09 PROTECTION OF WORK

- A. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum dry wall work being without damage or deterioration at time of substantial completion.

END OF SECTION 09 21 16

SECTION 09 65 13.13 – RESILIENT BASE

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions of Division 01 General Requirements, Specification Sections, apply to this section.

1.2 SUMMARY

- A. Section includes:
 - 1. Resilient Wall Base

1.3 SUBMITTALS, RELATED DOCUMENTS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.
- B. Product Data: Submit manufacturers:
 - 1. Technical data sheet
 - 2. Care & maintenance document
 - 3. Warranty
- C. LEED Submittals:
 - 1. Product Data for Credit EQ 4.1: For adhesives, including printed statement of VOC content and chemical components.
- D. Samples for Initial Selection: For each type of product indicated.
- E. Samples for Verification: For each type of product indicated, in manufacturer's standard- size samples of each resilient product color, texture and pattern required.
- F. Product Schedule: For resilient products. Use same designations indicated on Drawings.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide resilient wall base materials manufactured in the United States of America by a firm with a minimum of 10 years' experience with resilient rubber materials of type equivalent to those specified.
- B. Provide resilient wall base, flooring materials, adhesives, accessories and subfloor preparation products from one manufacturer to ensure color matching and compatibility.
- C. Manufacturer shall be capable of providing technical training and technical field service representation.

1.5 RELATED WORK

- A. Installer must be professional, licensed, insured and acceptable to manufacturer of resilient flooring materials. Project Managers or Field Supervisors must be INSTALL (International Standards & Training Alliance) certified CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager) for the requirements of the project or equivalent.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within the range recommended by Flexco of 55 degrees F (13 degrees C) and 85 degrees F (29 degrees C).

1.7 PROJECT CONDITIONS

- A. Install resilient products after other finishing operations, including painting, have been completed.
- B. Maintain ambient temperatures within range of (± 10 degrees F) 65 degrees (18 degrees C) and 85 degrees F (29 degrees C) in the spaces to receive the resilient products during:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- C. Maintain relative humidity between 40% and 65% during installation.
- D. Avoid conditions in which dew point causes condensation on the installation surface.

1.8 WARRANTY

- A. Provide manufacturer's standard limited commercial warranty to cover manufacturing defects.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Basis-of-Design: Flexco Floors | 1401 East 6th Street | Tuscumbia, AL 35674 | P: (800) 633-3151
- B. Substitutions: In accordance with Section 01 33 00 – Submittal Procedures

2.2 PRODUCTS

- A. TRADITIONAL WALL BASE
 - 1. FLEXCO BASE 2000 THERMOPLASTIC RUBBER (TP) WALL BASE - specify rubber wall base with the following characteristics: Meets the performance requirements for the following Industry Standards:
 - a. ASTM F1861, Standard Specification for Resilient Wall Base, Type TP (rubber, thermoplastic), Group 2 (layered), Style A&B (straight, cove)
 - b. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class A.
 - c. ASTM E648 (NFPA 253), Standard Test Method for Critical Radiant Flux, Class 1, >0.45 W/cm².
 - d. ASTM E662 (NFPA 258), Standard Test Method for Smoke Density, Passes, <450
 - e. ASTM F137, Standard Test Method for Flexibility of Resilient Flooring Materials protocols, Passes
 - f. ASTM F386, Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces, Passes
 - g. ASTM F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring, Excellent
 - h. ASTM F1515, Standard Test Method for Measuring Light Stability of Resilient Flooring protocols, Passes
 - i. National Fire Protection Association (NFPA): NFPA 253, Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source

- j. NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials
 - k. NFPA 258, Test Method for Specific Density of Smoke Generated by Solid Materials
CAN/ULC-S102.2
 - l. FSR 10, SDS 60
- B. FLEXCO RUBBER WALL BASE IS A THERMOPLASTIC RUBBER (TP)
- 1. Flexco Base 2000 Wall Base
 - 2. Height: Flexco Base 2000 4" height,
 - 3. Size: Flexco Base 2000 120' length rolls.
 - 4. Style: Style to be chosen by the Architect from manufacturer's full line of styles.
 - 5. Color: Color to be chosen by the Architect from manufacturer's full line of colors.
 - 6. TP BASE 2000 rubber base is SCS FloorScore® Certified and meets California Specifications Section 01350
 - 7. TP BASE 2000 rubber base and accessories do not contain chemicals that may be hazardous to human health
 - 8. TP BASE 2000 rubber base meets NSF 332 Gold Criteria
 - 9. TP BASE 2000 rubber base meets CHPS Criteria
 - 10. TP BASE 2000 rubber base is manufactured in the U.S.A.
 - 11. TP BASE 2000 rubber base is manufactured in a Facility that is ISO 14001 Certified
 - 12. TP BASE 2000 rubber base is free of materials known to be teratogenic, mutagenic or carcinogenic
 - 13. TP BASE 2000 rubber base is free of Halogens
 - 14. TP BASE 2000 rubber base is free of Asbestos
 - 15. TP BASE 2000 rubber base is free of Phthalates
 - 16. TP BASE 2000 rubber base is free of Heavy Metals
 - 17. TP BASE 2000 rubber base is free of any Red List Chemicals

2.3 INSTALLATION AND MAINTENANCE MATERIALS

- A. Substrate/Background Preparation Products:
 - 1. Adhesives: Adhesives should be selected based on the site conditions and use of the space being installed.
- B. Recommended Adhesive Products:
 - 1. Excelsior WB-600 Acrylic Wall Base Adhesive provided by Flexco
 - a. Unit Size: 30 oz. cartridge, 1 Gallon & 4 Gallon
 - b. Coverage: 30 – 70 linear feet per cartridge, 180 – 340 linear feet per gallon
 - c. Standard installations over porous backgrounds
 - d. 100 % solids, solvent free and low VOCs
 - e. Hard set adhesive adding to dimensionally stable materials
 - f. Excellent sheer strength
 - 2. Excelsior C-630 Contact Adhesive provided by Flexco
 - a. Unit Size: 1 Quart
 - b. Coverage: 20 – 40 Square Feet per unit / 120 – 140 Linear Feet per unit
 - c. Standard installations over porous and non-porous substrates
 - d. Hard set adhesive adding to dimensionally stable materials
 - e. Excellent sheer strength
 - f. Superior bond strength
 - g. Great for environments with topical moisture
- C. Accessories: Items needed to complete the installation. Recommended accessory products:
 - a. Flexco Factory Corners
 - b. Rubber Corner Blocks
 - c. Mini-Rubber Corners
 - d. Color-matched Caulks

- D. Maintenance Materials: Proper maintenance of the installation is critical to the long term performance of the flooring products being specified. Using the appropriate chemicals to maintain the product according to the environment in which it is specified is critical. Recommend maintenance products:
1. Excelsior NC-900, All-Purpose Neutral pH Cleaner provided by Flexco
 - a. For initial maintenance
 - b. For daily and routine maintenance

PART 3 – EXECUTION

3.1 GENERAL

- A. General Contractor Responsibilities:
1. Supply a safe, climate-controlled building as detailed in Flexco Technical Data Sheets.
 2. Ensure substrate/background meets the requirements of ASTM F1861, Flexco Technical Data Sheets and Excelsior Technical Data Sheets.
 3. Provide a secure storage area that is maintained permanently or temporarily at normal operating temperature and humidity conditions between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to and during the application of the wall base, so the contractor can acclimate the rubber base materials per manufacturer's instructions.
 4. Provide an installation area that is weather tight and maintained either permanently or temporarily at ambient service temperature and humidity. Normal operating temperature and humidity conditions are between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to and during the application of the wall base per the manufacturer's instructions.
 5. Ensure areas with direct prolonged exposure to sunlight are protected with protective UVA/UVB restrictive coatings or films.
 6. In areas where the walls are subject to direct sunlight through doors or windows, the doors and windows should be covered using blinds, curtains, cardboard or similar for the time of the installation and 72-hours after the installation to allow the adhesive to cure. Note: These areas should be installed using wet adhesives only.
 7. Conduct initial maintenance prior to final usage per the Flexco Care & Maintenance Documents. Do not conduct initial maintenance until adhesive has cured per the adhesive technical data.
 8. Provide trained installers that are professional, licensed, insured and acceptable to manufacturer of resilient rubber wall base materials.
 9. Ensure installers or installation teams meet one of the following requirements:
 - a. Have completed INSTALL (International Standards & Training Alliance)
 - b. CFI (Certified Floorcovering Installers) training programs
 - c. Certified by INSTALL or CFI.
 - d. Are being supervised by Project Managers or Field Supervisors that are INSTALL (International Standards & Training Alliance) certified, CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager).
 10. Follow all requirements in the appropriate Flexco and/or Excelsior Technical Data Sheets, Care & Maintenance Documents, Warranties and other technical documents or instructions.

3.2 EXAMINATION

- A. General: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and Preparation, as well as Section 01 43 00 – Quality Assurance.
- B. Verification of Conditions: Inspect all substrates/backgrounds to ensure they are clean, smooth, permanently dry, structurally sound and without voids. Confirm all areas are properly sealed and acclimated per manufacturer's requirements.
- C. Verification of Products: In accordance with manufacturer's installation requirements, visually inspect material for size, style, color or visual defects prior to installing. Any material that is incorrect or visually defective shall not be installed.

3.3 SUBSTRATE/BACKGROUND PREPARATION

- A. General: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and preparation. All work required ensuring substrate/background meets manufacturers' guidelines are the responsibility of the general contractor.
- B. Preparation: Ensure substrate/background meets the requirements of ASTM F1861 for resilient wall base and/or Flexco Technical Data Sheets and Excelsior Technical Data Sheets.
 - 1. Substrates/backgrounds must be free of visible water or moisture, dust, sealers, paint, residual adhesives and adhesive removers, solvents, wax, oil, grease, mold, mildew and any other extraneous coating, film, material or foreign matter.
 - 2. Acclimate all products to be used during the installation and the installation environment prior to installation according to the manufacturers written instructions.
 - 3. Fill cracks, holes, depressions and irregularities in the substrate/background to prevent transferring through to the surface of the resilient wall base.

3.4 INSTALLATION

- A. General: Follow all relevant guidelines detailed in Division 01, as well as wall base and adhesive manufacturer's technical data sheets.
- B. Resilient Vinyl Wall Base: Install material in accordance with manufacturer's recommendations.
 - 1. Select the appropriate adhesive for the application and job site conditions.
 - 2. Install material according to roll sequence or with like run numbers.
 - 3. Ensure material is rolled appropriately into the adhesive using a hand roller.

3.5 CLEANING & MAINTENANCE

- A. General: Clean up installation area and vacuum dust or wipe material to remove any dirt, dust or debris.
- B. Initial Maintenance: Conduct initial maintenance per the manufacturer's recommended procedures stated in the Maintenance Documents. All documentation is available upon request or from the Flexco website: www.flexcofloors.com. Excelsior Cleaning products are the recommended products for use. All can be found linked to the product on the Flexco website or at www.excelsiorproducts.net.
- C. Regular Maintenance: Conduct maintenance on regular intervals as needed. Insufficient cleaning will reduce the wear life of the wall base and alter the aesthetic properties of the wall base. The amount of maintenance depends directly upon the amount of dirt and particulates the area is subjected to.

3.6 CLOSEOUT ACTIVITIES

- A. General: Follow all federal, state and local requirements and Division 01 Section 01 76 00 – Protecting Installed Construction and Section 01 78 00 – Closeout Submittal requirements for these activities, protecting installed construction.
- B. Protection: Protect newly installed material from damage by other trades. Be sure all construction debris is picked up and vacuumed or removed prior to leaving the area. Limit usage and foot traffic according to the adhesive's requirements. When moving appliances or heavy furniture, protect wall base from scuffing and tearing using temporary floor protection as well.

END OF SECTION 09 65 13.13

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. Provide and install all modular carpet and installation work as required by contract documents and their specifications.

1.2 QUALITY ASSURANCE

- A. Manufacturer –
1. The carpet manufacturer shall have no less than fifteen years of production experience with modular carpet similar to type specified.
 2. Commitment to quality - Carpet manufacturer shall provide verification of registration to the ISO 9001/9002 Quality Management System.
 3. Carpet manufacturer shall provide verification of registration in the ISO 14001 Environmental Management System.
 4. Commitment to sustainability - carpet manufacturer shall demonstrate through programs of source reduction, recycling, reuse, water conservation and conservation of raw material usage its commitment to sustainability
 5. Response to RFQ shall be accompanied by a letter confirming compliance with listed performance specifications signed off by an Officer of the Company.
 6. Manufacturer shall make available a list of qualified minority, disabled, women and veteran owned carpet dealers capable of installation per manufacturer's installation instructions and provide contact information for each name supplied.
 7. All products offered by the manufacturer shall be "standard running line" products and shall be available with no minimum order (single box availability).
 8. Manufacturer shall guarantee availability of recycled content product.
 9. The product warranty required herein shall be provided directly by the carpet manufacturer.

1.3 INSTALLATION PROVIDER –

- A. The installation provider shall be directly responsible for the quality of the completed floorcovering installation, including the quality of both the materials and labor used in the installation.
- B. The installation provider shall directly warrant to the end use all products, materials and services related to the floorcovering installation (including any floorcovering(s), or other products or materials used in the installation) meeting specifications set forth herein.
- C. The installation provider shall have successful carpet installation experience on work similar to the work of this Section.

1.4 SUBMITTALS – Please submit each of the following with your proposal (unless otherwise noted):

- A. Manufacturer's Data - Two (2) copies of carpet manufacturer's construction specifications, performance specification and installation instructions for carpet and related items specified.
- B. Fiber Verification – Certification from the fiber producer verifying use of premium, type 6,6 fiber or type 6. (Premium fibers are identified as Invista, Universal and Aquafil).
- C. Fibers extruded by carpet mills will be considered "non-premium" for purposes of this specification.
- D. All applicable product warranties provided by manufacturer.
- E. Installation provider's proof of insurance, copy of contractor's license, and worker's compensation certificate.
- F. Five (5) current project references for installation provider, with scope, date, and customer contact with phone number in compliance letter.
- G. Samples – Customary (standard) size carpet samples of each type of carpet, in each specified pattern, color, and construction.

H. Any alternatives to specified product(s) or approved manufacturers, to be considered, shall be submitted for approval at least ten (10) working days prior to bid or proposal to be considered.

I. Maintenance Instructions - Two (2) copies of the manufacturer's carpet maintenance instructions.

1.5 WARRANTY

A. Provide the following written warranties by carpet manufacturer for a period of not less than 15 years (non-prorated):

B. Wear - Surface fiber wear shall not be more than 10% by weight in 15 years. (Note: Wear warranty shall not require use of chair pads)

C. Static - Static generation shall be less than 3.0 kV at 70° F, and 20% R.H.

D. No delamination

E. No edge ravel

F. No dimensional instability (i.e., shrinkage, curling and doming) which adversely affect the ability of the tile to lie flat

G. Submit manufacturer's National Voluntary Laboratory Accreditation Program (NVLAP) certified test results to show that carpet meets or exceeds product performance specification criteria for carpet testing requirements under Section 2.1 hereof.

H. Installation provider shall warrant all installation services will be free from defects in workmanship for a period of at least one (1) year following their completion, and that in the event of defective services, the installation provider will re-perform the effected services and, as necessary, supply new products of the same or similar grade sufficient to repair or replace products adversely affected.

PART 2 PRODUCTS

Interface, The Standard – Granite color selection.

2.1 MODULAR CARPET TILE PERFORMANCE STANDARDS. Modular carpet tile shall meet the following performance standards:

0.1	Carpet Flammability	
	.1 Pill Test (ASTM D2859 or CPSC FF-1-70)	Passes
	.2 Radiant Panel Test (ASTM E648)	≥ 0.45 watts/cm ² , Class 1
0.2	Smoke Density (ASTM E662)	≤ 450 Flaming Mode
0.3	Dimensional Stability (Aachen Method Din 54318)	≤ 0.1% change
0.4	Static Generation at 70° F (AATCC 134 w/ neolite)	≤ 3.0 kV at 20% R.H.
0.5	Lightfastness (AATCC 16E)	≥ 4.0 after 60 hours
0.6	Gas Fade (AATCC 23)	4
0.7	Ozone Fade (AATCC 109)	4
0.8.1	Antimicrobial (ASTM E2471-05)	The carpet primary backing should display a minimum performance rating of "CI" (complete inhibition) or "PI" high (partial inhibition high < 10% coverage) against the three challenge microorganisms
or 0.8.2	Antimicrobial (AATCC 174, Part II)	≥ 90.0% reduction
0.9	Fungicidal (AATCC 174, Part III)	No growth
0.10	Soil/Stain Protection (AATCC 175-1991)	≥ 8.0 on the Red 40 Stain Scale
0.11	Sustainable Carpet Assessment Standard – NSF/ANSI 140	Gold minimum, as certified by 3 rd party

-
- 0.12 Carpet & Rug Institute Green Label Plus Any and all products shall pass Carpet & Rug Institute Green Label Plus. Certification number of the specified product category shall accompany submittal.
- 0.13 Carbon Neutral 3rd party verified
- 2.2 PRODUCT CONSTRUCTION SPECIFICATION. Modular carpet tile shall meet the following construction specifications:
- A. Yarn System: Universal Type 6,6 Nylon
 - B. Dye Method: 100% Solution Dyed
 - C. Construction: Tufted
 - D. Patterning: Integrated (topical application or wet printed patterning not allowed)
 - E. Texture: Textured Loop
 - F. Gauge: 1/12
 - G. Pile Height: 0.12 inch
 - H. Tufted Yarn Weight: 15 oz per sq. yard \
 - I. Primary Backing: Non-woven polyester. Woven primary backings not allowed.
 - J. Secondary Backing: Fiberglass Reinforced Thermoplastic Composite (polyolefin-free). Secondary backing shall be 100% recyclable at the end of its useful life and shall contain recycled content. Claims of 'recyclable' shall meet the Federal Trade Commission Part 260 -- Guides for the Use of Environmental Marketing Claims 260.7(d).
 - K. Soil/Stain Resistance: Application by fiber producer and manufacturer required. Use of polyfluorinated chemical (PFC) coatings is prohibited.
 - L. Antimicrobial: Antifungal and Antibacterial ASTM E 2471-05 Standard Test Method for Use of Seeded Agar for Screening Assessment of Antimicrobial Activity in Carpet. Minimum allowable growth ratings on washed and unwashed carpet samples after 72 hours incubation are complete to partial inhibition (<10% sample coverage) on shaven primary and unshaven fiber layers. Or, if AATCC 174 Parts II & III (AATCC 171 Washed) is used, shall pass both Part II and Part III of AATCC 174 with a minimum of 90% reduction both gram negative and gram positive bacteria and no visible growth against the fungi.
 - M. Size: 50cm x 50cm
 - N. Installation Method: All product shall be designed for Non-Directional installation.
- 2.3 PRODUCT SUBSTITUTION
- A. Substitutions: Substitutions not permitted.
- 2.4 ENVIRONMENTAL SPECIFICATIONS
- A. Recycled Content by total product weight: minimum of 59% total recycled content with recycled content in both the yarn and backing; a minimum of 57% post-industrial and a minimum of 2% post-consumer content is required.
 - B. Recycled versus Recyclable – Primary consideration will be given to carpet products in the following order of priority: (A) use of post consumer recycled content in both fiber and backing, (B) post consumer recycled content in the backing, (C) 100% recyclable product. Claims shall meet the Federal Trade Commission Part 260 -- Guides for the Use of Environmental Marketing Claims.

- C. Product platform shall have a 3rd party verified Environmental Product Declaration following ISO 14025 guidelines and a 3rd party verified Life Cycle Assessment following ISO 14040 guidelines.
- D. Carbon footprint of the Product – Proposal shall state the average quantity of greenhouse gas emissions associated with the entire life cycle of the product from raw material extraction through end-of-life, a description of any emission reduction credits used to offset the global warming footprint. If credits are claimed the proposal must identify, quantity claimed and the name of the 3rd party verifying this claim.

2.5 MINIMUM ANTIMICROBIAL CONSTRUCTION STANDARDS

- A. Antimicrobial preservative, registered by the EPA for use in carpeting, with broad spectrum efficacy against the growth of bacteria and fungi for a minimum of 15 years, assuming proper maintenance. The antimicrobial ingredient shall meet standards set by the U.S. General Services Administration (GSA) for Antimicrobial Carpet as supported by independent lab testing less than six months old.
- B. Manufacturer shall provide a stamped EPA technical data sheet for carpet. Antimicrobial preservative shall contain no arsenic, formaldehyde or heavy metals (tin, lead, mercury, silver, copper or zinc), be non-halogenated (no fluorine, chlorine, bromine or iodine) and non-phenolic. Blends of amine neutralized phosphated esters are preferable. Antimicrobial shall have low water solubility (30ppm), a vapor pressure of 12mm Hg at 27° C, and an oral LD₅₀ toxicity rate less than 2.4 grams/kg.
- C. The Antimicrobial preservative shall be incorporated into the primary backing of the product during the manufacturing process, not topically applied to the carpet fibers.
- D. The antimicrobial treated carpet when new shall pass GSA parameters for treated carpets via AATCC method 174 parts II and III. Initial performance shall be 90% reduction of the microorganisms (Staphylococcus aureus 6538 and Klebsiella pneumoniae 4352) and no fungal growth on either the primary backing or fibers both on washed (AATCC method 174) and non-washed samples. The Standard Test Method for Use of Seeded Agar for Screening Assessment of Antimicrobial Activity in Carpet (ASTM E 2471-05) may be used in lieu of AATCC method 174 parts II and III.
- E. The antimicrobial treated carpet shall maintain, for the warranted life of the carpet, a minimum of 90% reduction of the microorganisms (Staphylococcus aureus 6538 and Klebsiella pneumoniae 4352) listed in AATCC method 174 part II, provided the carpet is maintained as specified. Additionally, the antimicrobial treated carpet shall maintain a "no macroscopic growth" rating against Aspergillus niger 6275 at the primary backing in accordance with AATCC 174 part III.
- F. The preservative shall be biodegradable and not toxic to non-target species as found acceptable by the US EPA.
- G. Efficacy of the preservative should be documented in professional peer reviewed scientific publications.

2.6 RELATED MATERIALS

- A. Leveling compound - Latex type as recommended by carpet manufacturer. Shall be compatible with carpet and curing/sealing compound on concrete.
- B. Glue - Installation shall be free of the application of any wet adhesive.
- C. Installation connectors - Compounded acrylic adhesive, applied to PET polyester backing with PET polyester release liner (clear 3" x 3" polyester squares with small quantity of a pressure sensitive adhesive applied on one side of the polyester film). The squares connect the carpet modules together to form a stable surface over almost any hard surface. The connectors shall contain no liquid components and shall have "zero" calculated VOC's.
- D. Carpet edge guard, non-metallic - Extruded or molded heavy duty vinyl or rubber carpet edge guard of size and profile indicated, and with minimum two-inch-wide anchorage flange; colors selected by architect/designer from among standard colors available within the industry.

PART 3 EXECUTION

3.1 PRE-INSTALLATION REQUIREMENTS

- A. Scope of Work: All existing carpet and existing carpet waste shall be reused or recycled at no added cost to the end use customer. A reclamation plan shall be submitted in the proposal that will provide directions for the "environmentally friendly" reclamation of all carpet at the job site. "Environmentally friendly" methods consist of:
1. Repurposing - reusing the product in another application such as facilitating the donation of used carpeting to charities and other nonprofit organizations.
 2. Closed Loop Recycling - turning waste materials into new materials of the same value, such as vinyl backing into vinyl backing and nylon yarn into nylon carpet yarn.
 3. Open Loop Recycling - creating other product types from reclaimed carpet. For example, turning nylon face fiber into automotive parts or carpet padding, including nylon face fiber in recycled backings.
 4. Waste-to-Energy - using carpet for waste-to-energy. Method of generating power through the disposal of used carpet - usually accomplished through burning.
 5. Landfill or incineration - are not approved disposal methods.
- B. Description of Reclamation Services - Carpet shall be removed by the successful contractor from any existing site and prepared for pickup based on the type of material and reclamation option selected. Documentation such as chain of custody must be provided for each and every job conducted under this contract during the term of the contract. Specifications for removal from the jobsite include:
1. Removal of vinyl backed carpet tile for recycling. All vinyl backed carpet tile must be closed loop recycled (13.1.1.2) through Hank's Specialties, or a qualified comparable contractor. Carpet must be tested to assess acceptability for vinyl closed loop recycling. Non-vinyl modular carpet must be managed in one of the other methods described above.
 - a. Carpet tile shall be palletized and secured for shipping, (i.e., shrink wrap, banding, strapping).
 - b. Carpet tile shall be kept dry and free of any moisture damage.
 - c. Carpet tile shall be clean of any non-carpet debris.
 2. Removal of non-vinyl backed carpet tile for open loop recycling or waste-to-energy shall be managed as follows:
 - a. Carpet tile shall be palletized and secured for shipping, (i.e., shrink wrap, banding, strapping).
 - b. Carpet tile shall be kept dry and free of any moisture damage.
 - c. Carpet tile shall be clean of any non-carpet debris.
 3. Removal of performance broadloom for recycling.
 - a. Performance broadloom shall be rolled, palletized and secured for shipping. Cut pieces of performance broadloom shall also be acceptable, provided they are secured for shipping.
 - b. Performance broadloom shall be kept dry and free from moisture damage.
 - c. Rolls shall be clean of any non-carpet debris, front and back, other than ordinary soiling in normal use.
 4. Removal of broadloom carpet for recycling.
 - a. Rolled carpet shall not exceed six (6) feet in length x one (1) foot diameter. Width may vary from 2 feet to 12 feet.
 - b. Carpet shall be accumulated and kept dry for shipping and processing.
 - c. Rolls shall be clean of any non-carpet debris, front and back, other than ordinary soiling in normal use.
 5. Repurposing of carpet material.
 - a. Approval of old carpet for possible donation shall be determined at the jobsite.
 6. All possible recycling options shall be clearly presented and submitted in writing to owner and specifier prior to job start. A written description of the used carpet disposal process is required.
 - a. Description shall contain information as to complete process of diversion from landfill.
 - b. A certificate shall be furnished upon request verifying the reclamation of the carpet and the pounds of material diverted from the landfill.

3.2 INSTALLATION

- A. General
- Comply with manufacturer's instructions and recommendations and in accordance with the Carpet and Rug Institute's Installation Standard. All products shall be installed as a random installation, meaning that each and every tile can be installed in any of the four possible directions without regard to pile direction, pattern or orientation of any adjacent tiles

while still creating a finished carpet tile assembly that appears to be a visually continuous carpeted surface with no tile appearing out of place or improperly positioned.

1. A "no-glue" waterless method of installation is preferred using materials described in 2.5.3 above. In the event a releasable glue method of installation is required, the following adhesive description applies. Adhesive shall be water-based and allow for removal of carpet tile at any time without damage to carpet or substrate. Adhesive shall contain antimicrobial preservative and have "zero" calculated VOC's.
2. Comply with manufacturer's instructions for subfloor evaluation for moisture and alkalinity. In the event the concrete subfloor does not meet moisture and alkalinity requirements as defined in manufacturer's installation instructions and the moisture vapor emission rates are less than 15 pounds and the alkalinity pH is less than 12.0, a moisture barrier such as MoistureGard 2.0 must be installed. Installation must comply with manufacturer's installation instructions. In the event the moisture vapor emission rate is higher than 15 pounds and the alkalinity is higher than a pH of 12.0, additional remediation of the slab is required.
3. Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.
4. Provide cut outs where required. Conceal cut edges with protective edge guards or overlapping flanges.
5. Run carpet under open bottom items such as heating convectors, and install tight against walls, columns and cabinets so the entire floor area is covered with carpet. Cover over all floor type door closures.
6. Install edging guard at all openings and doors wherever carpet terminates, unless indicated otherwise.
7. Cutting shall be done in accordance with the manufacturer's recommendation, using the tools designed for the carpet being installed.
8. Use leveling compound where necessary. Any floor filling or leveling shall have a minimum of 4'0" of feather.
9. Expansion joints - Do not bridge building expansion joints with continuous carpeting.
10. Chair Pads shall not be recommended or required within installation instructions.

3.3 CLEANING AND PROTECTION

- A. On completion of the installation in each area, all dirt, carpet scraps, etc. shall be removed from the surface of the carpet.
- B. Remove debris, and sort pieces to be saved from scraps to be repurposed or recycled.
- C. Construction manager shall protect carpeting against damage during construction.
- D. At the completion of the work and when directed by the construction manager, vacuum carpet using commercial dual motor vacuum of type recommended by carpet manufacturer. Remove spots and replace carpet where spots cannot be removed. Remove rejected carpeting and replace with new carpeting. Remove any protruding yarns with shears or sharp scissors.

3.4 INSPECTION

- A. Upon completion of the installation, manufacturer and installer shall verify and certify by means of an affidavit of compliance that work is complete, properly installed and meets all specification herein.
- B. Preliminary Acceptance - Upon completion of the carpet installation of each floor, such installation shall be inspected by owner, the construction manager and installation provider.

*Mergeability: Note that mergeability as defined here is applicable to select products and may not be applicable to all carpet tile styles.

END OF SECTION 09 68 13

SECTION 09 78 26.13 –FIBERGLASS REINFORCED PLASTIC PANELS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Special wall surfaces, including fiberglass reinforced plastic panels.
- B. Related Sections: Section(s) related to this section include:
 - 1. Section 09 29 00 – Gypsum Board
 - 2. Section 09 65 13 – Resilient Base and Accessories

1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
- B. ASTM International:
 - 1. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
 - 2. ASTM D5420 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
 - 3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 4. ASTM D570 Standard Test Method for Water Absorption

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Specification Section 01 33 00 Submittal Procedures.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA. product sheet, for specified products.
- C. Samples: Submit selection and verification samples for finishes, colors and textures. Submit 2 samples of each type of panel, trim and fastener.
- D. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.
 - 3. Manufacturer's installation instructions. Submit manufacturer's Installation Guide.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.
 - 2. Manufacturer Qualifications: Manufacturer should be capable of providing field service representation during construction and should be capable of approving application method. Minimum of 5 years experience manufacturing this or similar products.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Package sheets on skids or pallets for shipment to project site.

- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store panels indoors in a dry place at the project site.
- D. Handling: Remove foreign matter from face of panel by using a soft bristle brush, avoiding abrasive action.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Installation shall not begin until building is enclosed, permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete or terrazzo work has dissipated.
 2. During installation, and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
 3. Provide ventilation to disperse fumes during application of adhesive as recommended by adhesive manufacturer.
- B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.07 WARRANTY

Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

- A. Warranty Period: **10 years commencing on Date of Substantial Completion.**

PART 2 PRODUCTS

2.01 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

- A. Manufacturer: Kemlite Company, Inc.
 1. Contact: Joliet Sales Office, PO Box 2429, Joliet, IL 60434; Telephone: (800) 435-0080, (815) 467-8600; Fax: (815) 467-8666; E-mail: kemlitesales@kemplite.com; Web site: www.glasbord.com.
- B. Or approved equal.

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. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
 1. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails are countersunk and joints and cracks are filled flush and smooth with the adjoining surface.
 2. Do not begin installation until backup surfaces are in satisfactory condition.

3.03 PREPARATION

- A. Surface Preparation: Repair or patch all existing or new gypsum board finishes to provide smooth, secure, plumb and true surfaces on which panels are to be installed.

3.04 INSTALLATION

- A. Fiberglass Reinforced Panel (FRP) Installation:
1. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
 2. Install panels with manufacturer's recommended gap for panel field and corner joints.
 3. Predrill fastener holes in panels with 1/8 inch (3.2 mm) oversize.
 4. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.
 5. Use products acceptable to panel manufacturer and install FRP system in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's Installation Guide.

3.05 ADJUSTING AND CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace products that have been installed and are damaged. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.
1. Remove any adhesive or excessive sealant from panel face using solvent or cleaner recommended by panel manufacturer.

3.06 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION 09 78 26.13

SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The extent of painting work is shown on drawings and schedules, and as herein specified.
- B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout project, except as otherwise indicated.
 - 1. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.
- C. The work includes field painting of exposed bare and covered pipes and ducts (including color coding), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work, except as otherwise indicated.
- D. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime intermediate or finish coats.
- E. Paint exposed surfaces whether or not colors are designated in "schedules", except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated, Architect will select these from standard colors available for materials systems specified.
- F. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items as (but not limited to) metal toilet enclosures, refinished partition systems, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, elevator entrance frames, doors and equipment.
- G. Concealed Surfaces: Unless otherwise indicated, such as back priming of all exterior wood trim, painting is not required on surfaces such as walls or ceiling in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.
- H. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
- I. Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated. Do not paint over any code-required labels, such as Underwriters Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature panels.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use.
- B. Samples: Submit samples for Architect's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.
 - 1. On 12"x 12" hardboard, provide two samples of each color and material, with texture to simulate actual conditions. Resubmit samples as requested by Architect until acceptable sheen, color, and texture is achieved.

1.03 DELIVERY AND STORAGE

Deliver materials to job site in original, new, and unopened packages and containers bearing manufacturer's name and label and following information.

- A. Name or title of material. Fed. Spec. number if application instructions. Color name and number.

1.04 JOB CONDITIONS

- A. Apply water-based paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees F (10 degrees C.) And 90 Degrees F (32 degrees C.) Unless otherwise permitted by paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F (7 degrees C.) And 95 degrees F (35 degrees C.), unless otherwise permitted by paint manufacturer's printed instruction.

DO NOT APPLY PAINT in snow, rain, fog, or mist; or when relative humidity exceeds 85% or damp or wet surfaces: Unless otherwise permitted by paint manufacturer's printed instructions. Painting may be continued during inclement weather if areas and surfaces to be painted are closed and heated within temperature limits specified by paint manufacturer during application and drying periods.

- C. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specification in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

PART 2 - PRODUCTS

2.01 MATERIAL QUALITY

- A. Provide best quality grade of various types of coating as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.
1. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.
 2. Federal Specifications establish minimum acceptable quality for paint materials. Provide written certification from paint manufacturer that materials provided meet or exceed these minimums.
 3. Manufacturer's products which comply with coating qualitative requirements of applicable Federal Specifications, yet differ in quantitative requirements, may be considered for use when acceptable to Architect. Furnish material data and manufacturer's certificate of performance to Architect for any proposed substitutions.
- B. Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer and use only within recommended limits.
- C. Pint Coordination: Provide finish coats which are compatible with prime
- D. A "Schedule of Paint Systems" is at the end of this section.

PART 3 - EXECUTION

- 3.01 INSPECTION: Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator's acceptance of surfaces and conditions within any particular area. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
- 3.02 SURFACE PREPARATION
- A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as

herein specified for each particular substrate condition. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary for complete painting of painting of each space or area, reinstall removed items. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and process will not fall onto wet, newly painted surfaces.

- B. Cementitious Materials: Prepare Cementitious surfaces of concrete, concrete block, cement plaster and cement-asbestos board to be painted by removing efflorescence, chalk, dust, dirt, grease, oils and by roughening as required to remove glaze. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed directions.

Clean concrete floor surfaces scheduled to be painted with commercial solution of muriatic acid, or another etching cleaner. Flush floor with clean water to neutralize acid and allow drying before painting.

- C. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.
1. Prime, stain or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces-undersides, and backsides of such wood, including cabinets, counters, cases, paneling.
 2. When transparent finish is required, use spar varnish for back-priming.
 3. Back-prime paneling on interior partitions only where masonry plaster, or other wet wall construction occurs on backside.
 4. Seal tops, bottoms, and cut-outs of un-primed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.
- D. Galvanized Surfaces: Clean free of oil and surface contamination with non-petroleum-based solvent.

3.03 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
1. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
 2. Stir materials before application to produce a mixture of uniform density and stir as required during application. Do not stir surface film into material. Remove film, if necessary, strain material before using.

3.04 APPLICATION

- A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
 3. Paint interior surfaces of ducts, where visible through registers or grilles, with flat, non-specular black paint.
 4. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.
 5. Finish exterior doors on tops, bottoms, and side edges same as exterior faces, unless otherwise indicated.
 6. Sand lightly between each succeeding enamel or varnish coat.
 7. Omit first coat (primer) on metal surfaces which have been shop-primed, and touch-up painted, unless otherwise indicated.
- B. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pre-treated, or otherwise prepared

- for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until paint has dried to where it feels firm, does not deform, or feel sticky under moderate thumb pressure and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.
- D. Prime Coats: Apply prime coat of material, which is required to be painted or finished, and which has not been prime coated by others.
1. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- E. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, color spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- F. Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity; runs brush marks, orange peel, nail holes, or other surface imperfections.
- G. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

3.05 FIELD QUALITY CONTROL

The right is reserved by Owner to invoke material testing procedure at any time, and any number of times during period of field painting.

3.06 CLEAN-UP AND PROTECTION

- A. Clean-Up: During progress of work remove from site discarded paint materials, rubbish, cans and rags at end of each workday.
1. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping using care not to scratch or otherwise damage finished surfaces.
- B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing or work. Correct any damage by cleaning, repairing, or replacing, and repainting, as acceptable to Architect.
1. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
 2. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

3.07 EXTERIOR PAINT SCHEDULE

- A. General: Provide the following paint systems for the various substrates, as indicated. Concrete Masonry Units
- B. Lusterless (Flat) Acrylic Finish: 2 coats over filler coat with total dry film thickness not less than 2.5 mils, excluding filler coat.
1. Filler Coat: 100% Acrylic Block Filler (Volume Solids Minimum 53%) (Required if new or porous existing block)
PPG Paints: Speedhide Masonry Block Filler, 6-15XI
Sherwin Williams: Heavy Duty Block Filler, B42W00046.
 2. First and Second Finish Coats: Acrylic Elastomeric.
PPG Paints: Perma-Crete Pitt-Flex Elastomeric Coating 4-110 XI @ 5.4 – 7.2 mils D.F.T.
Sherwin Williams: A05W00151 Sherlastic® Elastomeric Coating @ 8.0 – 12.0 mils D.F.T.
- C. Ferrous Metal (Miscellaneous Metal):

1. Full Gloss Acrylic Enamel: 2 Finish coats over primer.
 2. Prime Coat:
 3. PPG Paints: Pitt-Tech Plus 4020 Primer/Finish 4020-0100
 4. Sherwin Williams: B66W00310 Pro-Cryl® Universal Primer.
 5. First and Second Finish Coats: Semi-Gloss High Performance Acrylic Finish.
 6. PPG Paints: Pitt-Tech Plus 4216 HP 4216-0100
 7. Sherwin Williams: B66W00351 SherCryl® HPA Acrylic Semi-Gloss Finish.
- D. Ferrous Metal (Handrails):
1. Full Gloss Alkyd Enamel: 2 Finish coats over primer.
 2. Prime Coat:
 3. PPG Paints: Multi-Prime 4160 Rust Inhibitive Fast Drying Primer 4160-6120
 4. Sherwin Williams: B66W00310 Pro-Cryl® Universal Primer.
 5. First and Second Finish Coats: Semi-Gloss High Performance Urethane Modified Finish.
 6. PPG Paints: HPC Industrial Alkyd Urethane Enamel 4308-0100
 7. Sherwin Williams: B54W00151 Industrial Urethane Alkyd Enamel.
- E. General Painted Wood:
1. Prime Coat: Exterior Primer Coating (Back prime all wood).
PPG Paints: Seal Grip Exterior Acrylic Universal Primer Sealer 17-921XI
Sherwin Williams: B42W00041 Exterior Latex Wood Primer.
 2. First and Second Finish Coat: Exterior Latex Satin.
PPG Paints: Sun Proof 100% Acrylic Satin 76-45XI
Sherwin Williams: A82W00151-A-100® Exterior Latex Satin.
- F. Zinc-Coated Metal: Water based Rust Inhibitive Primer.
1. Prime Coat:
PPG Paints: Pitt-Tech Plus 4020 Primer/Finish 4020-0100
Sherwin Williams: B66W00310 Pro-Cryl® Universal Primer.
 2. First and Second Finish Coats: High Performance Acrylic Finish.
PPG Paints: Pitt-Tech Plus 4216 HP 4216-0100
Sherwin Williams: B66W00351 SherCryl® HPA Acrylic Semi-Gloss Finish.

3.08 INTERIOR PAINT SCHEDULE

- A. General: Provide the following paint systems for the various substrates, as indicated.
- B. Concrete Masonry Units & Gypsum Board: (omit filler coat on gypsum board)
- C. Interior Water Based Precatalyzed Epoxy in Egg-Shell Finish: Coats with total dry film thickness not less than 3.0 mils.
- D. Lusterless (Flat) Emulsion Finish: 2 Finish coats over filled surface.
1. Filler Coat: Acrylic Block Filler. Apply filler coat at a rate to ensure complete coverage with pores filled.
PPG Paints: Speedhide Masonry Block Filler, 6-15XI
Sherwin Williams: B25W00025 PrepRite® Block Filler.
 2. Prime Coat: Interior Latex Emulsion.
PPG Paints: Speedhide Interior Zero VOC Latex Primer/Sealer 6-4900XI
Sherwin Williams: B28W08200 ProMar® 200 Interior Latex Primer.
 3. Second and Third Coats: Water Based Precatalyzed Epoxy.
PPG Paints: Pitt Glaze WB1 Pre-Catalyzed Water Borne Eggshell Epoxy 16-310
Sherwin Williams: K45W00151 Pro Industrial Pre-Catalyzed Water Based Eggshell Epoxy.
- E. Lusterless (Flat) Emulsion Finish: 2 Finish coats over filled surface.
1. Filler Coat: Acrylic Block Filler. Apply filler coat at a rate to ensure complete coverage with pores filled.
PPG Paints: Speedhide Masonry Block Filler, 6-15XI
Sherwin Williams: B25W00025 PrepRite® Block Filler.
 2. First and Second Finish Coats: Interior Latex Emulsion.

PPG Paints: Speedhide Zero VOC Interior Latex Flat 6-4110XI
 Sherwin Williams: B28W08200 ProMar® 200 Interior Latex Primer.

- F. Semi-Gloss Latex Enamel Finish: 2 Coats over filled surface with total dry film thickness not less than 3.0 mils. excluding filler coat.
 - 1. Filler Coat: Acrylic Block Filler. Apply filler coat at a rate to ensure complete coverage with pores filled.
 PPG Paints: Speedhide Masonry Block Filler, 6-15XI
 Sherwin Williams: B25W00025 PrepRite® Block Filler.
 - 2. First Coat: Latex Enamel.
 PPG Paints: Speedhide Zero VOC Interior Latex Semi-Gloss 6-4510XI
 Sherwin Williams: B28W08200 Pro-Mar 200 Latex Semi-Gloss.
 - 3. Second Coat:
 PPG Paints: Speedhide Zero VOC Interior Latex Semi-Gloss 6-4510XI
 Sherwin Williams: B28W08200 Pro-Mar 200 Latex Semi-Gloss.
- G. Zinc-Coated Metal & Primed Ferrous Metal: Semi-Gloss Pre-Catalyzed Epoxy 2 Finish coats over primer.
 - 1. Prime Coat: Omit prime coat on primed ferrous metal.
 PPG Paints: Pitt-Tech Plus 4020 Primer/Finish 4020-0100
 Sherwin Williams: B66W00310 Pro-Cryl® Universal Primer.
 - 2. First and Second Finish Coats: Semi-Gloss Pre-Catalyzed Epoxy.
 PPG Paints: Pitt Glaze WB1 Pre-Catalyzed Water Borne Semi-Gloss Epoxy 16-510
 Sherwin Williams: K46W00151 Pro Industrial Pre-Catalyzed Epoxy, Semi-Gloss.
- H. Painted Woodwork and Hardboard: Semi-Gloss Enamel Finish: 3 Coats.
 - 1. First Coat: Interior Enamel Undercoat.
 PPG Paints: Seal Grip Primeline Fast Dry Wood Undercoat 17-9517
 Sherwin Williams: B28W08111 Premium Interior Wall & Wood Primer.
 - 2. Second and Third Coats: Interior Semi-Gloss Enamel.
 PPG Paints: Advantage 900 Interior/Exterior Waterborne Acrylic Enamel Semi-Gloss 919-10
 Sherwin Williams: K46W00151 Pro-Classic Waterborne Semi-Gloss.
- I. Stained Woodwork: Stained-Varnish Rubbed Finish: 3 Finish Coats over stain plus filler on open grain wood.
 - 1. Stain Coat: Interior Oil Stain.
 PPG Paints: Deft Interior Oil Stain DFT-400
 Sherwin Williams: A49V00200 Wood Classics® Interior Oil Stain.
 - 2. First Coat: Bleached Shellac.
 PPG Paints: Deft Interior Oil Based Polyurethane DFT226
 Sherwin Williams: A66F00390 Wood Classics® FastDry Varnish Hand Rubbed Satin Clear.
 - 3. Filler Coat on Open Wood: Paste Wood Filler. Wipe before first varnish coat.
 PPG Paints: DAP Plastic All Purpose Wood Filler
 Sherwin Williams: Sherwood Filler.
 - 4. Second and Third Coats: Oil Rubbing Varnish.
 PPG Paints: Deft Interior Oil Based Polyurethane DFT 224
 Sherwin Williams: Wood Classic Varnish.

3.09 EXTERIOR WATER PROOFING SYSTEM

- A. Features: Apply directly to fresh concrete (less than 28 days old), Can be applied over high pH (up to 13) substrates, No Primer required.
- B. General Characteristics: Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI is specifically designed for interior and exterior, above ground, masonry substrates that require the ultimate match of flexibility and durability. The new and improved formula offers exceptional dirt resistance, alkali resistance and allows for application to concrete at 7 days old and a pH of less than 13 as well as application down to 35 degrees F. The 100% Acrylic formula bridges cracks and masks surface imperfections as well as protecting against wind driven rain.

General Characteristics: Loxon XP is a high build coating that provides excellent flexibility, durability and weather

resistance. This product will protect against wind-driven rain when used on tilt-up, precast, or poured-in-place concrete, CMU, and stucco. It is highly alkali and efflorescence resistant. This may be applied to a surface with a pH of 6 to 13.

C. Physical Properties: Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI

1. Wind-Driven Rain Test.....Passes
ASTM D6904-3
Two coats Perma-Crete Topcoat @ 14-16 mils WFT per coat
2. Elongation..... 340%
ASTM D2370
3. Tensile Strength.....300 psi
ASTM D2370
4. Flexibility..... Passes
ASTM D522 Method B
5. Mildew Resistance..... No Growth
ASTM D5590
6. Water Vapor Permeance.....21 perms @ 12 mils DFT – 2 coats
ASTM D1653

1. Wind-Driven Rain Test.....Passes
ASTM D6904-03
2 cts Loxon XP at 6.4 – 8.3 mils dft/ct
7. Water Vapor Permeance.....13.4 perms
Based on ASTM D1653
1 ct Loxon XP at 9.4 mils dft,
14-day cure @ 77°F & 50% RH
8. Elongation.....350%
ASTM D2370
1 ct Loxon XP at 9.4 mils dft,
14-day cure @ 77°F & 50% RH
9. Tensile Strength.....350 psi
ASTM D2370
1 ct Loxon XP at 9.4 mils dft,
14-day cure @ 77°F & 50% RH
10. Flexibility.....Passes
ASTM D522
11. Alkali Resistance.....Passes
Based on DSTM D1308
12. Mildew Resistance.....Passes
ASTM D3273/D3274

D. Product Specifications:

Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI

1. Colors-Most Colors

2. Coverage: 137-183 square ft per gallon at 12-16 mils Wet. Coverage will vary with substrate.
 3. For proper Wind Driven Rain/Water Resistance: 2 coats pinhole free at 5.4-7.2 mils DFT per coat.
 4. Drying time @ 77 degrees F and 50% RH:
 - a. Touch 1 hour
 - b. Recoat 24 hours
1. Colors – Most colors
 2. 1 coat system, brush, roller, or spray applied, coverage per coat > 14-18 mils wet, 6.4 – 8.3 mils dry, 90 – 115 sq ft/gal
 3. Can be applied up to 40 mils wet.
 4. Coverage will vary with the substrate and the texture.
 5. Coverage on porous and rough stucco 80 square feet per gallon.
 6. Drying time @ 77°, 50% RH:
 - a. Touch: 4 hours
 - b. Recoat: 24 hours
 7. For proper waterproofing performance and to resist alkalis, 2 coats of the coating MUST be applied between 14.0 – 18.0 mils wet per coat.
 8. A total dry film thickness of 12 – 16 mils of topcoat and a surface with 10 or less pinholes per square foot is required for a waterproofing system.

3.10 SURFACE PREPARATION

- A. Surface must be clean and sound, free of chalk, peeling paint, form oils, efflorescence, and mildew. Remove chalk, surface deposits, and loose or scaling paint by scraping, sanding, and preferably power washing. Repair all cracks and structural defects which could allow the intrusion of moisture. If mildew is evident, remove all traces by application of a commercial mildew wash following manufacturer's directions. CAUTION: Use rubber gloves, work goggles and protective clothing when applying mildew wash.
 1. Loose, sandy masonry should be hosed down thoroughly to remove surface particles, allowed to dry.
 2. A common exterior paint failure on masonry construction is peeling and scaling, often caused by painting over heavy chalk deposits. The most practical and efficient way to remove this substance is with high pressure spray equipment. Multiple coats of paint that are in advanced state of deterioration or prior applications of cement-based coatings must be removed to a sound substrate. Sand blasting or using a mechanical grinder are effective means of preparation.

3.11 PRIMER/FINISH SYSTEMS

- A. Masonry, New and Unpainted (Including Unglazed Brick): Poured and precast concrete must be allowed to cure for 7 days; block construction should be allowed to cure for 7 days. All surfaces must be thoroughly brushed with stiff fiber bristles to remove loose particles.
- B. Rough or Pitted Masonry: 2 Coats of Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI
One or two coats of Sherwin Williams Loxon XP.
- C. Smooth Poured or Precast Concrete: 2 Coats of Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI
One or two coats of Sherwin Williams Loxon XP.
- D. Masonry, Weathered and Unpainted (Including Unglazed Brick):
 1. Primer: Perma-Crete Interior/Exterior Alkali Resistant Primer 4-603XI
Sherwin Williams Loxon Conditioner.
 2. Finish: Sun Proof 100% Acrylic Satin 76-45XI or Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI
Sherwin Williams A-100 House Paint, or use Sherwin Williams Loxon XP, A24W451.
- E. Masonry Repaint (Including Unglazed Brick):
 1. Primer: Perma-Crete Interior/Exterior Acrylic Masonry Surface Sealer
Sherwin Williams Loxon Conditioner.
 2. Finish: Sun Proof 100% Acrylic Satin 76-45XI or Perma-Crete PITT-FLEX Elastomeric Coating 4-110XI
Sherwin Williams A-100 House Paint, or use Sherwin Williams Loxon XP, A24W451.

3.12 APPLICATION

- A. Mixing of Paint: Stir thoroughly prior to use.
- B. Do not apply when air and surface temperatures are below 50 degrees F (10 degrees C).
- C. Work well into crevices and holes to ensure adequate penetration and sealing.
- D. Brush: Stir thoroughly and apply as received in the container with a nylon/polyester brush.
- E. Roller: Stir thoroughly and apply as received in the container with a ½" to 1 ½" nap synthetic roller cover.
- F. Spray, Airless: Pressure, minimum 2,300 PSI;
Tip, minimum .012"
- G. Thinning/Cleanup: Do not reduce. Clean spills and spatters immediately with soap and warm water. Clean hands and tools immediately after use with soap and warm water. After cleaning, flush spray equipment with mineral spirits to prevent rusting of the equipment.

3.13 USE COMPLETELY OR DISPOSE OF PROPERLY. This product contains organic solvents which may cause adverse effects to the environment if handled improperly. Disposal of wastes containing either organic solvents or free liquids in landfills is prohibited. Dry, empty containers may be recycled in a can recycling program. Local disposal requirements vary; consult your sanitation department or state-designated environmental agency for more information on disposal options.

3.14 ENVIRONMENTAL AND SAFETY INFORMATION

- A. Warning! Harmful if inhaled
- B. Contains glycol ether and crystalline silica.
- C. May affect the brain or nervous system causing dizziness, headache, or nausea. Causes eye, skin, nose, and throat irritation.

3.15 IMPORTANT: Designed to be mixed with other components. Mixture will have hazards of both components. Before opening packages, read all warning labels.

3.16 NOTICE: Repeated and prolonged exposure to solvents may lead to permanent brain and nervous system damage. Eye watering, headaches, nausea, dizziness, and loss of coordination are signs that solvent levels are too high. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. To avoid breathing vapors or spray mist, open window and doors or use other means to ensure fresh air entry during application and drying. Cancer Hazard: Contains crystalline silica which can cause cancer when in respirable form (spray mist or sanding dust).

- A. Keep away from heat and flame. Use only with adequate ventilation. Do not breathe vapors or spray mist. Do not get in eyes or on skin.
- B. Wear a properly fitted vapor/particulate respirator approved by NIOSH/MSHA for use with paints, eye protection, gloves, and protective clothing during application and until all vapors and spray mist are exhausted. In confined places or where continuous spray operations are typical, or if proper respirator approved by NIOSH/MSHA. In all cases follow respirator manufacturer's directions. Do not permit anyone without protection in the painting area. Close container after each use.

3.17 FIRST AID: If affected by inhalation of vapors or spray mist, remove to fresh air. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and call a physician; for skin, wash thoroughly with soap and water. In case of ingestion, DO NOT INDUCE VOMITING. Get medical help immediately.

3.18 IN CASE OF: FIRE - Use foam, CO2, dry chemical, or water fog.
SPILL - Absorb with inert material and dispose of in accordance with applicable regulations.

END OF SECTION 09 91 00

SECTION 10 21 13.19 – SOLID PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments including the following: (Hiny Hiders)
 - 1. Floor mounted overhead-braced toilet compartments.
 - 2. Floor-to-ceiling toilet compartments.
 - 3. Ceiling hung toilet compartments.
 - 4. Privacy screens.
 - 5. Shower and dressing compartments.
 - 6. Vanities.

1.2 RELATED SECTIONS

- A. Section 05 50 00 - Metal Fabrications.
- B. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

- A. ASTM A 666 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. United States EPA (Environmental Protection Agency) Registration - Bactericidal Surfaces Registered with the U.S. EPA to Legally Make Claims that these Materials Kill Infectious Bacteria.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 – 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. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.
- D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.
- E. Sustainable Design Submittals:
 - 1. Recycled Content: Certify percentages of post-consumer and pre-consumer recycled content.
 - 2. Regional Materials: Certify distance between manufacturer and Project.

1.5 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. Materials: Doors, panels and pilasters, constructed from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof,

nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with a protective plastic masking.

D. Performance Requirements:

1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with ASTM E 84:
 - a. Class A flame spread/smoke developed rating.
 - b. Class B flame spread/smoke developed rating.
2. Material Fire Ratings:
 - a. National Fire Protection Association (NFPA) 286: Pass.
 - b. International Code Council (ICC): Class B.
3. Antimicrobial Touch Surfaces: Hardware touch surfaces shall be manufactured from substrates that are registered with the U.S. EPA to kill specific bacteria tested according to U.S. EPA protocols.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 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.

1.8 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. Labor not included in warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; ASD Toll Free Tel: 800-445-5148; Fax: 855-376-6161; Email: [request info \(info@scrantonproducts.com\)](mailto:request info (info@scrantonproducts.com)); Web: <https://www.scrantonproducts.com>
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 – Substitution Procedures.

2.2 MATERIAL

- A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface.
- B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.
- C. Stainless Steel Castings: ASTM A167, Type 304.
- D. Aluminum: ASTM 6463-T5 alloy.

2.3 SOLID PLASTIC TOILET COMPARTMENTS

- A. Basis of Design: Hiny Hiders Toilet Partitions as manufactured by and supplied by Scranton Products.
1. Style: Floor mounted overhead-braced toilet compartments.
- B. Doors, Panels, and Pilasters: 1 inch (25 mm) thick with all edges rounded to a radius. Mount doors and dividing panels based on height of specified system.
1. Door and Panel Height: 55 inches (1397 mm).
 2. Aluminum heat sink fastened to bottom edges.
 3. Panel Edge: Standard.
 4. Pilasters: 82 inches (2083 mm) high and fastened to floor.

- C. Panel Color: To be selected by Architect from manufacturer's full line of colors.
- D. Pilaster Shoes: 3 inches (76 mm) high one-piece molded HDPE. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.
 - 1. Pilaster Plastic Shoe Color: Mocha.
 - 2. Pilaster Plastic Shoe Color: Black.
 - 3. Pilaster Plastic Shoe Color: Grey.
 - 4. Pilaster Plastic Shoe Color: Linen.
 - 5. Pilaster Plastic Shoe Color: Beige.
 - 6. Pilaster Plastic Shoe Color: Blueberry.
- E. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
 - 1. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.
- F. Wall Brackets:
 - 1. Bracket Type: Continuous plastic, full length.
- G. Door Hardware:
 - 1. Wrap-Around Hinges: 8 inches (203 mm) and fabricated from heavy-duty extruded aluminum. Hinges are through-bolted to pilasters and doors with stainless steel tamper resistant Torx head sex bolts. Hinges operate with field adjustable nylon cams. Cams can be field set in 30, 60 or 9 degree increments.
 - 2. Door Strike/Keeper: Heavy-duty extruded aluminum 6436-T5 alloy with a bright dip anodized finish. Secured to pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
 - a. Style: 6 inches (152 mm) aluminum.
 - 3. Latch Mechanism: Healthy Hardware Slide Bolt, Pulls and Coat Hook: Made from U.S. EPA registered materials by manufacturer currently holding U.S. EPA Company Number, U.S. EPA Establishment Number and California Broker's License. Satin finish.
 - 4. Doors supplied with one coat hook/bumper and door pull made of chrome plated Zamak.
 - 5. Equip outswing handicapped doors with second door pull and door stop.

2.4 SOLID PLASTIC PRIVACY SCREENS

- A. Provide plastic privacy screens in urinal and entry toilet room applications as indicated or scheduled.
- B. Panels, and pilasters, if required, 1 inch (25 mm) thick with edges rounded to a radius. Screens to be mounted at 14 inches (356 mm) above the finished floor. Color as selected by Architect from manufacturer's full line of current colors.
 - 1. Aluminum heat sink fastened to bottom edges.
- C. Screen Type: Wall mounted.
 - 1. Urinal Screens: 24 inches (610 mm) wide by 42 inches (1067 mm) high.
- D. Wall Brackets: Extruded PVC plastic. Fastened to the panel/pilaster with stainless steel tamper resistant torx head screws and fastened to wall with stainless steel tamper resistant torx head sex bolts.
 - 1. Length of Wall Brackets: 41 inches (1041 mm).

PART 3 EXECUTION

3.1 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.

3.2 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.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install partitions rigid, straight, plumb, and level manor, with plastic laid out as shown on shop drawings.
- 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.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 10 21 13.19

SECTION 10 28 13.13 – COMMERCIAL TOILET ACCESSORIES

PART 1 - GENERAL

1.01 WORK INCLUDED

Toilet and related accessories of types scheduled in this section, complete with attachment hardware.

1.02 SAMPLES AND PRODUCT DATA

Submit the following in accordance with Section 01 33 00:

- A. Manufacturer's product data describing materials, construction, and finish for each type of accessory.
- B. Manufacturer's installations recommendations for each accessory.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect accessory and its finish.

1.04 PROTECTION

Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this section.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Stainless Steel Sheet: Commercial grade, 22-gauge.
- B. Stainless Steel Tubing: Commercial grade, seamless welded.
- C. Adhesive: Epoxy type contact cement.
- D. Fasteners, Screws and Bolts: Rust - resistant.

2.02 FABRICATION

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from one sheet of stock, free of joints.
- C. Provide steel anchor plates and anchor components for installation on building finishes.
- D. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- E. Back paint components where contact is made with building finishes to prevent electrolysis.
- F. Provide stainless steel anchors and fastening devices.
- G. Shop assemble the components and packages complete with anchors and fittings.
- H. All edges of removable stainless-steel waste containers shall be hemmed for safe handling.
- I. All bends on grab bars shall be made by the mandrel process to ensure uniform diameter bends, and to provide full 90

degree return to the mounting flange.

J. Grind smooth and polish weld marks at intermediate supports of all grab bars.

K. See Part 4 for Toilet Accessories Schedule.

PART 3 - EXECUTION

3.01 PREPARATION

A. Deliver inserts and rough-in frames to job site at appropriate time for installation. Provide templates and rough-in measurements as required.

B. Before starting work, notify Architect in writing of any conflicts detrimental to installation or operation of units.

C. Verify with Architect exact location of accessories.

3.02 INSTALLATION

A. Install accessories and items in accordance with approved manufacturer's printed instructions.

B. Install true, plumb, and level, securely and rigidly anchored to substrate.

C. See drawings for mounting height and location.

PART 4 - TOILET ACCESSORIES SCHEDULE

4.01 TOILET TISSUE DISPENSER

A. Single roll (open).

1. Partition mounted.

2. Manufacturers:

a. Bobrick Washroom Equipment, Inc., No. B-264.

b. Or approved equal.

3. Stainless steel with satin finish.

4. Manufacturers:

a. Bobrick Washroom Equipment, Inc., No. B-27313.

b. Or approved equal.

4.02 GRAB BAR

A. Straight grab bar, 1-1/2" diameter, 1-1/2" inside wall clearance.

B. Length: As Noted

C. Manufacturers / Products:

1. Bobrick No. B -6806 x "length as noted on drawings".

2. Or approved equal.

4.03 PAPER TOWEL DISPENSER AND DISPOSAL

A. Combination unit handicapped accessible.

B. Semi-recessed mounting.

C. Manufacturers / Products:

1. Bobrick No. B-3942.

2. Or approved equal.

4.05 DIAPER CHANGING UNIT

- A. Horizontal surface mounted.
- B. Color to be selected by Architect.
- C. Manufacturers / Products:
 - 1. Bobrick No. KB200 (Koala Kare).
 - 2. Or approved equal.

4.07 SOAP DISPENSER

- A. Surface mounted.
- B. Manufacturers / Products:
 - 1. Bobrick No. B-2111.
 - 2. Or approved equal.

4.12 MIRROR UNIT

- A. Stainless steel framed 1/4" float/plate glass mirror electrolytically copper plated.

Guarantee mirror against silver spoilage for 15 years.
- B. Frame: Type 304 stainless steel with a one-piece roll-formed angle, mitred, and welded corners, polished satin finish.
- C. Size: As shown on drawings.
- D. Manufacturers / Products:
 - 1. Bobrick No. B-290 x "size indicated on drawings".
 - 2. Or approved equal.

END OF SECTION 10 28 13.13

SECTION 10 44 16.13 – PORTABLE FIRE EXTINGUISHERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Definition: *"Portable Fire Extinguishers"* include units which can be hand carried as opposed to those which are equipped with wheels or to fixed fire extinguishing systems, unless otherwise indicated.

1.02 QUALITY ASSURANCE

- A. Provide portable fire extinguisher and accessories by one manufacturer, unless otherwise acceptable to Architect.
1. Manufacturers offering products to comply with the requirements include the following:

LARSEN'S UL Rated 3-A: 40-B: C 6# ABC Dry Chemical in semi-recessed rolled edge cabinets (mount top of cabinet at 5'-0" A.F.F.)

- B. Portable Fire Extinguisher Standard: Provide new portable fire extinguishers which comply with applicable *UL* standard and are labeled by *UL*.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for all portable fire extinguishers required. For fire extinguisher cabinets include roughing-in dimensions, and details showing mounting methods, relationships to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, style, and materials. Where color selections by Architect are required include color charts showing full range of manufacturer's standard colors and designs available.

PART 2 - PRODUCTS

2.01 FIRE EXTINGUISHERS

- A. General: Provide fire extinguisher for each location whether or not indicated as required by the Architect, in colors and finishes selected by Architect from manufacturer's standard which comply with requirements of governing authorities. Provide a minimum of (1) one fire extinguisher for each 2,500 sq. ft. of floor space; also provide one in each mechanical room and cooking space. Fill and service extinguishers to comply with requirements of governing authorities and manufacturer's requirements.

1. Abbreviations indicated below to identify extinguisher types relate to UL classification and ratings system and not necessarily, to type and amount of extinguishing material contained in extinguisher.

- B. Multi-Purpose Dry Chemical Type (4A-60BC-FE): *UL* rated 4-A; 60-BC, 10 lb. nominal capacity, in enameled steel container for *Class A, Class B, and Class C* fires.

2.02 MOUNTING BRACKETS

Provide manufacturer's standard bracket designed to prevent accidental dislodgment of extinguisher, or proper size for type and capacity of extinguisher indicated, in manufacturer's standard plated finish.

PART 3 - EXECUTION

3.01 INSTALLATION

Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

3.02 IDENTIFICATION

Identify bracket-mounted extinguishers with red letter decals spelling "*FIRE EXTINGUISHER*" applied to wall surface. Letters size, style, and location as selected by Architect.

END OF SECTION 10 44 16.13

SECTION 06 61 16 – SOLID SURFACING FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fabrication and installation of solid surfacing components including accessories indicated, specified, and required for installation.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's technical literature for each product indicated, specified, or required. Include manufacturer's written fabrication and installation instructions.
- B. Shop Drawings: Dimensioned and detailed plans, elevations, and large-scale details.
 - 1. Show locations of each component.
 - 2. Show materials, finishes, edge and splash profiles, and methods of joining.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, accessories and other items installed in countertops.
 - 4. Show attachment devices and other components to be incorporated into work.
- C. Samples for Verification: 4-inch square sample of selected material, in specified gloss, cut into 2 pieces and then joined together to represent an inconspicuous seam; indicate full range of color and pattern.
- D. Maintenance Data:
 - 1. For inclusion in maintenance manual required by Division 01.
 - 2. Include manufacturer's instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use.
 - 3. Include precautions against cleaning products and methods which may be detrimental to finishes and performance.
- E. LEED Submittals:
 - 1. To qualify for LEED Credit EQ 4.1, submit documentation substantiating each adhesive and sealant product complies with specified limits for VOC content.
 - 2. To qualify for LEED Credit EQ 4.4, submit documentation substantiating each adhesive product contains no added urea-formaldehyde.
 - 3. To qualify for LEED Credit MR 5.1, submit documentation substantiating products are regionally manufactured within 500 miles of Project.

1.3 QUALITY ASSURANCE

- A. Fabricator Qualifications:
 - 1. Experienced with successful fabrication of specified work similar to scope of this Project.
 - 2. Record of successful in-service performance.
 - 3. Sufficient production capability, facilities, and personnel to produce required work.
- B. Installer Qualifications:
 - 1. Experienced in installation of specified work similar to scope of this Project.
 - 2. Record of successful in-service performance.
 - 3. Sufficient installation capability, facilities, and personnel to produce required work.
- C. Mock-Up: Before beginning work of this Section, build mock-up to verify selections made under submittals and to demonstrate aesthetic effects and work execution. Approval does not constitute approval of deviations from Contract Documents, unless such deviations are specifically approved by Architect in writing.

1. Build mock-up approximately [] inches long by [] inches deep.
2. Use same Subcontractors, including supervisors, which will perform work on Project.
3. Install products and materials according to specified requirements.
4. Work on mock-up shall be representative of those to be expected for work.
5. Finish various components to show maximum variation that will exist in work.
6. Obtain Architect's approval before starting work of this Section.
7. Maintain mock-up during construction in an undisturbed condition as a standard for judging completed work.
8. Do not demolish, alter, or remove mock-up until acceptable to Owner and Architect.
9. When directed, demolish and remove mock-up from Project.

1.4 FIELD CONDITIONS

A. Field Measurements:

1. Where components are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
2. Locate concealed framing, blocking, and reinforcements that support components by field measurements before being enclosed, and indicate measurements on Shop Drawings.
3. Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabrication without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Do not deliver components until painting and similar activities have been completed in installation areas.
- B. Storage: Prior to installation, store in areas in which material will be installed.
- C. Handling: Handle components to prevent damage to finished surfaces.

1.6 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's warranty against defects in materials. Warranty shall provide material and labor to repair or replace defective materials. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted. Failures caused improper fabrication or installation will not be warranted.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements of Contract Documents, manufacturers offering products that may be incorporated into work include, but are not limited to, those named alphabetically below.
1. Avonite, Inc.; Avonite Surfaces.
 2. E. I. du Pont de Nemours and Co.; Corian.
 3. Formica Corp.; Formica Solid Surfacing.
 4. LG Chemical, Ltd.; Hi-Macs.
 5. Samsung; Staron.
 6. US Surface Warehouse; Livingstone.
 7. Wilsonart International; Gibraltar.

2.2 SOLID SURFACING MATERIAL

- A. Sheet Material:

PROJECT NAME
LOCATION

SOLID SURFACING FABRICATIONS
SOLID SURFACING COUNTERTOPS

KING ARCHITECTS, INC

SECTION 06 61 16
SECTION 12 36 61.16

1. Description: Continuously cast, non-porous, homogeneous solid sheets composed of acrylic polymer, aluminum trihydrate filler, and pigments that yield through-body color; not coated, laminated or of composite construction.
2. Basis of Design Selection:
 - a. Manufacturer: US Surface Warehouse.
 - b. Color Name:
 - c. Finish: Matte.
 - d. Finish: Satin or semi-gloss.
 - e. Finish: Polished.

B. Integral Sink/Bowls:

1. Description: Cast, non-porous, homogeneous solid sheets of filled plastic resin with through-body colors; not coated, laminated or of composite construction.
2. Basis of Design Selection:
 - a. Manufacturer: US Surface Warehouse.
 - b. Color Name and SKU Number:

2.3 ACCESSORIES

A. Joint Adhesives:

1. Description: No-added urea formaldehyde, 1 or 2 part adhesive capable of creating inconspicuous, non-porous seams; acceptable to material manufacturer.
2. LEED Objectives:
 - a. To qualify for LEED Credit EQ 4.1, adhesives applied inside weatherproofing system shall have VOC content not more than listed below, less water, when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24).
 - 1) Adhesives for Porous Materials (Except Wood): 50 grams per liter.
 - 2) Multipurpose Construction Adhesives: 70 grams per liter.
 - 3) Contact Adhesive: 80 grams per liter.
 - 4) Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 grams per liter.
 - 5) Adhesive Primer for Plastic: 550 grams per liter.
 - b. To qualify for LEED Credit EQ 4.4, building materials and products shall contain no added urea-formaldehyde.

B. Fasteners and Mounting Hardware: Device type and size required sufficient to correctly attach or anchor specified item to substrate indicated without failure.

C. Protective Tape: Heat-reflective aluminum foil or insulating felt tape of thickness necessary to protect edges from heat sources.

2.4 FABRICATION

A. Fabrication Quality Standards: In addition to standards listed elsewhere, comply with following, unless otherwise specified:

1. Material quality standard indicated.
2. Approved submittals.
3. Contract Documents.

B. Shop Assembly:

1. Fabricate shapes in sizes and profiles indicated according to approved shop drawings and manufacturer's instructions.

2. Where necessary for fitting at Project, provide ample allowance for scribing, trimming, and fitting.
- C. Seams:
 1. Form inconspicuous joints between components.
 2. Reinforce on concealed side with strip of solid surfacing material not less than 1 inch on either side of joint by same thickness as components being joined.
 3. Locate more than 3 inches from cutouts.
- D. Cutouts:
 1. Use router to make openings according to templates and finish with clean and smooth edges.
 2. Provide not less than 1/8 inch clearance between cutout edges and appliance or plumbing fixture.
 3. Remove nicks and scratches.
- E. Overhangs: Support overhangs that are more than 6 inches.
- F. Thermoforming:
 1. Heat component and maintain between 275 and 325 degrees Fahrenheit during forming.
 2. Form pieces to shape prior to seaming and joining.
 3. Cut pieces to finished dimensions.
 4. Sand edges and remove nicks and scratches.
- G. Inlays:
 1. Rout groove approximately 1/8 inch deep according to design.
 2. Fill groove using methods approved by manufacturer, avoiding air bubbles or voids.
 3. Overfill inlay area.
 4. Allow inlay to cure.
 5. Do not allow inlay to overheat during sanding.
 6. Finish and touch-up to uniform appearance.
- H. Integral Sink/Bowls: Secure sinks/bowls to countertops using manufacturer's recommended sealant, adhesive, or mounting hardware.
- I. Countertop Configuration:
 1. General Provisions:
 - a. Fabricate with loose backsplashes for field assembly.
 - b. Accurately cut holes and drill countertop panels to receive plumbing, fixtures, soap dispensers and other accessories.
 - c. Install integral sink bowls in countertops in shop.
 2. Countertop and Splashes Thickness: Not less than 1/2 inch.
 3. Front Edge: Straight, slightly eased at top.
 4. Front Edge: Beveled.
 5. Front Edge: 3/4 inch bullnose.
 6. Front Edge: Radius edge with apron, 2 inch high with 3/8 inch radius.
 7. Front Edge: 1-1/2 inch laminated bullnose.
 8. Front Edge: 1 inch laminated bullnose.
 9. Front Edge: Wood-trimmed edge as indicated.
 10. Splashes: Straight, slightly eased at corner.
 11. Splashes: Beveled.
 12. Splashes: Radius edge with 3/8 inch radius.

PROJECT NAME
LOCATION

SOLID SURFACING FABRICATIONS
SOLID SURFACING COUNTERTOPS

KING ARCHITECTS, INC

SECTION 06 61 16
SECTION 12 36 61.16

PART 3 - EXECUTION

3.1 EXAMINATION

A. Acceptance of Surfaces and Conditions:

1. Examine substrates to which solid surfacing components will be applied for compliance with requirements and other conditions affecting performance.
2. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents.
3. Starting work within a particular area will be construed as acceptance of surface conditions.

3.2 INSTALLATION

A. General:

1. Install components plumb, level, and scribed to adjacent substrates.
2. Leave space, not less than 1/8 inch for every 10 foot of length, between components and adjacent substrates.

B. Anchorage:

1. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Pre-drill holes for screws as recommended by manufacturer.
2. Secure backsplashes to tops and walls with adhesive.

C. Seams:

1. Clean surfaces to be seamed to remove oil, dirt, and dust.
2. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's instructions.
3. Clamp until fully cured.
4. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
5. Buff and sand to produce a smooth uniform seamless surface.

D. Tolerance: Install countertops level, accurately aligned, without sag, bow, or variation from a straight line to a tolerance of 1/8 inches in 8 feet.

3.3 CLEANING

A. Surface Finish:

1. Remove stains according to manufacturer's instructions.
2. Sand and polish to remove nicks, scratches, and other imperfections.

3.4 PROTECTION

A. Coverings: Cover installed components to prevent physical damage or staining until substantial completion.

END OF SECTION 06 61 16

SECTION 22 05 00 - GENERAL PROVISIONS FOR PLUMBING**I. GENERAL****A. DIVISION OF SPECIFICATIONS**

1. For Bidder's convenience only, this Division of the Specifications is divided into the following parts:

22 05 00	GENERAL PROVISIONS FOR PLUMBING
22 05 03	BASIC MATERIALS AND METHODS FOR PLUMBING
22 07 00	PLUMBING INSULATION
22 10 00	PLUMBING
22 11 00	WATER SUPPLY
22 13 00	WASTE WATER DISPOSAL

B. GENERAL CONDITIONS

1. The General Conditions of the Architectural Specifications along with supplementary conditions, special conditions, information to bidders, and any other pertinent information and documents shall apply the same as if repeated herein. The contractor shall review Architectural General Conditions. Where the requirements of Architectural General Conditions and these specs conflict for the contractor, the most stringent shall be applied.
2. Plumbing subcontractor shall be the sole source responsible party to furnish and install the plumbing system. Plumbing contractor shall be properly licensed to perform this work.
3. Wherever the word contractor is mentioned in Division 22 of these specifications, it is intended to mean the Plumbing Contractor as appropriate. These are sub-contractors to the General Contractor who has the contract with the owner. It is the General contractor who bears the responsibility to fulfill this part of the project (Division 22 – Plumbing) under the contract with the owner. The General Contractor shall be responsible for all costs associated with any and all bidding errors and omissions of the sub-contractor.

C. SCOPE OF WORK

1. Furnish labor, materials and equipment necessary to provide and install the complete plumbing portion of this contract, as called for herein and on accompanying drawings. Parts of the plumbing division may be bid separately or in combination at the contractor's option; however, it shall be the responsibility of the General Contractor to assure himself that all items

KING ARCHITECTS, INC.

SECTION 22 05 00

covered in the Plumbing Division have been included if he chooses to accept separate bids.

2. Contractor shall refer to the Architectural, Structural, Mechanical and Electrical drawings and install all equipment, piping, etc., to meet building and space requirements. **No equipment shall be bid on or submitted for approval if it will not fit in space provided or coordinated with other trades involved on the project.**
3. It is the intention of these Specifications that all plumbing systems shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc., necessary to provide a satisfactory installation in working order and in accordance with all Federal, State and Local codes and ordinances.
4. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the contractor from the responsibility of installing his work to meet conditions.
5. Lack of coordination shall not be acceptable and shall not be a reason for poorly installed work or additional cost to this trade or others on the project. All associated extra cost shall be borne by the contractor. The General contractor shall be responsible for all costs, time and liquidated damages associated with lack of coordination or poor coordination.

D. LOCAL CONDITIONS

1. Location and elevation of all services is based on information obtained from the Owner. However, this shall serve as a general guide only and the contractor shall visit the site and verify the location and elevation of this service to his own satisfaction in order to determine the amount of work required for the execution of the contract.
2. Contractor shall contact the various utility companies, determine the extent of their requirements and cooperate with the utility company in reaching a finished product. Contractor shall pay charges by Utility Company for extensions, connections, meter fees, street patching, etc.
3. In case major changes are required, this fact, together with the reasons therefore, shall be submitted to the Architect, in writing, not less than seven days before the date of bidding. Failure to comply with this requirement will make the contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

E. CUTTING AND PATCHING

KING ARCHITECTS, INC.

SECTION 22 05 00

1. Initial cutting and patching shall be the responsibility of the General Contractor with the Plumbing Contractor responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimble without first receiving the approval of the Architect/Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at this contractor's expense.
2. Cutting and patching shall be done in such a manner that the surrounding work will be restored to its original condition.
3. The plumbing piping shall be run at proper slopes and without conflict with other trades. It may be necessary to penetrate beams, grade beams, footings and foundations. Install thimbles as required and of approved by the Structural Engineer and Architect.

F. CODES AND STANDARDS

1. The entire plumbing work shall comply with the rules and regulations of the City, Parish and State in which this project is being constructed including the State Fire Marshal and State Board of Health. All modifications required by these authorities shall be made without additional charge to the Owners. The Plumbing Contractor shall report these changes to the Architect and secure his approval before work is started.
2. In addition to the codes mentioned, all plumbing work and equipment shall conform to the applicable portions of the following Specifications, codes and regulations:
 - a. National Electric Code
 - b. National Fire Protection Association
 - c. American Society of Mechanical Engineers
 - d. Underwriters's Laboratories
 - e. American Gas Association
 - f. Energy Code for Commercial and High Rise Residential Buildings
 - g. International Energy Conservation Code
 - h. International Building Code
 - i. International Plumbing Code with Louisiana Amendments
3. Materials, equipment and accessories installed under this contract shall conform to all rules, codes, etc., as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. Materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, contractor shall submit a sample for approval before proceeding.

KING ARCHITECTS, INC.

SECTION 22 05 00

4. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories whether or not called for in these Specifications.
5. Material and equipment furnished or installed as part of these construction documents shall be installed and operated in strict accordance with the respective manufacturer's guidelines for installation and operating instructions. The manufacturer's guidelines shall become part of the construction documents.

G. MINOR DEVIATIONS

1. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown and such deviations are permissible and shall be made as required, but, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift pipes or to change the shape of and these changes shall be made as required. All such changes shall be referred to the Architect/Engineer for approval before proceeding. Extra charges shall not be allowed for these changes.
2. No structural beams or joists (concrete or steel) shall be cut or thimble without first receiving the approval of the Architect/Structural Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at the Plumbing Contractor's own expense.
3. Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project without drawing on the contractor's experience or ingenuity. However, only typical details are shown on the plans. In cases where the contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details shall not be an excuse for improper installation. Submit installation shop drawings with manufacturer's details for review prior to installation.
4. In general, the drawings are diagrammatic and the contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect/Engineer is to state which equipment, piping, etc., is to be relocated regardless of which item was first installed.

H. WORKMANSHIP

KING ARCHITECTS, INC.

SECTION 22 05 00

1. Workmanship shall be of highest grade, highest quality and all construction shall be done according to the best practice of the trade. Work shall be completed to satisfaction of the Architect/Engineer.

I. COORDINATION

1. Coordinate work of the different trades to avoid interferences between plumbing and all other work. All piping, etc., shall be installed in lines as required to accomplish this end whether or not shown on the plans.
2. There will be a certain amount of work which must be coordinated with the Owner. This contractor shall coordinate required work with the Owner through the General Contractor using procedures acceptable to the Architect and Owner. The contractor shall maintain documentation of coordinated work.
3. This contractor shall coordinate and confirm that all equipment requiring electric service will be adequately and properly serviced by Electrical Contractor. Any conflicts shall be brought to the attention of the Architect/Engineer prior to ordering the equipment. **VERIFY ALL VOLTAGES WITH THE ELECTRICAL PLANS AND ELECTRICAL CONTRACTOR.**
4. This contractor shall coordinate the space clearances required for the plumbing system with the structure, ceilings, lights, ductwork, etc. In some cases, due to space limitations, it may be necessary to reroute piping to meet the conditions of the project. Any rerouting shall be part of this project and done without any additional cost to the Owner. **DO NOT MAKE PIPING WITHOUT COORDINATION. Avoid conflicts with other trades.**
5. This contractor shall coordinate the installation of sewer lines with all parts of the structural foundation system and structural building systems. Provide sleeves through grade beams or concrete beams at all conflicts. All points of penetration of foundation shall be reviewed by the Architect/Engineer prior to rough-in. All sleeves shall be installed per the instructions and details of structural engineer.
6. All piping shall be run as high as possible with sleeves through concrete beams to avoid conflicts. This means the piping shall run in or through the structure unless approved otherwise by the Architect/Engineer.

J. REVIEW OF MATERIALS

1. Whenever manufacturers or trade names are mentioned in these plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only and should not be construed to infer a

KING ARCHITECTS, INC.

SECTION 22 05 00

preference. Equivalent products which meet the Architect's approval will be accepted; however, these requests for acceptance of products must be received by the Architect a minimum of ten days prior to bid date. Submission shall include manufacturer's name, model number, rating table and construction features. Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. The contractor shall base his bid solely on those items specified or included in the "Prior Approval Addendum" as no other item will be acceptable. Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the contractor of the responsibility of assuring himself that this equipment is in complete accord with plans and Specifications and will fit into the space provided. Submit shop drawings on all items of equipment for approval as hereinafter specified.

2. Should a substitution or variation occur, the better quality or greater quantity of material or work shall be furnished. This also does not preclude other manufacturers if they meet the following criteria:
 - a. Product proposed for substitution shall be equal or superior to that specified in construction, efficiency, utility and function.
 - b. Physical size of substitute brand shall not be greater than space provided for it.
 - c. Profile of substitution shall be same concerning size, shape, indentations, recesses, etc.
 - d. Complete illustrations, specifications and description of substitution shall be submitted for approval.
 - e. Availability and proximity of manufacturer's service representative shall be factors considered in substitution approval.
 - f. Substitution and/or variations shall be reviewed and allowed when there is no change in cost to the project and shall be made at the discretion of the Engineer.

K. SHOP DRAWINGS

1. The General Contractor shall submit plumbing submittal within 30 days of the date of the contract between owner and contractor or the date of notice to proceed as issued by the owner to the General Contractor. The mechanical submittals shall have been submitted to the General Contractor within 30 days after the construction contract has been signed. The General Contractor and his sub-contractors shall bear all responsibility for any extra costs or delays to late submittals of shop drawings.
2. Drawings shall be presented in a clear and thorough manner.
3. Details shall be identified by reference to sheet detail, schedule or room numbers shown on contract and drawings.

4. Drawings shall contain the following information:
 - a. Date.
 - b. Number of the drawing or revision.
 - c. Name of project or facility.
 - d. Name of contractor and subcontractor.
 - e. Clear identification of contents and location of work.
5. Preparation:
 - a. Clearly mark each copy to identify pertinent products or models.
 - b. Show performance characteristics and capacities.
 - c. Show dimensions and clearances required.
 - d. Show wiring or piping diagrams and controls.
 - e. Show weights and mounting data.
 - f. Provide letter documentation confirming that all coordination with other trades effected have been done. This is especially necessary with the electrical requirements and rough-in requirements.
6. Manufacturer's standard schematic drawings and diagrams:
 - a. Modify drawings and diagrams to delete information which is not applicable to the work.
 - b. Supplement standard information to provide information specifically applicable to the work.
7. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - a. Functional characteristics of the product, with integral related parts and attachment devices.
 - b. Full range of color, texture and pattern.
8. Equipment shop drawing shall be prepared by the contractor/supplier. These shop drawing shall include the manufacturer's performance data and installation manuals. In addition, the shop drawings shall show the installation specific to this project.
9. Assemble certificates, executed by each of the respective manufacturers, suppliers, and subcontractors.
10. All submittals shall be submitted prepaid and in ample time for review before installation.
11. Six (6) copies of each submittal shall be submitted to the Architect.

KING ARCHITECTS, INC.

SECTION 22 05 00

12. These shop drawings shall be supplied as part of this contractor's contract. Any drawings not approved shall be resubmitted until approved. **Submit all shop drawings at the same time.**
13. Time necessary for review of samples, certificates, test reports, and shop drawings is at least 30 calendar days after receipt of the item. All materials installed in the work shall match the reviewed submittals. After a submission has been reviewed, no substitutions will be permitted without written approval by the Architect.
14. The Architect's/Engineer's review of shop drawings shall not relieve the contractor from the responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings or specifications, even though approved by the Architect, shall not relieve the contractor from furnishing and erecting same.
15. Any delays caused by contractor not submitting shop drawings within a timely manner shall be the problem of the responsible subcontractor and the General Contractor.

L. UTILITIES

1. Connect all utilities at the points indicated on the drawings and extend such utilities to the building and to equipment or facilities requiring same.
2. Contractor shall pay all service and connection charges required by utility companies and/or site conditions (offsets, conflict boxes, etc.).
3. Contractor shall include all costs required by utility companies to extend utilities to the site. It is the responsibility of the contractor to obtain these fees from the utility companies and include those costs in the bid.

M. REPAIRING ROADWAYS AND WALKS

1. Where this contractor cuts or breaks roadways or walks to lay the piping, he shall repair or replace these sections to meet the Architect's approval. Repair of public roadways and highways shall be done as per the Federal, State or Local agencies having jurisdiction. Contractor shall obtain and pay for all permits.

N. EXCAVATION AND BACK FILL

1. Trench and excavation work shall include excavating, preparing of trenches, and backfilling as specified. Contractor shall install caution tape 12 inches above all piping, conduit, etc., as backfilling processes.

KING ARCHITECTS, INC.

SECTION 22 05 00

2. Trench and excavation work shall not include pavement breaking, cutting of holes through foundation walls and floors, removal of obstructions, relaying and/or repairing of floors, and repaving, which work shall be the responsibility of the General Contractor.
3. Contractor shall do all necessary trenching, excavation and backfilling for the proper installation of his work. Care shall be taken not to excavate below depth required, that trench beds are well rounded and that ground under pipe line is firm and secure before any pipe is laid. Trenches shall be excavated where bells of pipe occur in order to insure a pipe resting on the entire length of the bottom of the trench.
4. Unless otherwise noted, minimum cover over underground lines shall be 2-1/2 feet, except under streets and parking lots where minimum cover shall be 3 feet.
5. The width of the trench shall be sufficient to permit thorough compaction of the backfill under and around the pipe but not exceeding the external diameter of the pipe by more than 12 inches. Excavation for pipes shall be by hand and/or machine and as specified herein and shall conform to the lines and elevations indicated on the plans.
6. The pipe shall be placed on a uniformly firm and compacted bed of sand, carefully shaped to support the pipe at the desired grade and so that any reaction will be distributed as nearly uniform as possible over a horizontal width of not less than six-tenths (6/10) of the outside diameter and all possibility of concentration of the reaction at or near the vertical diameter eliminated. The bed shall be shaped as to fit the lower part of the pipe exterior for at least 10 percent of its overall height.
7. The pipe shall be placed on a firm foundation. Any muck or other objectionable material found during excavation and preparation of the bed shall be removed and replaced with suitable bed material directed by the Architect.
8. All trenches and excavation shall be backfilled in a reasonable time after the pipes are installed unless otherwise directed by the Architect. Special care shall be taken in placing the backfill and extra care shall be used to obtain compaction under and along sides to the top of the pipe.
9. The backfill shall be placed in loose layers not exceeding 6 inches in depth under and around the pipe and not exceeding 8 inches over the pipe. Each layer shall be compacted to the compaction requirements as specified by the Architect.
10. Compaction shall be by hand and pneumatic tampers and the successive layers shall be added and compacted until the trench is completely filled

KING ARCHITECTS, INC.

SECTION 22 05 00

and brought to elevation as directed. Back-filling shall be done in such a manner as to avoid injurious top or side pressures on the pipe.

11. Improper backfilling and compacting shall be cause to have the trench opened to expose the pipe for inspection then properly backfilled and compacted with fill material.
12. Where trenching is for piping, the bottom of the trench shall have minimum 95 percent compaction and shall be bedded with minimum 12 inches compacted sand, crushed stone or shell on undisturbed soil (minimum 95 percent compaction).

O. MATERIALS

1. Work materials shall be new and the best of their respective kinds, and shall bear the label of NFPA, ASME Code, AGA, and UL where such standard has been established for the particular item of equipment used.

P. MATERIAL STORAGE

1. General: Provide space for storage of material and equipment at ground level. Roof surfaces shall not be used for storage of materials or equipment. Any storage within the building shall be approved by the Architect/Engineer prior to use of the space.
2. Exterior: Pipe, fitting, or other materials stored outside of building shall be set on wood or steel racks or platforms inside storage container units. All necessary provisions shall be made to keep water and debris away from such stored material. Ends of pipes and valves shall be kept sealed until used.
3. Warehousing: Equipment subject to rusting shall be kept warehoused until just prior to setting. If necessary the warehouse shall have climate controlled conditions.
4. Offsite warehousing shall be approved by the Architect and Owner only.
5. Any warehousing used shall be approved by the Owner and an insurance certificate naming the Owner as insured shall be provided to the Owner.

Q. GROUND AND CHASES

1. Contractor shall see that all required chases, sleeves, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise he shall bear the cost of providing them.

R. MACHINERY GUARDS

1. Contractor shall provide v-belt guards for each v-belt drive or other hazardous drive. Guard shall enclose the drive entirely and shall have a hole for taking tachometer reading.

S. SPECIAL TOOLS

1. Special tools required for proper operation or maintenance of any equipment provided under this contract shall be delivered to the Owner at the completion of the project.

T. FILL AND CHARGES FOR EQUIPMENT

1. Fill and charge with materials or chemicals all devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.
2. This contractor shall flush systems as required per local and state jurisdictions and equipment/material manufacturer's guideline. (Chlorination, chemical treatment, etc.)

U. EQUIPMENT ACCESS

1. Large equipment to be installed in building, which is too large to permit access through doorways, shall be brought to the job by the contractor and placed before enclosing structure. Equipment shall be cribbed up from the floor by the contractor and covered where necessary or directed.

V. EQUIPMENT IDENTIFICATION

1. Stenciling: All items of major plumbing equipment (water heaters, pumps, starters, mixing valves, etc.) shall be neatly and clearly stenciled in letters not less than 1 inch high, with the same designation as appears on drawing. Location and color of such stenciling shall be appropriate for ready identification and/or as directed by the Architect. One set of compatible metal interlocking stencil letters and numbers shall be turned over to the Owner at the completion of the job. At contractor's option engraved plastic adhesive tags may be used. Tags used outdoors shall be listed for such use.
2. Pipe Coding: All piping, etc., both insulated and bare, shall be color coded with a general purpose pipe marker for interior locations and a 6 inch enamel painted band for exterior locations, and stenciled as to service and characteristics on the 10 foot centers and/or as directed. Directional arrows not less than 1/2 inch wide and not less than 6 inches long shall be permanently stenciled on each line at each stencil location. Stenciling shall be located such that it is clearly visible from floor or adjacent service

KING ARCHITECTS, INC.

SECTION 22 05 00

platform. Coding shall be as per schedule approved by Owner through submittal to Architect. At contractor's option, pre-manufactured vinyl pipe labels and directional arrows may be used but shall be banded on either end to secure to pipe.

2. Valve tags shall be installed on all valves controlling building zones, areas, or equipment. Valve tags shall be 2 inch diameter brass stenciled with valve number. A framed list of valves with associated numbers, sizes and locations shall be mounted in the building as directed by Architect.

W. TEMPORARY USE OF EQUIPMENT

1. The permanent equipment installation shall not be used for temporary purposes by the contractor for temporary conditioning of the building during construction.
2. Acceptable Use Without Specific Authorization: Temporary use shall not be construed to mean "bumping" of electric motors on equipment to verify rotation direction nor short time operation of systems for test purposes.

X. CLEANING AND ADJUSTING

1. Upon completion of his work, the contractor shall clean and adjust all equipment, controls, valves, etc. Clean all piping, etc., and leave entire installation in good working order.

Y. PAINTING

1. This contractor shall obtain the services of a painting sub-contractor as part of his contract with the General Contractor for all painting.
2. General: Except for standard factory finishes, all pipe, pipe covering, equipment, supports, hangers, etc., exposed inside and outside building or in equipment room shall be painted. This contractor shall prepare surface of material to receive first coat of paint. All subsequent coatings shall be prepared by Painting Subcontractor. Requirements covering paints, workmanship and preparation of surfaces as stated in Architectural Specifications shall govern. Color coding shall be approved by Architect (submit color samples). All submittals for review shall be through Architect.
3. Damage: Where standard equipment factory finishes have been damaged or scratched, the damaged area shall be repaired or replaced by the contractor to match the original finish.

KING ARCHITECTS, INC.

SECTION 22 05 00

4. Preparation: Thoroughly clean surfaces of all rust, scale, cement, and dirt from all equipment, piping or other work installed and leave ready for finish painting.
5. All exposed piping shall be painted. Paint with two (2) coats of paint. The color shall be industry standard color coding. Submit color code chart with sample color chips to Architect for review prior to starting work.

Z. FIRESTOPPING

1. Penetrations through rated construction shall be sealed with a material capable of preventing the passage of flames and hot gases when tested in accordance with ASTM-EB14. Notify Architect for inspection of all completed fire and/or smoke barrier walls before any construction is installed that may conceal the firestopping material installation.
2. Access to random selected areas may be required by the architect at the time of final inspection should notification not be given.
3. Provide detailed instructive cutsheets of fire penetration sealing system (firestopping) used to the architect at the time of inspection. Random selective sampling by the contractor will be observed by the architect and State Fire Marshal.

AA. NOISE VIBRATION

1. General: Take the utmost precautions in the installation of the equipment and piping systems to prevent noise and vibration transmission.
2. Isolation of equipment: Equipment that would tend to cause noise or vibration shall be isolated to prevent noise transmission to the building or to other equipment.
3. Equipment Connections: Piping, conduit, or other connections to equipment shall be isolated. The contractor shall be responsible for the prevention of noise and vibration transmission through these connections to equipment.

BB. PERMITS, INSPECTIONS AND TESTS

1. Contractor shall obtain and pay for permits, fees, etc., for the installation, inspection, service connections, verifying location or construction of the work which are required by any authority and/or agencies having jurisdiction.

KING ARCHITECTS, INC.

SECTION 22 05 00

2. Contractor shall arrange and pay for inspections, examinations and tests required to obtain complete and final acceptance of all plumbing systems. Contractor shall deliver certificates of all such inspections to the Architect.
3. Contractor shall notify Architect and local governing authorities before any tests are made and tests are not to be drawn off a line covered or insulated until examined and approved by the authorities. In the event defects are found, these shall be corrected and the work shall be retested.
4. Prior to requesting final inspection by the Architect, the contractor shall have a complete coordination and adjustment meeting of all of his subcontractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operation shall be checked to assure proper operation. Notify the Architect in writing ten days prior to this meeting instructing him of the time, date and whom you are requesting be present. This project shall not be accepted until the above provisions are met to the satisfaction of the Architect.

CC. TRAINING OF MAINTENANCE PERSONNEL

1. Contractor shall provide on the job training for Owner's personnel upon completion of the work including testing and adjustment. Minimum 15 hours of onsite training shall include maintenance checks, lubrication of components, adjustment of control set points, and troubleshooting techniques.
2. Contractor shall use factory start-up personnel to train the owner's maintenance personnel.

DD. OPERATION AND MAINTENANCE INSTRUCTIONS

1. Provide Owner with four (4) copies of printed instructions indicating various pieces of equipment by name and model number complete with parts lists and maintenance and repair instructions. This information shall be bound in plastic covered notebooks. Submit the manuals to the Architect for approval.
2. Include all warranty certificates or statements in a separate section of the manuals. Provide all materials and test certificates for the final inspection.
3. Provide three (3) sets of DVDs of the operation and maintenance manuals.

EE. GUARANTEE

1. Contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts,

KING ARCHITECTS, INC.

SECTION 22 05 00

etc., necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters.

2. If the contractor's office is in excess of a 50 mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

FF. WARRANTIES

1. Assemble warranties executed by each of the respective manufacturers, suppliers, and subcontractors into a warranty book and prepare a table of contents.
2. Two (2) original signed copies of each warranty are required.
3. Provide complete information for each item including:
 - a. Product and work item.
 - b. Local supplying firm or manufacturer's dealer, with name of principal, address and telephone number.
 - c. Scope of warranty.
 - d. Date of beginning of warranty.
 - e. Duration of warranty.
 - f. Provide information for Owner:
 - 1) Proper procedure to evoke the warranty in case of failure.
 - 2) Instances which might affect the validity of the warranty.
 - g. Contractor, name of responsible principal, address and telephone number.
 - h. All contractors and manufacturers equipment warranties shall start at the acceptance of the project by the Owner.
 - i. Provide owner with contact information for warranties which extend beyond one year.

GG. RECORD DRAWINGS

1. Contractor shall maintain two (2) sets of drawings of the original construction documents to utilize as markup sets to record field modifications from original construction documents. Once approval has been gained from the Architect, the contractor shall record these variances on the two (2) sets in a neat and readable manner. Noted shall be sizes, locations, changes in directions, etc. with distances dimensioned from columns, walls, inverts, etc. The maintenance and cost of these documents shall be the responsibility of the contractor.

KING ARCHITECTS, INC.

SECTION 22 05 00

HH. MATERIALS CONTAINING HAZARDOUS SUBSTANCES OR COMPONENTS

1. This contractor shall not provide any material or component of equipment which contains asbestos, lead based paint or PCBs. The contractor shall provide certificates or manufacturer's statements/letters to show that the products and/or building materials do not contain asbestos, lead based paint or PCBs.
2. If any product or building material is found to contain asbestos, lead based paint or PCBs, the contractor shall bear all cost for removal, abatement, and disposal of materials in accordance with all state and federal regulations. The contractor shall install replacement materials to the satisfaction of the Architect at no additional cost to the project.
3. During the construction, if the contractor suspects that any material in the building contains or is a hazard material (asbestos, lead, PCB, mercury, etc.) work shall be stopped to prevent disturbance and the Owner shall be notified immediately.

END OF SECTION 22 05 00

SECTION 22 05 03 - BASIC MATERIALS AND METHODS FOR PLUMBING**I. GENERAL****A. DESCRIPTION**

1. Type of piping for various systems shall be as specified herein.
2. All pipe shall be true and straight without sags or traps.

II. MATERIALS**A. SANITARY SEWER WASTE AND VENT LINES**

1. All sanitary sewer waste and vent lines above and below building slab shall be constructed of service weight bell and spigot cast iron pipe and fittings. Where space requirements do not allow the use of the above materials, government type DWV copper pipe shall be used. All cast iron pipes shall comply with Commercial Standards CS 188-59 coated with tar inside and out and marked with manufacturer's identification and proper weight classification. Joints shall be made with neoprene gaskets.
2. At contractor's option, all sanitary sewer waste and vent lines may be Schedule 40 PVC plastic lines and fittings with solvent weld joints (solid core allowed only; foam or cell core not acceptable).
3. Sanitary sewer lines exterior of building (5 feet from building) shall be constructed of PVC Schedule 40 type "DWV" plastic pipe and fittings (solid core allowed only; foam or cell core not acceptable).
4. At contractor's option, sanitary sewer vent lines above grade may be constructed of "no hub" service weight cast iron pipe with neoprene/stainless steel clamp couplings.

B. DOMESTIC WATER PIPE/WATER HEATER RELIEF PIPE/EQUIPMENT DRAIN PIPE/TRAP PRIMER

1. All domestic cold water lines/hot water lines within building, water heater relief lines and equipment drain piping shall be government type "L" hard copper water tube of standard weight and thickness, unless indicated otherwise. Use 95-5 "lead free" solder on all piping above slab. Use Silfos 1000 degrees Fahrenheit solder or equal on all piping beneath slabs. "Press-Fit" or "Pro-Press" piping is not acceptable.
2. Site water piping (beyond 5 feet of building footprint) shall be Schedule 40 PVC pipe and fittings solvent weld joints (solid core allowed only; foam or cell core not acceptable).

C. PIPE FITTINGS

1. All pipe fittings shall be same as piping specified unless indicated otherwise.
2. Fittings for domestic water lines shall be solder type wrought copper, Nibco or equivalent.

D. PIPE SPECIALTIES

1. Dielectric unions shall be used between copper and iron pipe.

E. PIPE HANGERS AND SUPPORTS

1. This contractor shall furnish and install all foundations and supports required for his equipment unless indicated otherwise on the drawings.
2. This contractor shall furnish and install all escutcheons, inserts, thimbles, hangers, etc., required for the proper support and installation of his equipment and piping. Cooperate with other trades in locating and placing these items.
3. Provide sleeves for all pipes passing through walls, floors, beams, etc. Sleeves passing through structural members shall be of cast iron or Schedule 40 steel pipe unless other material is approved by the Structural Engineer. Sleeves passing through nonstructural walls or floors shall be of Schedule 10 galvanized iron. Joints between sleeves and pipes passing through floors shall be made watertight with plastic materials. Where pipes pass through floors shall be made watertight with plastic materials. Where pipes pass through waterproofing membrane, flashing sleeves shall be installed.
4. Provide malleable iron split ring hangers with rod supports throughout. Strap hangers or wire will not be accepted. Maximum spacing of hangers for cast iron pipes shall be 5 feet; for other than soil, use 10 feet.
5. Provide galvanized iron shields between hangers and pipe covering.
6. Provide chrome plated brass escutcheons wherever pipes pass through floors, walls or ceilings in exposed or finished areas.
7. All piping projecting from chases shall be rigidly supported in the wall or chase. Loosely supported piping or accessories will not be accepted.

F. VALVES AND UNIONS

KING ARCHITECTS, INC.

SECTION 22 05 03

1. Furnish and install all valves, unions, stops, connections, etc., shown on plans and necessary to make a complete system in working order. Provide valves on inlet and outlet of all equipment and fixtures and on branch lines to fixtures or groups of fixtures.

2. Valves and unions shall be as follows:

<u>COPPER PIPE</u>	<u>2" AND LESS</u>	<u>MV</u>	<u>OVER 2"</u>	<u>MV</u>
Gate Valve	Crane 1320	115	Crane 461	M-2882
Globe Valve	Crane 1310	1590T	Crane 359	F-2981
Unions	Crane 633		Crane Std. Gal.	
Check Valve	Crane 1303	1509	Crane 373	2974M

<u>IRON PIPE</u>	<u>2" AND LESS</u>	<u>MV</u>	<u>OVER 2"</u>	<u>MV</u>
Gate Valve	Crane 440	148	Crane 461	F2882-M
Globe Valve	Crane 7	590	Crane 359	F
Unions	Crane 633			
Check Valve	Crane 1303	1509	Crane 373	2974M

3. The following valves are considered equal to Crane Company:

<u>CRANE</u>	<u>POWELL</u>	<u>NIBCO</u>	<u>HAMMOND</u>	<u>STOCKHAM</u>	<u>MV</u>
7	150	T-235-Y	1B413T	B-22	590T
359	301	F-718-Y	1R126	G514	F2981
373	559	F918B	1R1124	G931	M2974
440	500	T113	1B640	B114	148
461	1787	F619	1R1138	G612	M-2882
1303	1825	S413(BWY)	1B943	B309	1509
1310	1823	S211(YW)	424	B14	1502
1320	1822	S113	1B647	B112	115

4. All valves, unions, etc., where pipe is chrome plated shall have similar finish. All exposed supplies to plumbing fixtures shall be chrome plated.
5. Ball valves shall be as manufactured by Milwaukee Valve (MV), Watts, Stockham, Powell, NIBCO, Neles-Jamesbury or Hammond.

	<u>2" and Smaller</u>	<u>2-1/2 to 4"</u>	<u>Over 4"</u>
Watts	Series B-6800	Series G-4000	Series G-4000
Neles-Jamesbury	Series 4000	Full Port Series	Full Port Series
Milwaukee Valve	BA-300	F-20CS	F-20CS

6. All valves over 2 inches shall be flanged type and full port type. All valves 2 inches and smaller shall be screw type, sweat type or flanged type as appropriate for type of pipe.

G. MOTORS STARTERS AND ELECTRICAL WORK

KING ARCHITECTS, INC.

SECTION 22 05 03

1. The Plumbing Contractor shall furnish to Electrical Contractor for installation, all motor starters, start-stop push buttons and pilot lights for each piece of motor driven equipment unless shown otherwise.
2. The Electrical Contractor shall install all motor starters, start-stop push buttons and pilot lights as furnished by the Plumbing Contractor. The Electrical Contractor shall do all power wiring required for the installation of all equipment including equipment interlocking power wiring, etc. All work shall be done in accordance with the National Electrical Code requirements and with wiring workmanship, etc., as called for in the Electrical Specifications. The Plumbing Contractor shall provide approved wiring diagrams of all equipment, controls, etc., to the Electrical Contractor for his installation. Coordinate all work to provide a complete system in working order. All wiring shall be plenum rated.
3. All electrical equipment shall have UL label or ETL label and shall meet the standards of the National Electrical Code and NEMA.
4. Plumbing contractor shall provide and install transformers and low voltage wiring (below 120-1-60) from transformer to equipment. Electrical contractor shall provide and install power wiring to transformers.

H. ACCESS PANELS

1. Furnish and install access panels where valves, dampers, etc., are concealed in walls, ceilings, floors or otherwise inaccessible. Panels shall be Milcor, Babcock, Larsen, MIFAB, Acudor, Nystrom or equivalent. All access panels shall be minimum 18 inches X 18 inches hinged with flush latch and lock. The panels shall be constructed of minimum 18 gauge stainless steel. Frame flange shall be minimum 1-1/2 inches wide. Rated panels shall have U.L. rating for type wall or ceiling where located.
2. Access panels located in rated walls, floors, ceilings, shall be so rated and installed per manufacturer's recommendations to maintain rated integrity.

III. EXECUTION

A. SANITARY SEWER PIPE

1. Pipe ends shall be square cut. Ends of pipes shall be reamed and shall be wiped clean to remove cuttings. Before installation, pipe shall be stood on end and tapped sharply to remove cuttings and other foreign materials from interior. Pipe shall be thoroughly cleaned inside and outside. Bending or springing of pipe shall not be permitted.
2. Various service pipes, valves, fittings, etc., running parallel with each other and near together shall be in line with each other and shall be kept at

a sufficient distance from each other and other work to permit no less than 1/2 inch between finished coverings on different services.

3. Each contractor shall furnish all foundations, structural or pipe supports indicated, called for specifically or that may be required to support his particular equipment and material unless hangers are definitely indicated as being furnished by others. All horizontal runs of piping shall be securely supported by pipe hangers spaced at not more than 10 feet apart and closer when necessary to prevent sagging. Sewer waste and vent lines shall be supported every 5 feet.
4. Perforated strap hangers shall not be allowed for any part of the hangers.
5. Drainage and vent pipes: The main vertical soil and waste vent shall be extended full size through the wall. Cast-iron pipe inside the building shall be extended 6 inches above the floor.
6. Fittings: Changes in pipe size on soil, waste, and drain lines shall be made with reducing fittings or recessed reducers. All changes in direction shall be made by the appropriate use of 45 degree wyes, long or short sweep 1/4 bends, 1/6, 1/8, or 1/16 bends, or by a combination of those or equivalent fitting, except that single and double sanitary tees may be used in drainage lines only where the direction of flow is from horizontal to vertical. Short sweeps not less than 3 inches in diameter may be used where the change in direction of flow is either from horizontal to vertical or from vertical to horizontal.
7. Pipe sleeve, hangers, and fixture supports: These items shall be furnished and set and the contractor shall be responsible for their proper and permanent location.
 - a. Pipe sleeves - Install sleeves for all pipes passing through footings, floors, and walls. Clearance between sleeves and pipe covering and/or pipes shall be approximately 1/4 inch. Construction shall not be cut except where approved by the Architect. Where cutting of construction is permitted, the construction shall be repaired to match its original condition. Sleeves shall not be installed in structural members except where indicated. Sleeves are not required for wall hydrants.
 - 1) Install sleeves for pipes that pass through walls. Sleeves that pass through walls shall be cut flush with surfaces. The space between sleeves and pipe or covering shall be sealed with graphite packing and synthetic rubber caulking compound.
 - 2) Install sleeves where pipes pass through waterproofing membrane. The sleeves shall be provided with an integral flashing flange or a clamping device to which a 4 pound

- lead flashing shield shall be clamped or soldered. The shield shall extend 12 inches from the pipe and shall be thoroughly mopped into the membrane. The space between the sleeve and pipe shall be made watertight by inserting an oakum gasket, filling the remaining space with lead, and thoroughly caulking.
- b. Threaded pipe - Support pipes at 7 foot intervals.
 - c. Copper tubing - Support tubing at not more than 5 foot intervals. Hangers for copper tubing except where protective shields are installed shall have proper size rings to suit outside diameter of tubing and the hangers or supports shall be copper or copper plated at contact surfaces.
 - d. Underground piping - Lay pipe on a firm bed for its entire length, except where support is otherwise provided.
 - e. Vertical piping - Supports shall be at each floor. Horizontal piping - Hangers and supports shall be installed at locations not more than 3 feet from the end of each run out. A hanger shall be installed not over 1 foot from each change in direction of piping.
- 8. Make connections to equipment and branch mains with unions.
 - 9. Provide drain valves at main shutoff valves, low points of piping and apparatus.
 - 10. Install each fixture with trap, easily removable for servicing and cleaning. Each trap shall be placed as near the fixture as possible, and no fixture shall be double trapped. At completion, thoroughly clean plumbing fixtures and equipment.
 - 11. Fixture connections: Connections between earthenware fixtures and flanges on soil pipes shall be made absolutely gas tight and water tight with a closet-setting compound or gasket. Bolts shall be not less than 1/4 inch in diameter and shall be equipped with chromium-plated nuts and washers.
 - 12. Test sanitary drainage, condensate drains and vent systems with water or air in accordance with requirements of the State Sanitary Code, International Plumbing Code and all applicable local codes. Water test may be applied to entire drainage systems or sections of systems. All openings shall be tightly closed in section to be tested except at highest opening. All portions of systems shall be subject to a minimum of 10 feet head of water. Water must have been in the system 2 hours prior to inspection. Air test in accordance with the Plumbing Code may be used at contractor's option.
 - 13. Sanitary sewer or storm drain pipe penetrating concrete slabs shall be wrapped with foam insulation tape.

B. DOMESTIC WATER PIPE

1. Perforated strap hangers shall not be allowed for any part of the hangers.
2. Mains, branches, and run outs: Piping shall be installed as indicated on the drawings. Pipe shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. Care shall be taken not to weaken structural portions of the building. Above ground piping shall be run parallel with the lines of the building unless otherwise shown or noted on the drawings. Branch pipes from service lines may be taken from top, bottom, side or main, using such crossover fittings as may be required by structural or installation conditions. Service pipes, valves, and fittings shall be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering and other work and not 1/2 inch between finished covering on the different services. No water pipe shall be made with reducing fittings. Use of long screws and bushings will not be permitted. Slope water pipe 1 inch in 40 feet and arrange to drain at low point.
3. Expansion and contraction of piping: Allowance for expansion and contraction shall be made throughout. Sufficient flexibility shall be provided on all branch run outs from mains to risers to provide for expansion and contraction of piping. Flexibility shall be provided by installing one or more turns in the line so that the piping will spring enough to allow for expansion without straining.
4. Joints: Tubing shall be cut square, and butts shall be removed. Both inside of fittings and outside of tubing shall be well cleaned with steel wool before sweating. Care shall be taken to prevent annealing of fittings and hard drawn tubing when making connections. Installation shall be made by competent workmen in accordance with manufacturer's recommendation. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints for soldered fittings shall be made with a noncorrosive paste flux and solid string of wire solder. Cored solder will not be permitted.
5. Valves: Valves shall be provided on all supplies to fixtures as specified under type of fixture and fixture trimmings. Valves indicated in connection with run outs, risers, branches, and mains shall be in accordance with this specification. No valve shall be installed on any lines with its stem below the horizontal. All valves shall be gate valves unless otherwise specified or indicated. Provide drain valves at main shut-off valves, low points of piping and apparatus.

6. Pipe sleeve, hangers, and fixture supports: These items shall be furnished and set and the contractor shall be responsible for their proper and permanent location.
 - a. Pipe sleeves - Install sleeves for all pipes passing through footings, floors, and walls. Clearance between sleeves and pipe covering and/or pipes shall be approximately 1/4 inch. Construction shall not be cut except where approved by the Architect. Where cutting of construction is permitted, the construction shall be repaired to match its original condition. Sleeves shall not be installed in structural members except where indicated. Sleeves are not required for wall hydrants.
 - 1) Install sleeves for pipes that pass through walls. Sleeves that pass through walls shall be cut flush with surfaces. The space between sleeves and pipe or covering shall be sealed with graphite packing and synthetic rubber caulking compound.
 - 2) Install sleeves where pipes pass through waterproofing membrane. The sleeves shall be provided with an integral flashing flange or a clamping device to which a 4 pound lead flashing shield shall be clamped or soldered. The shield shall extend 12 inches from the pipe and shall be thoroughly mopped into the membrane. The space between the sleeve and pipe shall be made watertight by inserting an oakum gasket, filling the remaining space with lead, and thoroughly caulking.
 - b. Threaded pipe - Support pipes at 7 foot intervals.
 - c. Copper tubing - Support tubing at not more than 5 foot intervals. Hangers for copper tubing except where protective shields are installed shall have proper size rings to suit outside diameter of tubing and the hangers or supports shall be copper or copper plated at contact surfaces.
 - d. Underground piping - Lay pipe on a firm bed for its entire length, except where support is otherwise provided.
 - e. Vertical piping - Supports shall be at each floor. Horizontal piping - Hangers and supports shall be installed at locations not more than 3 feet from the end of each run out. A hanger shall be installed not over 1 foot from each change in direction of piping.
7. Unions: Make connections to equipment and branch mains with unions. Provide non-conducting type connections wherever jointing dissimilar metals in open systems. Brass adapters and valves are acceptable.
8. Domestic cold water lines penetrating concrete slabs shall be wrapped with vinyl flexible tube. Domestic hot or return water piping penetrating concrete slabs shall be insulated at all penetrations through slab (refer to insulation specifications).

KING ARCHITECTS, INC.

SECTION 22 05 03

9. Provide drain valves at main shutoff valves, low points of piping and apparatus.
10. Hydrostatically test entire domestic water system to 200 psig or 2-1/2 times normal working pressure.
11. Sealing or flashing the building envelope due to penetrations in building shall be the responsibility of the general contractor.
12. Water service to fixtures or groups of fixtures shall have 12 inch long air chambers at the same diameter as header or service pipe on both hot and cold water lines. Air chamber shall be installed close to fixture. Provide and install shock arrestors on sterilizer water supplies or supplies with quick closing valves such as flush valves, dishwashers, tempering valves, etc. Location and size of shock arrestor shall be as per manufacturer's instructions.

END OF SECTION 22 05 03

SECTION 22 07 00 – PLUMBING INSULATION**I. GENERAL****A. DESCRIPTION**

1. Pipe insulation installation shall not begin until all work has been tested and found to be tight. All insulation shall be UL listed and have a flame spread of less than 25 and a developed smoke rating less than 50. All insulation shall be banded with aluminum bands, three per section. All insulation shall be continuous through walls, floors, ceilings, etc.

II. MATERIALS**A. DOMESTIC WATER PIPING**

1. Cover cold water lines above ceilings and in exterior walls and all hot water lines with 1 inch thick closed cell rubber type insulation. At contractor's option, 1 inch thick fiberglass insulation with white universal jacket may be used. All flanges, valves and fittings shall be insulated with closed cell rubber type molded fittings insulation, fabricated mitered segments of pipe insulation or closed cell rubber type insulation equivalent in thickness to insulation of adjoining pipe.
2. All water lines exposed in mechanical rooms shall be covered with 0.020 color coded PVC jacket with solvent welded seams and joints.
3. All water lines outside of building exposed to the weather shall have 1 inch thick closed cell rubber type insulation covered with 0.016 smooth aluminum jacket and elbows.
4. All water lines below building slab shall be insulated with 1 inch thick closed cell insulation with two (2) coats of mastic.

B. HORIZONTAL WASTE PIPING

1. All horizontal waste lines and traps above first floor slab which receive condensate from air conditioning equipment, roof drain bodies, shall be insulated with 2 inch thick, 3/4 pound density fiberglass insulation with aluminum foil vapor barrier or closed cell rubber insulation.

C. INSULATION BANDS

1. All pipe insulation shall be banded with nylon tie-wrap bands, three (3) to a section, and with one (1) band on each side of each fitting, valve, etc.

D. FLANGES, VALVES AND FITTINGS

1. All flanges, valves and fittings shall be insulated with fabricated fiberglass molded fitting insulation, using factory fabricated fittings up to 3 inches and fabricated mitered segments of pipe insulation equal in thickness to the insulation to the adjoining pipe. All fabricated mitered segments shall be covered with matching embossed vapor barrier laminate.

III. INSTALLATION

- A. Provide clearance for installation of insulation and for access to valves, air vents, drains and unions.

1. Insulation Installation:
 - a. Do not install covering before piping has been tested and approved.
 - b. Ensure piping surface is clean and dry prior to installation.
 - c. Ensure insulation is dry before and during application.
 - d. Insulation shall be continuous through walls, floors and ceiling. Pack around pipes with fire proof self-supporting insulation material, fully sealed.
 - e. Insulate fittings and valves. The end of the insulation shall be fitted with a metal escutcheon plate with set screw or taped neatly with pressure sensitive fiberglass reinforcing cloth.
 - f. All joints shall be sealed with 3 inch wide fiberglass reinforcing cloth with pressure sensitive adhesive.
 - g. Pipe insulation at Hangers and Supports: Pipe insulation at hanger and support shall be protected with a half circular shield of the size of the insulation and 12 inches long constructed from 20 gauge galvanized steel. The shield shall be held in place with the fiberglass reinforcing cloth and pressure sensitive adhesive. Where pipes pass through walls, ceiling and floor in finished areas, escutcheon plates shall be installed to encompass pipe and insulation. Escutcheon plates shall be chromed brass or stainless steel and shall be either solid or the clamp on split type.
 - h. Painting of fiberglass pipe jacket is not required. Piping shall be painted colors as standard in this facility.

END OF SECTION 22 07 00

SECTION 22 10 00 - PLUMBING**I. GENERAL****A. DESCRIPTION**

1. Furnish all labor and materials as hereinbefore specified, indicated or reasonably implied for the complete installation of the following systems:
 - a. Cold Water
 - b. Hot Water System
 - c. Sanitary Drainage System

II. MATERIALS**A. FLOOR DRAINS**

1. All floor drains shall be constructed of cast iron and shall be complete with clamping devices as required.
2. Floor drains (Marked "FD"): shall be bottom outlet with duracoated cast iron body with clamping collar and 6 inch diameter nickel bronze strainer adjustable vertically to floor level, with square perforations and vandal proof screws. Refer to fixture schedule for specific types.

B. CLEANOUTS

1. Cleanouts shall be provided where shown on plans, at each change of direction of the building drain greater than 45 degrees and at or near the foot of each vertical waste or soil stack. Location of all cleanouts shall be same size as piping up to 4 inches. Larger pipes shall have 4 inch cleanouts unless noted otherwise. Every cleanout shall be installed so that the cleanout opens in the direction of flow of the drainage line or at right angles thereto. Floor cleanouts shall be adjustable type, double drainage flange, clamping collar (above grade installations), 2 pound lead flashing, nickel bronze cover. Top of cleanout shall be level with top of finished floor so there is a continuous surface. Wall cleanouts shall be nickel bronze access frame and cover. Outside cleanouts shall be installed with cover, set flush with finished grade, or as detailed on plans.

C. FLASHING

1. Flash around all pipes passing through roof in connection with this contract with sheet lead, not less than 2-1/2 pound to the square foot, built 6 inches into the waterproofing, running 10 inches up the pipe and turned over into the pipe cavity. Flashing around roof drains shall be not less than 2-1/2 pound lead extending at least 12 inches from the drain rim into

membrane waterproofing. Fasten flashing to drain clamp device making watertight durable joint.

D. EQUIPMENT FURNISHED BY OWNER AND/OR BY OTHER TRADES

1. This equipment and other miscellaneous equipment shall be furnished and set in place under other sections of these Specifications and/or by the Owner, unless specified otherwise.
2. Plumbing Contractor shall provide necessary rough-in required for the equipment and shall completely connect all plumbing services for this equipment providing cut-off valves and unions for each plumbing supply service to each piece of equipment. It is the obligation of the Plumbing Contractor to obtain correct rough-in dimension plans for this equipment as well as the equipment furnished under this contractor.
3. The various equipment contractors shall provide access holes for service lines that enter his equipment. This work to be performed on the job site, as necessary. Plumbing Contractor shall furnish and install escutcheons, locknut type, at these locations.

E. PLUMBING FIXTURES

1. Plumbing Contractor shall furnish and install all plumbing fixtures shown on accompanying drawings. Refer to both plumbing and architectural drawings and provide all fixtures shown on either. Fixtures shall be complete with all necessary brass and accessories required for a complete installation including traps, escutcheons, angle supplies, basin cocks, etc. All fixtures shall be new and must be delivered to the building properly crated in perfect condition.
2. All brass must be of the best quality; lightweight goods will not be accepted. All brass pipe shall be seamless brass tubing and nipples shall be extra heavy. All fittings and trim shall be chromium plated heavy brass unless otherwise specified. "P" traps shall be cast brass with cleanouts. All exposed piping shall be chromium plated. Provide cutoff valves at each fixture in both hot and cold water piping.
3. For the purpose of establishing type and class of fixtures required, the scheduled plate numbers have been taken from the indicated catalog. Approved equals shall be as follows: Fixtures: Kohler, Briggs, American Standard, Crane, Eljer, Elkay, Dayton, Just or Universal Rundle. Flush Valves: Sloan, Zurn. Faucets: Elkay, Just, Chicago, Kohler, American Standard, Delta Commercial, Zurn, Speakman. Water Heaters: A.O.Smith, Ruud/Rheem, State, Bradford White. Drains: Wade, J.R. Smith, Zurn, Josam. Hose Bibbs: Josam, Woodford, J.R. Smith, Wade, Zurn.

KING ARCHITECTS, INC.
III. EXECUTION

SECTION 22 10 00

A. SURFACE CONDITIONS

1. Inspection:
 - a. Prior to all work of this section, carefully inspect the installed work of adjacent trades and verify that all such work is complete to the point where fixture installation may properly commence.
 - b. Verify that all hangers and fixture supports are properly installed to receive plumbing fixtures.

B. PLUMBING FIXTURE

1. Each plumbing fixture shall be fitted with all necessary and proper fittings, trimmings and operating devices, and shall be in perfect operating condition.
2. Refer to architectural drawings for any other information that may be necessary or required in connection with plumbing installation.
3. Before setting any fixtures, obtain the exact mounting height, as desired, from the Architect.
4. Wall mounted water closets, urinals, and lavatories shall have a floor anchored carrier to fit in available wall space (coordinate requirements in drawings).

END OF SECTION 22 10 00

SECTION 22 11 00 - WATER SUPPLY

I. GENERAL

A. DESCRIPTION

1. Install water supply piping as indicated on plans.

II. MATERIALS

A. PIPING

1. All water supply piping shall be of materials hereinbefore specified.
2. All water lines shall be disinfected in accordance with the State Sanitary Code.

III. EXECUTION

A. INSTALLATION

1. Water lines run underground shall have a minimum of 24 inches cover to finished grade.
2. Make up complete water supply system. Connect to all fixtures and outlets requiring water.
3. At each fixture or group of fixtures furnish and install a 12 inch high air chamber of same size as branch feed line except at fixtures with quick closing valves such as flush valves, dishwashers, etc., in which cases provide "Shock Arrestor" properly sized for each unit.

B. TESTING

1. All lines shall be tested in accordance with requirements listed in construction documents and State Plumbing Code.

END OF SECTION

SECTION 22 13 00 - WASTE WATER DISPOSAL**I. GENERAL****A. DESCRIPTION**

1. Extend sanitary sewer lines to the location as shown on the plans.

II. MATERIALS**A. PIPING**

1. The system of sewage and drainage shall be of materials as hereinbefore specified except where space requirements necessitate the use of Type "DWV" copper.

III. EXECUTION**A. INSTALLATION**

1. All work shall be in strict conformity with the State Plumbing Code and in accordance with all local codes. Piping shall be routed as shown on plans or in acceptable manner to meet building conditions. Venting shall be as shown on plumbing riser diagrams.
2. Connections between traps and cast iron pipes are to be made with heavy brass ferrules.
3. Provide reducers, increasers, special flanges, and fittings where required between piping work and fixtures in order to connect and complete work and render it ready for use. Make any offsets required to avoid construction.
4. All lines 3 inches and smaller shall be sloped 1/4 inch per foot, lines 4 inches through 6 inches shall be sloped 1/8 inch per foot, lines 8 inches and larger shall be sloped 1/16 inch per foot. Piping shall be laid so slope is continuous.
5. All vents shall extend 10 inches above roof and terminate in an appropriate flashing collar. No vents shall penetrate roof within 48 inches of an exterior wall. Offset in ceiling as required. All back vents shall be taken off as near trap as possible.

B. TESTING

1. All lines shall be tested in accordance with requirements listed in construction documents and State Plumbing Code.

END OF SECTION 22 13 00

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SECTION 23 00 00

SECTION 23 00 00 – HEATING, VENTILATION AND AIR CONDITIONING

PART 1 - GENERAL

- A. The extent of the HVAC work is shown on drawings and specified herein.
- B. General Requirements Reference: Section 23
- C. Protection of Equipment
 - 1. Take such precautions as may be necessary to properly protect his equipment from damage; failure to comply with the above to the satisfaction of the Architect will be sufficient cause for rejection of the particular piece of equipment in question.
- D. All work shall be in accordance with NFPA 101 and NFPA 90A.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. Refrigerant Pipe: Type "L" copper with soldered joints.
- B. Condensate: Pipe shall be SCH 40 PVC with solvent cemented joints.
- C. Valves: Jenkins, Walworth, Nibco, or Crane, or the manufacturer's listed.
- D. Pipe Sleeves: (See Section 22 00 00)

2.02 PIPE INSULATION

- A. Refrigerant: Armstrong Armaflex or equal.

2.03 DUCTWORK

- A. Rectilinear galvanized sheet metal duct gauges per ASHRAE Standards.
 - 1. Damper Regulator: N.P. Young or equal.
 - 2. Duct Insulation: 1 inch thick, 1.5 lb. (10') density duct liner with coating on the air stream side.
 - 3. Duct Board will be allowable in concealed areas (attic).

2.04 FLEX DUCT

- A. UL-181, NFPA-90A, and NFPA-90B approved. Duct to de-rated for 6" H 0 positive, 2" H 0 negative. R value 4.3 minimum.

PART 3 - EQUIPMENT

3.01 AIR COOLED CONDENSING UNITS: See schedule on drawings.

3.02 AIR HANDLING UNITS: See drawings

3.03 FANS: See drawings.

PART 4 - EXECUTION

4.01 GENERAL

- A. Materials and equipment shall be first class in every respect and shall be aligned, leveled and adjusted for proper operation. All work shall be done in a neat, workmanlike manner.
- B. Equipment, ducts, piping, etc. must fit into the available spaces shown on the drawings and shall be introduced into the

building at such time and in such a manner as not to cause damage to the structure.

- C. Visit the site and study drawings and specifications. Perform the work to conform to applicable conditions and space limitations. No allowances shall be made for Contractor's misunderstanding of the work involved or to lack of knowledge of existing conditions.
- D. Lay out the work and be responsible for its correctness, taking all measurements and verifying all dimensions as may be necessary to assure proper fitting and installation of the work and all other work depending thereon.
- E. All equipment and apparatus normally requiring operation, service or maintenance within the life of the system shall be made easily accessible.
- F. Application and installation of materials and equipment shall be strictly in accordance with manufacturer's recommendations should there be any difference between such recommendations and the requirements of the drawings and specifications, the Contractor shall notify the Architect of such differences and obtain the Architect's interpretation prior to installation. Differences brought to the Architect's attention after installation shall be corrected to the Architect's interpretation by the Contractor, at the Contractor's expense.
- G. Perform all labor and furnish all materials in strict accordance with the rules of the National Board of Fire Underwriters, Municipal and State Regulation, the Gas Company, or any other authorities that may have lawful jurisdictions pertaining to the work specified.
- H. The manufacturer of equipment or materials shall concur with the use of his equipment or material in the manner specified. No equipment shall be installed without the manufacturer's approval for the service intended and/or the manner specified. If so installed, and such equipment fails to achieve the intended results, the Contractor shall make such alterations substitutions as required, to accomplish the intention at the Contractor's expense.

4.02 PIPING

- A. Provide all piping, as shown on the plans and as are necessary for the complete interconnection of all equipment. Pipe shall run substantially as indicated on the plans; however, conditions may require the Contractor to make minor changes in pipe location where conflicts occur. Any changes shall be at the Contractor's expense. Pipe shall be straight and true and free from defects.
Reducers shall be installed only at the equipment whose inlet and outlet are smaller than the pipe connecting to it. The use of bushings, in lieu of reducers, is prohibited.
 - 1. Condensate: Pipe shall be minimum size 3/4" with 1/2" min. thick insulation.
 - 2. Valves and Fittings: Provide valves and fittings as indicated on the plans and as good piping practice indicates. All gate and globe valves shall be installed with stem in horizontal position wherever possible. The Contractor shall standardize on one make of valve as such as possible. Valves in copper lines shall have sweat connections.
 - 3. Pipe Sleeves: Where pipes pass through concrete and masonry walls, concrete slabs and partitions, a PVC pipe sleeve, of sufficient size to allow for free expansion and contraction of piping, shall be installed. Sleeves shall extend through walls, partitions and floors, full thickness and extend 1/2" above finished floor. Void between pipe and sleeves shall be filled with RTV foam.

4.03 DUCT WORK

- A. Install duct work in accordance with the recommendations of the American Society of Heating and Air Conditioning Engineers Guide, latest edition. Conform to the standards of the "Sheet Metal and Air Conditioning Contractor's Association, Inc." (SMACNA). Support horizontal ducts rigidly from the roof framing construction above. Install factory made turning vanes in all square duct turns in supply and return ducts.
- B. At every point where ducts divide, provide adjustable spitter dampers. These spitter dampers shall be a sturdy construction, streamline design, and shall be provided with indicating type locking quadrant in unfinished rooms or attic spaces and with specified damper regulators where they are exposed in finished rooms.
- C. All duct work will be effectively isolated from units by means of 16 oz. waterproof flexible canvas connections, except where shown otherwise.
- D. Supply and return duct work to be insulated. Apply insulation to sheet metal with adhesive and further secure with

spotter pins and clips at 12 inch o.c. insulation shall conform to NFPA Pamphlet numbers 90A and 90B. Duct sizes on plans to be inside dimensions unless noted otherwise on drawings.

- E. All Flex-duct to tie into metal duct with "Spin-Taps" with damper and scoop.

4.04 SAFETY CONTROLS

- A. Install safety controls as required by NFPA Code Section 90A and 90B. All HVAC Equipment of any capacity, and each exhaust fan of any capacity shall have a firestat installed in the inlet of the fan to stop the equipment if the inlet temperature exceeds 136 degrees F. This firestat must be manual reset. The firestat must break the motor power circuit, not a control circuit.
- B. All HVAC equipment with a capacity of 2000 CFM or greater shall have a smokestat in the outlet duct unless exempted by NFPA 90A and 90B.

4.05 TESTING AND START

- A. The Contractor shall at his own expense, during the progress, or upon its completion, make such test of his work as are herein specified or as required by the Architect or by state or municipal bureaus having jurisdiction and under their supervision. Furnish a competent refrigeration technician to supervise the starting, testing, and balancing of all mechanical equipment and will correct, at his own expense, any defects that develop. Operate the system until such time as the Architect gives approval and acceptance of the installation at which time the Owners will operate the system.
- B. Instruct the Owner's personnel in the proper operation of all items of equipment including those that may not be placed in operation at the time of startup, i.e., boilers during summer time startup.

END OF SECTION 23 00 00

SECTION 23 01 00 – MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

- A. The General Conditions of the Architectural Specifications along with supplementary conditions, special conditions, information to bidders, and any other pertinent information and documents shall apply the same as if repeated herein.
- B. The term "Architect" in this specification may be his agent such as the Consulting Engineer.
- C. The *EXTENT* of the mechanical work is shown on the drawings and specified herein.
- D. Work shall be in accordance with NFPA 101, NFPA 90 A, NFPA 96 and SBCCI Mechanical, Plumbing, and Gas Code.

1.01 SCOPE OF WORK

- A. Furnish all labor and material necessary to provide and install the complete mechanical portion of this contract, including plumbing, sewage collection and water distribution systems, and HVAC systems, as called for herein and on accompanying drawings. Parts of the mechanical division may be bid separately or in combination at the Contractor's option; however, it shall be the responsibility of the General Contractor to assure himself that all items covered in the Mechanical Division have been included if he chooses to accept separate bids.
- B. Refer to the Architectural and Structural drawings and install all equipment, piping, etc. to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit in space provided.
- C. It is the intention of these specifications that all mechanical systems shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc., necessary to provide a satisfactory installation in working order.
- D. Visit the site and thoroughly examine all existing conditions which would affect the work. Failure to do so shall not relieve the Contractor from the responsibility of installing his work to meet conditions.
- E. Contractor shall protect his system from damage until job acceptance and failure to do so may cause rejection of that system.
- F. Make tie-ins and /or rough-ins to equipment, piping, r systems installed and /or furnished by others, or as noted on the drawings.

1.02 GROUNDS AND CHASES

- A. See that all required chases, grounds, holes, and accessories necessary for the installation of his work are properly built in as the work progresses.

1.03 CUTTING AND PATCHING

- A. Initial cutting patching shall be the responsibility of the General Contractor, unless noted. This Contractor shall be responsible for timely location of all openings required. After initial finish is complete any additional cutting and finish work will be at this Contractors expense.
- B. No structural beams or joists shall be cut or thimble without first receiving the approval of the Architect.

1.04 REPAIRING ROADWAYS AND WALKS

- A. Cuts or breaks in roadways or walks to lay the piping, shall be repaired or replaced to meet the Architect's approval.

1.05 TRENCH AND EXCAVATION WORK

- A. Trench and excavation work shall include excavating, preparing of trenches, and backfilling. Care shall be taken not to excavate below depth required, that trench beds are well rounded and that ground under pipe line is firm and secure

- before any pipe is laid. Trenches shall be excavated where bells of pipe occur in order to insure a pipe resting on the entire length of the bottom of the trench. Minimum cover over underground lines shall be 2-1/2', except under streets of parking lots where minimum cover shall be 3' unless slope to sewer mains prevent this depth.
- B. The width of the trench shall be sufficient to permit thorough compaction of the backfill under and around the pipe but not exceeding the external diameter of the pipe by more than *twelve (12) inches*. Excavation for pipes shall be by hand and / or machine and as specified herein and shall conform to the lines indicated on the plans.
 - C. All pipe shall be place on a firm foundation. Any muck or other objectionable material found during excavation and preparation of the bed shall be removed and replaced with suitable bed material as directed by the Architect.
 - D. Backfill in accordance with Architectural specifications.

1.06 LOCAL CONDITIONS

- A. The location and elevation of all services, if shown, is based on information obtained from the Owner. However, this shall serve as a general guide only and the Contractor shall visit the site and verify the location and elevation of this service to his own satisfaction for the execution of the contract.
- B. Contact the various utility companies, determine the extent of their requirements and include in the bid all lawful fees and payments required by these companies for complete connection and services to the building, including meters, connection charges, street patching, extensions from meters to main, etc.
- C. In case major changes are required, this fact, together with the reasons therefor, shall be submitted to the Architect, in writing, not less than *ten (10) days* before the date of bidding. Failure to comply with this requirement will make the contractor liable for any changes, additions, and expenses necessary for the successful completion of the project.

1.07 PERMITS, INSPECTIONS, AND TESTS

- A. All permits, fees, etc., for the installation, inspection, service connections, verifying locations, or construction of the work which are required by any authority and / or agencies having jurisdiction, shall be obtained and paid for by contractor.
- B. All inspections, examinations and tests required shall be arranged and paid for by the Contractor as necessary to obtain complete and final acceptance of all mechanical systems. The Contractor shall deliver certificates of all such inspections to the Architect.
- C. Notify the Architect and local governing authorities before any tests are made and tests are not to be drawn off or a line covered or insulated until examined and approved by the authorities. In event defects are found, these shall be corrected and the work shall be re-tested at the Contractor's expense.

1.08 CODES AND STANDARDS

- A. The entire mechanical work shall comply with the rules and regulations of the City, Parish, and State in which this project is being constructed including the State Fire Marshal and State Board of Health. All modifications required by these authorities shall be made without additional charge to the Owners. The Mechanical Contractor shall report these changes to the Architect and secure his approval before work is started. Work shall be in accordance with NFPA 101, NFPA 90A, NFPA 96 and SBCCI Mechanical, Plumbing and Gas Code.
- B. In addition to the codes heretofore mentioned, all mechanical work and equipment shall conform to the applicable portions of the following specifications, codes, and regulations:

American Society of Heating, Refrigeration and Air Conditioning Engineers, National Electrical Code National Fire Protection Association, American Society of Mechanical Engineers, American Gas Association, and Sheet Metal and Air Conditioning Contractor National Associations.
- C. All materials, equipment, and accessories installed under this contract shall conform to all rules, codes, etc., as recommended by National Associations governing the manufacturer, rating, and testing of such materials, equipment, and accessories. All materials shall be new and of the best quality and first class in every respect. Whenever directed

by Architect, the Contractor shall submit a sample for approval before proceeding.

- D. Where laws or local regulations provide that certain accessories such as gauges, thermometer, relief valves, and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories whether or not called for in these specifications.
- E. All unfired pressure vessels shall be built in accordance with the *A.S.M.E. Code* and so stamped. Furnish shop certificates for each vessel.

1.09 REVIEW OF MATERIALS

- A. Whenever manufacturers or trade names are mentioned in these plans or specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard or quality only and should not be construed to infer a preference. Equivalent products which meet the Architect's approval will be accepted; however, these products must be submitted to the Architect a minimum of *ten (10) days* prior to bid date. Submission shall include manufacturer's name, model number, rating table, and construction features.

Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. The Contractor shall base his bid solely on those items specified or included in the "Prior Approval Addendum" a particular piece of equipment does not mean automatic final acceptance and will not relieve the Contractor of the responsibility of assuring himself that this equipment is in complete accord with plans and specifications and will fit into the space provided. Submit shop drawings on all items of equipment for approval as hereinafter specified.

- B. The Architect's approval of shop drawings shall not relieve the Contractor from the responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings or specifications, even though approved by the Architect, shall not relieve the Contractor from furnishing and erecting same.

1.10 SUBMITTALS

- A. Before proceeding with work and / or within *thirty (30) days* after award of the General Contract for this work, the Contractor shall furnish to the Architect *six (6)* complete sets of shop and working drawings of such apparatus, equipment, controls, etc., to be provided in this project. These drawings shall give dimensions, weights, mounting data, performance curves, and other pertinent information. The submittals shall include plumbing fixtures, HVAC equipment, sprinkler system equipment, air compressor, vacuum equipment, etc.
- B. The Contractor may be required to submit shop drawings on any other material he supplies in construction of this project. These drawings shall be submitted at the time requested by the Architect.
- C. The Architect's approval of shop drawings shall not relieve the Contractor from responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings, or specifications, even though approved by the Architect, shall not relieve the Contractor from furnishing and erecting same.
- D. Upon completion of the work, the Contractor shall furnish *three (3)* bound sets of equipment brochures, parts list, operating instructions, and maintenance manuals of materials furnished on this project.

1.11 MINOR DEVIATIONS

- A. Plans and details sketches are submitted to limit, explain and define conditions, specify requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown, and such deviations are permissible and shall be made as required, but specified sized and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift ducts or pipes or to change the shape of ducts, and these changes shall be made as required. All such changes shall be referred to the Architect for approval before proceeding. Extra charges shall not be allowed for these changes.
- B. The drawings and specifications could not delve into every step, sequence, or operation necessary for completion of

the project without drawing on the Contractor's experience or ingenuity. However, only typical details are shown on plans. In cases where the Contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details shall not be an excuse for improper installation.

- C. In general, the drawings are diagrammatic and the Contractor shall install his work in a manner so that interferences between the various trades is avoided. In cases where interferences do occur, the Architect is to state which equipment, piping, etc., is to be relocated regardless of which item was first installed.

1.12 COORDINATION OF WORK

- A. Perform all work at such times and in such a manner as to avoid interference with work of other Contractors. Confer with and cooperate with all contractors on the project to insure proper completion of the work with a minimum amount of interference between the work of this fabrication and erection of work.

1.13 CLEANING AND ADJUSTING

- A. Upon completion of his work, clean and adjust all equipment, controls, valves, etc. Clean all piping, duct work, etc., and leave entire installation in good working order.

1.14 OPERATING AND MAINTENANCE INSTRUCTION

- A. Provide *four (4)* copies of printed instructions indicating various pieces of equipment be name and model number complete with parts lists and maintenance and repair instructions. This information shall be bound in plastic or canvas covered notebooks. Submit the manuals to the Architect for approval. Following his review & approval they will be submitted to owner and include a copy of submitted data, maintenance and operation equipment instructions, parts list, warranties, and, if required, test and balance report.

1.15 GUARANTEE

- A. Guarantee all materials, equipment, and workmanship for a period of one year from the date of final acceptance of the project. This guarantee shall include furnishings of all labor and repairs, adjustments, or replacement of any equipment, parts, etc., necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters.
- B. If the Contractor's office is in excess of a *fifty (50)* mile radius of the project, he shall appoint a local qualified Contractor to perform any emergency repairs or adjustments required during the guarantee period. The Contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

1.16 AS-BUILTS DRAWINGS

- A. Mechanical Contractor shall keep blue line copy of as-built drawings throughout project construction and two copies shall be turned over to owner at end of project.

1.17 FILL AND CHARGES FOR EQUIPMENT

- A. Fill and charge with materials or chemicals all devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.

1.18 MACHINERY GUARDS

- A. Provide guards for belt driven or other hazardous equipment. Completely enclose moving parts and provide openings in cover for tachometer readings.

1.19 ACCESS PANELS

- A. Furnish and install access panels where valves, dampers, etc., are concealed in walls, ceilings, floors or otherwise inaccessible. Panels to be Milcor or equal of the size required, furnished with prime coat finish.

1.20 PIPE MARKERS

- A. Provide pipe markers and directional arrows on all piping in mechanical equipment rooms, exposed and both sides of valves located above ceilings. Letter sizes and colors per OSHA recommendations.

1.21 MECHANICAL EQUIPMENT MOTORS

- A. Motor for mechanical equipment shall be *40 degrees C.* rise wound for plus or minus *ten* percent of rated voltage. Motors *1/2 or less* shall be *120 or 277* volt, single phase as noted. Motors above *1/2 HP* shall be of the specified or schedule voltage. Motors shall conform to EPACT.
- B. All electrical equipment shall be *U.L.* approved and comply with *NEC* and *NEMA* standards and *Division 16* of these specifications.
- C. Three phase starters shall be equipped with built-in single phase protection.
- D. Provide combination starters where noted on plans.
- E. Starters which are to be "Start/Stop" operated remotely shall have *120V CPT*.

1.22 AIR TEST AND BALANCE

- A. The Contractor shall procure the services of an independent air balancing contractor approved by the Associated Air Balance Council and testing agency or by personnel employed by the Mechanical Contractor to balance, adjust, and test air moving equipment and air distribution or exhausting systems as herein specified.

All work in this section shall be done under direct supervision of qualified ventilating technicians. All instruments used shall be accurately calibrated and maintained in good working order. If requested, test shall be conducted in presence of Architect and/or his representatives.

- B. Air balance and testing shall not begin until system has been completed and is in full working order. Contractor shall put all heating, ventilating, and air conditioning systems and equipment into full operation and shall continue the operation of same during each working day of testing and balancing. The contractor shall submit within 15 days after receipt of the contract, 6 copies of submittal data for the testing and balancing of the air conditioning, heating, and ventilating system. The air balance agency shall provide proof of having successfully completed at least 5 projects of similar size and scope.
- C. Test and balance shall include an extended warranty of 90 days after completion of test and balance work during which time the Architect, at his discretion, may request a re-check or re-setting of any outlet, supply air fan or exhaust fan as listed in test report. The agency shall provide technicians to assist Architect in making any tests he may require during this period of time.
- D. A complete air balance report shall be submitted to the Architect's office for review and final approval. The report shall indicate any areas with shortage of air flow or equipment malfunctions. The report shall be signed by officer or owner of the contracting company.

If Owner deems work unacceptable, he shall have the option to back charge or withhold payment to Contractor to have additional work performed by an independent testing contractor to complete work to Owner's satisfaction.

Report to include:

- All Grilles and Diffuser CFM specified and actual
- RPM of all rotating equipment specified and actual
- Voltage nameplate and actual
- Amps nameplate and actual
- FPM specified and actual
- Pressure drop air - across coils actual
- Pressure drop water - through pumps, chiller, coils, etc. specified and actual

1.23 TESTING PROCEDURES

KING ARCHITECTS, INC

SECTION 23 01 00

- A. Air Balance Agency shall provide three (3) copies of the report using the proper forms as accepted by AABC or NEBS for all mechanical equipment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 23 01 00

KING ARCHITECTS, INC

SECTION 23 03 00

SECTION 23 03 00 – BASIC HVAC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SCOPE

1. These specifications are intended to provide the complete and proper operation of all cooling, heating and ventilating system, as specified herein or as indicated on the drawings.
2. All electrical work will be done under the sections in Division 26, except where indicated otherwise. Furnish wiring diagrams and any other information required for all wiring in connection with the mechanical equipment and controls.

1.02 CODES AND REGULATIONS

1. Ordinances, Rules and Regulations: All work shall conform to the requirements of all building codes, sanitary codes and laws and ordinances in force in the locality in which the work is to be done. All work shall conform to the requirements of the National Fire Protection Association and Underwriter's Laboratories.

1.03 INSTRUCTIONS

1. Operating and Maintenance Instructions: Provide three (3) copies of operating and maintenance brochures for each piece of equipment including manufacturer's descriptive bulletins with wiring diagrams, parts lists and specific lubricating and maintenance instructions. Brochures shall be bound in suitable permanent type binders and suitably indexed.

1.04 SUBMITTALS

1. Submittals: The Contractor shall submit six (6) copies of manufacturer's data and descriptive literature and drawings for all equipment and materials. These submittals shall contain all pertinent information necessary for the Architect/Engineer to properly evaluate the items. In the event the Contractor submits equipment requiring electrical service other than that shown in the plans and specifications, the Contractor shall bear all costs for revisions to the electrical service.

PART 2 - PRODUCTS

2.01 PRODUCTS

1. No products are specified under this section of the specifications.

PART 3 - EXECUTION

3.01 COORDINATION

1. Coordination of Trades: Where work is in close proximity to the work of other trades, the Contractor shall review the plans of other Contractors and coordinate his work with theirs. This Contractor shall verify the location of lighting fixtures, beams, joists, pipes, or other obstructions before beginning his work in the area. Notify the Architect/Engineer where proper clearances do not occur, where the work of other would interfere with the safe and/or proper operation of this work, or where it is not possible to locate the equipment as shown on the drawings.
2. Foundations and Supports: The Contractor shall provide a 4" thick, cast-in-place concrete pad for the condensing unit(s) and all supports, etc., necessary for supporting his work and equipment.
3. Openings, Cutting, and Patching: Cut all openings required for the work under this contract. Patching will be done by the various crafts whose work is involved. Furnish and install all necessary sleeves, thimbles, hangers, inserts, etc., at such times and in such a manner as not to delay or interfere with work of other contractors. Caulk, flash or otherwise make weatherproof and bug-proof all penetration through the roof and exterior walls.

3.02 TESTING

KING ARCHITECTS, INC**SECTION 23 03 00**

1. Testing and Adjusting: The Contractor shall be responsible for all the testing and adjustments describable herein. All refrigerant piping shall be checked and/or tested before being concealed. After the work has been completed and before final acceptance by the owner, the Contractor shall test the system under actual working conditions at which time the Contractor shall make all adjustments. The Contractor shall balance and set all grilles, splitters, fans, etc., to proper cfm.

END OF SECTION 23 03 00

SECTION 23 05 00 - GENERAL PROVISIONS FOR HVAC

PART 1 – GENERAL

A. DIVISION OF SPECIFICATIONS

1. For Bidder's convenience only, this Division of the Specifications is divided into the following parts:

23 05 00	GENERAL PROVISIONS FOR HVAC
23 05 03	BASIC MATERIALS AND METHODS FOR HVAC
23 05 93	TESTING, ADJUSTING, AND BALANCING
23 07 00	MECHANICAL INSULATION
23 09 00	TEMPERATURE CONTROLS
23 30 00	AIR DISTRIBUTION
23 70 00	AIR CONDITIONING

B. GENERAL CONDITIONS

1. The General Conditions of the Architectural Specifications along with supplementary conditions, special conditions, information to bidders, and any other pertinent information and documents shall apply the same as if repeated herein. The contractor shall review Architectural General Conditions. Where the requirements of Architectural General Conditions and these specs conflict for the contractor, the most stringent shall be applied.
2. Mechanical subcontractor shall be the sole source responsible party to furnish and install the mechanical system. Mechanical contractor shall be properly licensed to perform this work.
3. Wherever the word contractor is mentioned in Division 23 of these specifications, it is intended to mean the Mechanical Contractor as appropriate. These are sub-contractors to the General Contractor who has the contract with the owner. It is the General Contractor who bears the responsibility to fulfill this part of the project (Division 23 – Mechanical) under the contract with the owner. The General Contractor shall be responsible for all costs associated with any and all bidding errors and omissions of the sub-contractor.

C. SCOPE OF WORK

1. Furnish labor, materials, and equipment necessary to provide and install the complete mechanical portion of this contract, including air conditioning, heating, and ventilating systems as called for herein and on accompanying drawings. Parts of the mechanical division may be bid separately or in combination at the contractor's option; however, it shall be the responsibility of the General Contractor to assure himself that all items covered in the Mechanical Division have been included if he chooses to accept separate bids.
2. Contractor shall refer to the Architectural, Structural, Plumbing and Electrical drawings and install all equipment, piping, etc., to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit in space provided or coordinated with other trades involved on the project.
3. It is the intention of these Specifications that all mechanical systems shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc., necessary to provide a satisfactory installation in working order and in accordance with all Federal, State and Local codes and ordinances.
4. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the contractor from the responsibility of installing his work to meet conditions.
5. Lack of coordination shall not be acceptable and shall not be a reason for poorly installed work or additional cost to this trade or others on the project. All associated extra cost shall be borne by the contractor. The General Contractor shall be responsible for all costs, time and liquidated damages associated with lack of coordination or poor coordination.

D. LOCAL CONDITIONS

1. Location and elevation of all services is based on information obtained from the Owner. However, this shall serve as a general guide only and the contractor shall visit the site and verify the location and elevation of this service to his own satisfaction in order to determine the amount of work required for the execution of the contract.
2. Contractor shall contact the various utility companies, determine the extent of their requirements and cooperate with the utility company in reaching a finished product. Contractor shall pay charges by Utility Company for extensions, connections meter fees, street patching, etc.
3. In case major changes are required, this fact, together with the reasons therefore, shall be submitted to the Architect, in writing, not less than seven days before the date of bidding. Failure to comply with this requirement will make the contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

E. CUTTING AND PATCHING

1. Initial cutting and patching shall be the responsibility of the General Contractor with the Mechanical Contractor responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimble without first receiving the approval of the Architect/Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at this contractor's expense.
2. Cutting and patching shall be done in such a manner that the surrounding work will be restored to its original condition.
3. The HVAC piping shall be run in such a manner as to avoid conflicts with other trades. It may be necessary to penetrate beams, grade beams, footings, and foundations. Install thimbles as required and as approved by the Structural Engineer and Architect.

F. CODES AND STANDARDS

1. The entire mechanical work shall comply with the rules and regulations of the City, Parish and State in which this project is being constructed including the State Fire Marshal and State Board of Health. All modifications required by these authorities shall be made without additional charge to the Owners. The Mechanical Contractor shall report these changes to the Architect and secure his approval before work is started.
2. In addition to the codes mentioned, all mechanical work and equipment shall conform to the applicable portions of the following Specifications, codes and regulations:
 - a. American Society of Heating, Refrigeration and Air Conditioning Engineers
 - b. National Electric Code
 - c. National Fire Protection Association
 - d. American Society of Mechanical Engineers
 - e. Underwriters's Laboratories
 - f. American Gas Association
 - g. Energy Code for Commercial and High Rise Residential Buildings
 - h. International Energy Conservation Code
 - i. International Building Code
 - j. International Plumbing Code with Louisiana Amendments
 - k. International Mechanical Code
 - l. International Fuel Gas Code
 - m. SMACNA Guidelines
3. Materials, equipment and accessories installed under this contract shall conform to all rules, codes, etc., as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. Materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, contractor shall submit a sample for approval before proceeding.

KING ARCHITECTS, INC

SECTION 23 05 00

4. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories whether or not called for in these Specifications.
5. Unfired pressure vessels shall be built in accordance with the ASME Code and so stamped. Furnish shop certificates for each vessel.
6. Material and equipment furnished or installed as part of these construction documents shall be installed and operated in strict accordance with the respective manufacturer's guidelines for installation and operating instructions. The manufacturer's guidelines shall become part of the construction documents.

G. MINOR DEVIATIONS

1. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown and such deviations are permissible and shall be made as required, but, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift ducts or pipes or to change the shape of ducts and these changes shall be made as required. All such changes shall be referred to the Architect/Engineer for approval before proceeding. Extra charges shall not be allowed for these changes.
2. No structural beams or joists (concrete or steel) shall be cut or thimble without first receiving the approval of the Architect/Structural Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at the Mechanical Contractor's own expense.
3. Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project without drawing on the contractor's experience or ingenuity. However, only typical details are shown on the plans. In cases where the contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details shall not be an excuse for improper installation. Submit installation shop drawings with manufacturer's details for review prior to installation.
4. In general, the drawings are diagrammatic and the contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect is to state which equipment, piping, etc., is to be relocated regardless of which item was first installed.
5. Materials and equipment furnished or installed as part of these construction documents shall be installed and operated in strict accordance with the respective manufacturer's guidelines for installation and operating instructions. The manufacturer's guidelines shall become part of the construction documents.

H. WORKMANSHIP

1. Workmanship shall be of highest grade, highest quality and all construction shall be done according to the best practice of the trade. Work shall be completed to satisfaction of the Architect/Engineer.

I. COORDINATION

1. Coordinate work of the different trades to avoid interferences between mechanical and all other work. All piping, ductwork, etc., shall be installed in lines as required to accomplish this end whether or not shown on the plans.
2. There will be a certain amount of work which must be coordinated with the Owner. This contractor shall coordinate required work with the Owner through the General Contractor using procedures acceptable to the Architect and Owner. The contractor shall maintain documentation of coordinated work.
3. This contractor shall coordinate and confirm that all equipment requiring electric service will be adequately and properly serviced by Electrical Contractor. Any conflicts shall be brought to the attention of the Architect/Engineer prior to ordering the equipment. VERIFY ALL VOLTAGES WITH THE ELECTRICAL PLANS AND ELECTRICAL CONTRACTOR.

4. This contractor shall coordinate the space clearances required for the HVAC ductwork with the structure, ceilings, lights, sprinklers, etc. In some cases, due to space limitations, it may be necessary to re-size ductwork to meet the conditions of the project. Any resizing required shall be part of this project and done without any additional cost to the Owner. DO NOT MAKE DUCTWORK WITHOUT COORDINATION. Avoid conflicts with other trades.
5. This contractor shall coordinate the installation of HVAC piping with all parts of the structural foundation system and structural building systems. Provide sleeves through grade beams or concrete beams at all conflicts. All points of penetration of foundation shall be reviewed by the Architect/Engineer prior to rough-in. All sleeves shall be installed per instructions and details of the structural engineer.
6. All piping shall be run as high as possible with sleeves through concrete beams to avoid conflicts. This means the piping shall run in or through the structure unless approved otherwise by the Architect/Engineer.

J. REVIEW OF MATERIALS

1. Whenever manufacturers or trade names are mentioned in these plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only and should not be construed to infer a preference. Equivalent products which meet the Architect's approval will be accepted; however, these requests for acceptance of products must be received by the Architect a minimum of ten days prior to bid date. Submission shall include manufacturer's name, model number, rating table and construction features. Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. The contractor shall base his bid solely on those items specified or included in the "Prior Approval Addendum" as no other item will be acceptable. Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the contractor of the responsibility of assuring himself that this equipment is in complete accord with plans and Specifications and will fit into the space provided. Submit shop drawings on all items of equipment for approval as hereinafter specified.
2. Should a substitution or variation occur, the better quality or greater quantity of material or work shall be furnished. This also does not preclude other manufacturers if they meet the following criteria:
 1. Product proposed for substitution shall be equal or superior to that specified in construction, efficiency, utility and function.
 2. Physical size of substitute brand shall not be greater than space provided for it.
 3. Profile of substitution shall be same concerning size, shape, indentations, recesses, etc.
 4. Complete illustrations, specifications and description of substitution shall be submitted for approval.
 5. Availability and proximity of manufacturer's service representatives shall be factors considered in substitution approval.
 6. Substitution and/or variations shall be reviewed and allowed when there is no change in cost to the project and shall be made at the discretion of the Engineer.

K. SHOP DRAWINGS

1. The General Contractor shall submit mechanical submittal within 30 days of the date of the contract between owner and contractor or the date of notice to proceed as issued by the owner to the General Contractor. The mechanical submittals shall have been submitted to the General Contractor within 30 days after the construction contract has been signed. The General Contractor and his sub-contractors shall bear all responsibility for any extra costs or delays to late submittals of shop drawings.
2. Drawings shall be presented in a clear and thorough manner.
3. Details shall be identified by reference to sheet detail, schedule or room numbers shown on contract and drawings.
4. Drawings shall contain the following information:
 - a. Date.

- b. Number of the drawing or revision.
 - c. Name of project or facility.
 - d. Name of contractor and subcontractor.
 - e. Clear identification of contents and location of work.
- 5. Preparation:
 - a. Clearly mark each copy to identify pertinent products or models.
 - b. Show performance characteristics and capacities.
 - c. Show dimensions and clearances required.
 - d. Show wiring or piping diagrams and controls.
 - e. Show weights and mounting data.
 - f. Provide letter documentation confirming that all coordination with other trades effected have been done. This is especially necessary with the electrical requirements and rough-in requirements.
- 6. Manufacturer's standard schematic drawings and diagrams:
 - a. Modify drawings and diagrams to delete information which is not applicable to the work.
 - b. Supplement standard information to provide information specifically applicable to the work.
- 7. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - a. Functional characteristics of the product, with integral related parts and attachment devices.
 - b. Full range of color, texture and pattern.
- 8. Equipment shop drawing shall be prepared by the contractor/supplier. These shop drawing shall include the manufacturer's performance data and installation manuals. In addition, the shop drawings shall show the installation specific to this project.
- 9. Assemble certificates, executed by each of the respective manufacturers, suppliers, and subcontractors.
- 10. All submittals shall be submitted prepaid and in ample time for review before installation.
- 11. Six (6) copies of each submittal shall be submitted to the Architect.
- 12. These shop drawings shall be supplied as part of this contractor's contract. Any drawings not approved shall be resubmitted until approved. Submit all shop drawings at the same time. No separate items will be accepted.
- 13. Time necessary for review of samples, certificates, test reports, and shop drawings is at least 30 calendar days after receipt of the item. All materials installed in the work shall match the reviewed submittals. After a submission has been reviewed, no substitutions will be permitted without written approval by the Architect.
- 14. The Architect's/Engineer's review of shop drawings shall not relieve the contractor from the responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings or specifications, even though approved by the Architect, shall not relieve the contractor from furnishing and erecting same.
- 15. Any delays caused by contractor not submitting shop drawings within a timely manner shall be the problem of the responsible subcontractor and the General Contractor.

L. UTILITIES

- 1. Connect all mechanical utilities at the points indicated on the drawings and extend such utilities to the building and to equipment or facilities requiring same.
- 2. Contractor shall pay all service and connection charges required by utilities companies and/or site conditions (offsets, conflict boxes, etc.).

KING ARCHITECTS, INC

SECTION 23 05 00

3. Contractor shall include all costs required by utility companies to extend utilities to the site. It is the responsibility of the contractor to obtain these fees from the utility companies and include those costs in the bid.

M. REPAIRING ROADWAYS AND WALKS

1. Where this contractor cuts or breaks roadways or walks to lay the piping, he shall repair or replace these sections to meet the Architect's approval. Repair of public roadways and highways shall be done as per the Federal, State or Local agencies having jurisdiction. Contractor shall obtain and pay for all permits.

N. EXCAVATION AND BACK FILL

1. Trench and excavation work shall include excavating, preparing of trenches, and backfilling as specified. Contractor shall install caution tape 12 inches above all piping, conduit, etc., as backfilling processes.
2. Trench and excavation work shall not include pavement breaking, cutting of holes through foundation walls and floors, removal of obstructions, relaying and/or repairing of floors, and repaving, which work shall be the responsibility of the General Contractor.
3. Contractor shall do all necessary trenching, excavation and backfilling for the proper installation of his work. Care shall be taken not to excavate below depth required, that trench beds are well rounded and that ground under pipe line is firm and secure before any pipe is laid. Trenches shall be excavated where bells of pipe occur in order to insure a pipe resting on the entire length of the bottom of the trench.
4. Unless otherwise noted, minimum cover over underground lines shall be 2-1/2 feet, except under streets and parking lots where minimum cover shall be 3 feet.
5. The width of the trench shall be sufficient to permit thorough compaction of the backfill under and around the pipe but not exceeding the external diameter of the pipe by more than 12 inches. Excavation for pipes shall be by hand and/or machine and as specified herein and shall conform to the lines and elevations indicated on the plans.
6. The pipe shall be placed on a uniformly firm and compacted bed of sand, carefully shaped to support the pipe at the desired grade and so that any reaction will be distributed as nearly uniform as possible over a horizontal width of not less than six-tenths (6/10) of the outside diameter and all possibility of concentration of the reaction at or near the vertical diameter eliminated. The bed shall be shaped as to fit the lower part of the pipe exterior for at least 10 percent of its overall height.
7. The pipe shall be placed on a firm foundation. Any muck or other objectionable material found during excavation and preparation of the bed shall be removed and replaced with suitable bed material directed by the Architect.
8. All trenches and excavation shall be backfilled in a reasonable time after the pipes are installed unless otherwise directed by the Architect. Special care shall be taken in placing the backfill and extra care shall be used to obtain compaction under and along sides to the top of the pipe.
9. The backfill shall be placed in loose layers not exceeding 6 inches in depth under and around the pipe and not exceeding 8 inches over the pipe. Each layer shall be compacted to the compaction requirements as specified by the Architect.
10. Compaction shall be by hand and pneumatic tampers and the successive layers shall be added and compacted until the trench is completely filled and brought to elevation as directed. Back-filling shall be done in such a manner as to avoid injurious top or side pressures on the pipe.
11. Improper backfilling and compacting shall be cause to have the trench opened to expose the pipe for inspection then properly backfilled and compacted with fill material.
12. Where trenching is for piping, the bottom of the trench shall have minimum 95 percent compaction and shall be bedded with minimum 12 inches compacted sand, crushed stone or shell on undisturbed soil (minimum 95 percent compaction).

KING ARCHITECTS, INC

SECTION 23 05 00

O. MATERIALS

1. Work materials shall be new and the best of their respective kinds, and shall bear the label of NFPA, ASME Code, AGA, and UL where such standard has been established for the particular item of equipment used.
2. Where project is defined as "Buy American", the contractor shall follow laws and policies governed by this definition as indicated in architectural specifications. Submit documentation that product complies. Include in equipment submittals.

P. MATERIAL STORAGE

1. General: Provide space for storage of material and equipment at ground level. Roof surfaces shall not be used for storage of materials or equipment. Any storage within the building shall be approved by the Architect/Engineer prior to use of the space.
2. Exterior: Pipe, fitting, or other materials stored outside of building shall be set on wood or steel racks or platforms inside storage container units. All necessary provisions shall be made to keep water and debris away from such stored material. Ends of pipes and valves shall be kept sealed until used.
3. Warehousing: Equipment subject to rusting shall be kept warehoused until just prior to setting. If necessary, the warehouse shall have climate-controlled conditions.
4. Offsite warehousing shall be approved by the Architect and Owner only.
5. Any warehousing used shall be approved by the Owner and an insurance certificate naming the Owner as insured shall be provided to the Owner.

Q. GROUNDS AND CHASES

1. Contractor shall see that all required chases, sleeves, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise he shall bear the cost of providing them.

R. MACHINERY GUARDS

1. Contractor shall provide v-belt guards for each v-belt drive or other hazardous drive. Guard shall enclose the drive entirely and shall have a hole for taking tachometer reading.

S. SPECIAL TOOLS

1. Special tools required for proper operation or maintenance of any mechanical equipment provided under this contract shall be delivered to the Owner at the completion of the project.

T. FILL AND CHARGES FOR EQUIPMENT

1. Fill and charge with materials or chemicals all devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.
2. This contractor shall flush systems as required per local and state jurisdictions and equipment/material manufacturer's guidelines (chlorination, chemical treatment, etc.).

U. EQUIPMENT ACCESS

3. Large equipment to be installed in building, which is too large to permit access through doorways, shall be brought to the job by the contractor and placed before enclosing structure. Equipment shall be cribbed up from the floor by the contractor and covered where necessary or directed.

V. EQUIPMENT IDENTIFICATION

4. Stenciling: All items of major mechanical equipment (pumps, AHUs, starters, valves, etc.) shall be neatly and clearly stenciled in letters not less than 1 inch high, with the same designation as appears on drawing. Location and color of such stenciling shall be appropriate for ready identification and/or as directed by the Architect. One set of compatible metal interlocking stencil letters and numbers shall be turned over to the Owner at the completion of the job. At contractor's option engraved plastic adhesive tags may be used. Tags used outdoors shall be listed for such use.
5. Pipe Coding: All piping, etc., both insulated and bare, shall be color coded with a general-purpose pipe marker for interior locations and a 6 inch enamel painted band for exterior locations, and stenciled as to service and characteristics on the 10 foot centers and/or as directed. Directional arrows not less than 1/2 inch wide and not less than 6 inches long shall be permanently stenciled on each line at each stencil location. Stenciling shall be located such that it is clearly visible from floor or adjacent service platform. Coding shall be as per schedule approved by Owner through submittal to Architect. At contractor's option, pre-manufactured vinyl pipe labels and directional arrows may be used but shall be banded on either end to secure to pipe.
6. Valve tags shall be installed on all valves controlling building zones, areas, or equipment. Valve tags shall be 2-inch diameter brass stenciled with valve number. A framed list of valves with associated numbers, sizes and locations shall be mounted in the building as directed by Architect.

W. TEMPORARY USE OF EQUIPMENT

1. The permanent equipment installation shall not be used for temporary purposes by the contractor for temporary conditioning of the building during construction. Contractor shall provide temporary dehumidification and drying equipment as required to maintain clean, dry air during construction.
2. Acceptable Use Without Specific Authorization: Temporary use shall not be construed to mean "bumping" of electric motors on equipment to verify rotation direction nor short time operation of systems for test purposes, operation of refrigeration and heating system for short periods to adjust controls and temperature regulation, or the operation of fans for air balance.

X. CLEANING AND ADJUSTING

1. Upon completion of his work, the contractor shall clean and adjust all equipment, controls, valves, etc. Clean all piping, ductwork, etc., and leave entire installation in good working order.

Y. PAINTING

1. This contractor shall obtain the services of a painting sub-contractor as part of contract with the General Contractor for all painting.
2. General: Except for standard factory finishes, all pipe, pipe covering, ducts, equipment, supports, hangers, etc., exposed inside and outside building or in equipment room shall be painted. This contractor shall prepare surface of material to receive first coat of paint. All subsequent coatings shall be prepared by Painting Subcontractor. Requirements covering paints, workmanship and preparation of surfaces as stated in Architectural Specifications shall govern. Color coding shall be approved by Architect (submit color sample). All submittals for review shall be through Architect.
3. Damage: Where standard equipment factory finishes have been damaged or scratched, the damaged area shall be repaired or replaced by the contractor to match the original finish.
4. Preparation: Thoroughly clean surfaces of all rust, scale, cement, and dirt from all equipment, piping or other work installed and leave ready for finish painting.
5. All exposed piping shall be painted. Paint with two (2) coats of paint. The color shall be industry standard color coding. Submit color code chart with sample color chips to Architect for review prior to starting work.

Z. NOISE VIBRATION

KING ARCHITECTS, INC

SECTION 23 05 00

1. General: Take the utmost precautions in the installation of the equipment, piping, and duct systems to prevent noise and vibration transmission. Noise levels determined by octave band analysis with all components of the mechanical system operating and the building completely furnished shall not exceed NC-35 in operations and office areas, and shall not exceed NC-45 in equipment areas. Where equipment and installations do not meet these limits, the contractor must provide necessary attenuation to reduce net noise levels to the above requirements.
2. Isolation of equipment: Equipment that would tend to cause noise or vibration shall be isolated to prevent noise transmission to the building or to other equipment.
3. Equipment Connections: Piping, conduit, or other connections to equipment shall be isolated. The contractor shall be responsible for the prevention of noise and vibration transmission through these connections to equipment.

AA. PERMITS, INSPECTIONS AND TESTS

1. Contractor shall obtain and pay for permits, fees, etc., for the installation, inspection, service connections, verifying location or construction of the work which are required by any authority and/or agencies having jurisdiction.
2. Contractor shall arrange and pay for inspections, examinations and tests required to obtain complete and final acceptance of all mechanical systems. Contractor shall deliver certificates of all such inspections to the Architect.
3. Contractor shall notify Architect and local governing authorities before any tests are made and tests are not to be drawn off a line covered or insulated until examined and approved by the authorities. In the event defects are found, these shall be corrected, and the work shall be retested.
4. Prior to requesting final inspection by the Architect, the contractor shall have a complete coordination and adjustment meeting of all of his subcontractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operations shall be checked to assure proper operation. Notify the Architect in writing ten days prior to this meeting instructing him of the time, date and whom you are requesting be present. This project shall not be accepted until the above provisions are met to the satisfaction of the Architect.

BB. TRAINING OF MAINTENANCE PERSONNEL

1. Contractor shall provide on the job training for Owner's personnel upon completion of the work including testing and adjustment. Minimum 20 hours of onsite training shall include maintenance checks, lubrication of components, adjustment of control set points, and troubleshooting techniques of the air conditioning unit.
2. Contractor shall use factory start-up personnel to train the owner's maintenance personnel.

CC. OPERATION AND MAINTENANCE INSTRUCTIONS

1. Provide Owner with four (4) copies of printed instructions indicating various pieces of equipment by name and model number complete with parts lists and maintenance and repair instructions. This information shall be bound in plastic covered notebooks. Submit the manuals to the Architect for approval.
2. Include all warranty certificates or statements in a separate section of the manuals. Provide all materials and test certificates for the final inspection.
3. Provide three (3) sets of DVDs of the operation and maintenance manuals.

DD. GUARANTEE

1. Contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc., necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters.
2. If the contractor's office is in excess of a 50 mile radius of the project, he shall appoint a local qualified contractor to

perform any emergency repairs or adjustments required during the guarantee period. The contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

EE. WARRANTIES

1. Assemble warranties executed by each of the respective manufacturers, suppliers, and subcontractors into a warranty book and prepare a table of contents.
2. Two (2) original signed copies of each warranty are required.
3. Provide complete information for each item including:
 - a. Product and work item.
 - b. Local supplying firm or manufacturer's dealer, with name of principal, address and telephone number.
 - c. Scope of warranty.
 - d. Date of beginning of warranty.
 - e. Duration of warranty.
 - f. Provide information for Owner:
 - 1) Proper procedure to evoke the warranty in case of failure.
 - 2) Instances which might affect the validity of the warranty.
 - g. Contractor, name of responsible principal, address and telephone number.
 - h. All contractors and manufacturers equipment warranties shall start at the acceptance of the project by the Owner.
 - i. Provide owner with contact information for warranties which extend beyond one year.

FF. RECORD DRAWINGS

1. Contractor shall maintain two (2) sets of drawings of the original construction documents to utilize as markup sets to record field modifications from original construction documents. Once approval has been gained from the Architect, the contractor shall record these variances on the two (2) sets in a neat and readable manner. Noted shall be sizes, locations, changes in directions, etc. with distances dimensioned from columns, walls, inverts, etc. The maintenance and cost of these documents shall be the responsibility of the contractor.

GG. MATERIALS CONTAINING HAZARDOUS SUBSTANCES OR COMPONENTS

1. This contractor shall not provide any material or component of equipment which contains asbestos, lead based paint or PCBs. The contractor shall provide certificates or manufacturer's statements/letters to show that the products and/or building materials do not contain asbestos, lead based paint or PCBs.
2. If any product or building material is found to contain asbestos, lead based paint or PCBs, the contractor shall bear all cost for removal, abatement, and disposal of materials in accordance with all state and federal regulations. The contractor shall install replacement materials to the satisfaction of the Architect at no additional cost to the project.
3. During the construction, if the contractor suspects that any material in the building contains or is a hazard material (asbestos, lead, PCB, mercury, etc.) work shall be stopped to prevent disturbance and the Owner shall be notified immediately.

END OF SECTION 23 05 00

KING ARCHITECTS, INC

SECTION 23 05 03

SECTION 23 05 03 – BASIC MATERIALS AND METHODS FOR HVAC

PART 1 – GENERAL

A. DESCRIPTION

1. Type of piping for various systems shall be as specified herein.
2. All pipe shall be true and straight without sags or traps.

PART 2 – MATERIALS

A. REFRIGERANT PIPING/EQUIPMENT DRAIN PIPING

1. All refrigerant and equipment drain piping shall be government type "L" hard copper tube standard weight and thickness as made by Mueller, Chase, Anaconda or equivalent, unless indicated otherwise. Use Silfos 1000 degrees Fahrenheit solder on all joints.
2. Tubing shall be brought to the site with ends sealed.

B. A/C CONDENSATE DRAIN PIPING

1. All A/C condensate drain piping shall be government type "L" hard copper water tube of standard weight and thickness. Fittings shall be compatible with pipe. Use Silfos 1000 degrees Fahrenheit solder on all joints.

C. PIPE FITTINGS

1. All pipe fittings shall be same as piping specified unless indicated otherwise.
2. Fittings for refrigerant piping and other copper lines shall be solder type wrought copper, Nibco or equivalent.

D. PIPE SPECIALTIES

1. Dielectric unions shall be used between copper and iron pipe.

E. PIPE HANGERS AND SUPPORTS

1. This contractor shall furnish and install all foundations and supports required for his equipment unless indicated otherwise on the drawings.
2. This contractor shall furnish and install all escutcheons, inserts, thimbles, hangers, etc., required for the proper support and installation of his equipment and piping. Cooperate with other trades in locating and placing these items.
3. Provide sleeves for all pipes passing through walls, floors, beams, etc. Sleeves passing through structural members shall be of cast iron or Schedule 40 steel pipe unless other material is approved by the Structural Engineer. Sleeves passing through nonstructural walls or floors shall be of Schedule 10 galvanized iron. Joints between sleeves and pipes passing through floors shall be made watertight with plastic materials. Where pipes pass through floors shall be made watertight with plastic materials. Where pipes pass through waterproofing membrane, flashing sleeves shall be installed.
4. Provide malleable iron split ring hangers with rod supports throughout. Strap hangers or wire will not be accepted. Maximum spacing of hangers for cast iron pipes shall be 5 feet; for other than soil, use 10 feet.
5. Provide galvanized iron shields between hangers and pipe covering.
6. Provide chrome plated brass escutcheons wherever pipes pass through floors, walls or ceilings in exposed or

finished areas.

7. All piping projecting from chases shall be rigidly supported in the wall or chase. Loosely supported piping or accessories will not be accepted.

F. MOTORS STARTERS AND ELECTRICAL WORK

1. The Mechanical Contractor shall furnish to Electrical Contractor for installation, all motor starters, start-stop push buttons and pilot lights for each piece of motor driven equipment unless shown otherwise.
2. The Electrical Contractor shall install all motor starters, start-stop push buttons and pilot lights as furnished by the Mechanical Contractor. The Electrical Contractor shall do all power wiring required for the installation of all mechanical equipment including equipment interlocking power wiring, etc. Temperature control wiring shall be furnished and installed by the Mechanical Contractor. All work shall be done in accordance with the National Electrical Code requirements and with wiring workmanship, etc., as called for in the Electrical Specifications. The Mechanical Contractor shall provide approved wiring diagrams of all equipment, controls, etc., to the Electrical Contractor for his installation. Coordinate all work to provide a complete system in working order. All wiring shall be plenum rated.
3. All motors for the mechanical equipment shall be of the 40 degrees Celsius rise type and shall be furnished and installed by the Mechanical Contractor. All motors shall be wound for +/- 10 percent of the specified voltage. Motors shall be voltages indicated on drawings. All motors shall have copper windings, class F insulation and shall be rated for continuous duty service. All three-phase motors shall be inverter-duty type motors.
4. All electrical equipment shall have UL label or ETL label and shall meet the standards of the National Electrical Code and NEMA.
5. Starters for single phase motors 1/2 HP and below shall be furnished with pilot light and "hand-off-auto" selector switch where required.
6. Starters for three-phase, single speed motors shall be stepless solid state soft starter with "hand-off-auto" selector switch, three (3) overload relays and auxiliary contacts as required. The starter shall operate at manufacturer's ratings with 10 percent and -15 percent applied voltage tolerance and be capable of operating continuously under ambient temperatures of 0 to 50 degrees Celsius. The starter control circuitry shall be designed for current ramp operation and utilize current feedback for closed loop operation to minimize variation of acceleration time with varying load conditions. The starter shall use metal oxide varistors to clip transient voltage spikes on incoming power lines with protection to limit the rate of rise of voltage spikes to protect the SCR's from damage. The starter shall provide electronic motor overload protection. The starter shall shut down (or shall not start) to protect itself from either phase loss or phase rotation. The starter shall have adjustments for initial torque, pulse, ramp up time, ramp down time, and current limit. The starter shall have a main trip breaker to act as a disconnect and necessary contactors. The starter shall have contacts for remote starting from a building energy management system.
7. Mechanical contractor shall provide and install all smoke dampers and smoke or duct detectors. The electrical contractor shall provide and install all wiring/interlocks with fire alarm.

G. ACCESS PANELS

1. Furnish and install access panels where valves, dampers, etc., are concealed in walls, ceilings, floors or otherwise inaccessible. Panels shall be Milcor, Babcock, Larsen, MIFAB, Acudor, Nystrom or equivalent. All access panels shall be minimum 18 inches X 18 inches hinged with flush latch and lock. The panels shall be constructed of minimum 18-gauge stainless steel. Frame flange shall be minimum 1-1/2 inches wide. Rated panels shall have U.L. rating for type wall or ceiling where located.
2. Access panels located in rated walls, floors, or ceilings shall be so rated and installed per manufacturer's recommendations to maintain rated integrity.

PART 3 – EXECUTION

A. PIPING

1. Perforated strap hangers shall not be allowed for any part of the hangers.
2. Mains, branches, and run outs: Piping shall be installed as indicated on the drawings. Pipe shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. Care shall be taken not to weaken structural portions of the building. Above ground piping shall be run parallel with the lines of the building unless otherwise shown or noted on the drawings. Branch pipes from service lines may be taken from top, bottom, side or main, using such crossover fittings as may be required by structural or installation conditions. Service pipes, valves, and fittings shall be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering and other work and not 1/2 inch between finished covering on the different services. No water pipe shall be made with reducing fittings. Use of long screws and bushings will not be permitted. Slope water pipe 1 inch in 40 feet and arrange to drain at low point.
3. Expansion and contraction of piping: Allowance for expansion and contraction shall be made throughout. Sufficient flexibility shall be provided on all branch run outs from mains to risers to provide for expansion and contraction of piping. Flexibility shall be provided by installing one or more turns in the line so that the piping will spring enough to allow for expansion without straining.
4. Joints: Tubing shall be cut square, and butts shall be removed. Both inside of fittings and outside of tubing shall be well cleaned with steel wool before sweating. Care shall be taken to prevent annealing of fittings and hard drawn tubing when making connections. Installation shall be made by competent workmen in accordance with manufacturer's recommendation. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints for soldered fittings shall be made with a noncorrosive paste flux and solid string of wire solder. Cored solder will not be permitted.
5. Valves: Valves shall be provided on all supplies to fixtures as specified under type of fixture and fixture trimmings. Valves indicated in connection with run outs, risers, branches, and mains shall be in accordance with this specification. No valve shall be installed on any lines with its stem below the horizontal. All valves shall be gate valves unless otherwise specified or indicated. Provide drain valves at main shut-off valves, low points of piping and apparatus.
6. Pipe sleeve, hangers, and fixture supports: These items shall be furnished and set and the contractor shall be responsible for their proper and permanent location.
 - a. Pipe sleeves - Install sleeves for all pipes passing through footings, floors, and walls. Clearance between sleeves and pipe covering and/or pipes shall be approximately 1/4 inch. Construction shall not be cut except where approved by the Architect. Where cutting of construction is permitted, the construction shall be repaired to match its original condition. Sleeves shall not be installed in structural members except where indicated. Sleeves are not required for wall hydrants.
 - 1) Install sleeves for pipes that pass through walls. Sleeves that pass through walls shall be cut flush with surfaces. The space between sleeves and pipe or covering shall be sealed with graphite packing and synthetic rubber caulking compound.
 - 2) Install sleeves where pipes pass through waterproofing membrane. The sleeves shall be provided with an integral flashing flange or a clamping device to which a 4 pound lead flashing shield shall be clamped or soldered. The shield shall extend 12 inches from the pipe and shall be thoroughly mopped into the membrane. The space between the sleeve and pipe shall be made watertight by inserting an oakum gasket, filling the remaining space with lead, and thoroughly caulking.
 - b. Threaded pipe - Support pipes at 7 foot intervals.
 - c. Copper tubing - Support tubing at not more than 5 foot intervals. Hangers for copper tubing except where protective shields are installed shall have proper size rings to suit outside diameter of tubing and the hangers or supports shall be copper or copper plated at contact surfaces.
 - d. Underground piping - Lay pipe on a firm bed for its entire length, except where support is otherwise provided.
 - e. Vertical piping - Supports shall be at each floor. Horizontal piping
 - Hangers and supports shall be installed at locations not more than 3 feet from the end of each run out. A hanger shall be installed not over 1 foot from each change in direction of piping.
7. Unions: Make connections to equipment and branch mains with unions. Provide nonconducting type connections wherever jointing dissimilar metals in open systems. Brass adapters and valves are acceptable.

KING ARCHITECTS, INC

SECTION 23 05 03

8. Provide drain valves at main shutoff valves, low points of piping and apparatus.
9. Provide and install air vents with shutoff valve at all high points in the system.

END OF SECTION 23 05 03

SECTION 23 05 29 – HANGERS AND SUPPORTS

PART I - GENERAL

A. SUMMARY

1. This section includes the following:
 - a. Steel pipe hangers and supports
 - b. Trapeze pipe hangers
 - c. Metal framing systems
 - d. Thermal hanger shield inserts
 - e. Fastener systems
 - f. Equipment supports
2. See Division 5 Section "Metal Fabrications" for structural steel shapes and plates for trapeze hangers for pipe and equipment supports.
3. See Division 13 Section "Fire Suppression Piping" for fire protection piping.
4. See Division 15 Section "Mechanical Vibration and Seismic Controls" for vibration isolation devices.
5. See Division 15 Section "Pipe Expansion Fittings and Loops" for pipe guides and anchors.
6. See Division 15 Section(s) "Metal Ducts" for duct hangers and supports.

1.01 DEFINITIONS

1. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports".

1.02 PERFORMANCE REQUIREMENTS

1. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.03 SUBMITTALS

1. Product Data: For the following:
 - a. Steel pipe hangers and supports
 - b. Thermal hanger shield inserts
 - c. Powder actuated fastener systems
2. Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - a. Trapeze pipe hangers. Include Product Data for components.
 - b. Metal framing systems. Include Product Data for components.
 - c. Equipment supports.
3. Welding certificates

1.04 QUALITY ASSURANCE

1. Welding: Qualify procedures and personnel according to ASME Boiler and Pressure Vessel Code: Section IX.

PART 2 - PRODUCTS

KING ARCHITECTS, INC

SECTION 23 05 29

2.01 MANUFACTURERS

1. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, manufacturers specified.
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 STEEL PIPE HANGERS AND SUPPORTS

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.
2. Manufacturers:
 - a. AAA Technology & Specialties Co., Inc.
 - b. Bergen Power Pipe Supports
 - c. B-Line Systems Inc., a division of Cooper Industries
 - d. Carpenter & Paterson, Inc.
 - e. Empire Industries, Inc.
 - f. ERICO/Michigan Hanger Co.
 - g. Globe Pipe Hanger Products, Inc.
 - h. Grinnell Corp.
 - i. GS Metals Corp.
 - j. National Pipe Hanger Corp.
 - k. PHD Manufacturing, Inc.
 - l. PHS Industries, Inc.
 - m. Piping Technology & Products, Inc.
 - n. Tolco, Inc.
3. Galvanized Metallic Coatings: Pregalvanized or hot dipped
4. Nonmetallic Coatings: Plastic coating, jacket, or liner
5. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping

2.03 TRAPEZE PIPE HANGERS

1. Description: MSS SP69, Type 59, shop- or field-fabricated pipe-support assembly made from structural steel shapes with MSS SP58 hanger rods, nuts, saddles, and U-bolts.

2.04 METAL FRAMING SYSTEMS

1. Description: MFMA3, shop- or field-fabricated pipe support assembly made of steel channels and other components.
2. Manufacturers:
 - a. B-Line Systems, Inc.; a division of Cooper Industries
 - b. ERICO/Michigan Hanger Co.; ERISTRUT Div.
 - c. GS Metals Corp.
 - d. Power-Strut Div.; Typco International, Ltd.
 - e. Thomas & Betts Corp.
 - f. Tolco, Inc.
 - g. Unistrut Corp.; Tyco International, Ltd.
3. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.
4. Nonmetallic Coatings: Plastic coating, jacket or liner.

2.05 THERMAL HANGER SHIELD INSERTS

1. Description: 100-psig minimum, compressive strength insulation insert encased in sheet metal shield.
2. Manufacturers:
 - a. Carpenter & Paterson, Inc.
 - b. ERICO/Michigan Hanger Co.
 - c. PHS Industries, Inc.
 - d. Pipe Shields, Inc.
 - e. Rilco manufacturing Co., Inc.
 - f. Value Engineered Products, Inc.
3. Insulation-Insert Material for Cold Piping: ASTM C552, Type II cellular glass with vapor barrier
4. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C522, Type II cellular glass
5. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe
6. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
7. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.06 FASTENER SYSTEMS

1. Powder-Actuated Fasteners: Threaded steel stud, for use in hardened portland cement concrete with pull out, tension, and shear capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers:
 - i. Hilti, Inc.
 - ii. ITW Ramset/Red Head
 - iii. Masterset Fastening Systems, Inc.
 - iv. MKT Fastening, LLC
 - v. Powers Fasteners
2. Mechanical Expansion Anchors: Insert wedge type zinc coated stainless steel, for use in hardened portland cement concrete with pull out, tension, and shear capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers:
 - i. B-Line Systems, Inc.; a division of Cooper Industries
 - ii. Empire Industries, Inc.
 - iii. Hilti, Inc.
 - iv. ITW Ramset/Red Head
 - v. MKT Fastening, LLC
 - vi. Powers Fasteners

2.07 EQUIPMENT SUPPORTS

1. Description: Welded, shop- or field-fabricated equipment support made from structural steel shapes

2.08 MISCELLANEOUS MATERIALS

1. Structural Steel: ASTM A36/A36M, steel plates, shapes, and bars; black and galvanized.
2. Grout: ASTM C1107, factory-mixed and packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

- a. Properties: Nonstaining, noncorrosive, and nongaseous
- b. Design mix: 5000psi, 28-day compressive strength

PART 3 - EXECUTION

3.01 HANGER AND SUPPORT APPLICATIONS

1. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.
2. Comply with MSS SP69 for pipe hanger selections and applications that are not specified in piping system Sections.
3. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.
4. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
5. Use padded hangers for piping that is subject to scratching.
6. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system sections, install the following types:
 - a. Adjustable, Steel Clevis Hangers (MSS Type 1) : For suspension of noninsulated or insulated stationary pipes, NPS ½ to NPS 30.
 - b. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 deg F pipes, NPS 4 to NPS 16, requiring up to 4 inches of insulation.
 - c. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS ¾ to NPS 24, requiring clamp flexibility and up to 4 inches of insulation.
 - d. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS ½ to NPS 8.
 - e. U-Bolts (MSS Type 24): For support of heavy pipes, NPS ½ to NPS 30.
 - f. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.
 - g. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from 2 rods if longitudinal movement caused by expansion and contraction might occur.
 - h. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
7. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system sections, install the following types:
 - a. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS ¾ to NPS 20.
 - b. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS ¾ to NPS 20, if longer ends are required for riser clamps.
8. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system sections, install the following types:
 - a. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - b. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
9. Building Attachments: Unless otherwise indicated and except as specified in piping system sections, install the following types:
 - a. Steel or Malleable Concrete Inserts (MSS Type 18) For upper attachment to suspend pipe hangers from concrete ceiling.
 - b. Top-beam C-Clamps (MSS Type 19) For use under roof installations with bar joist construction to attach to top flange of structural shape.
 - c. Side-Beam or Channel Clamps (MSS Type 20) For attaching to bottom flange of beams, channels, or angles.
 - d. Center-Beam Clamps (MSS Type 21) For attaching to center of bottom flange of beams.

- e. Welded Beam Attachments (MSS Type 22) For attaching to bottom of beams if loads are considerable and rod sizes are large.
 - f. C-Clamps (MSS Type 23) For structural shapes
 - g. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - i. Light (MSS Type 31) 750 lbs.
 - ii. Medium (MSS Type 32) 1500 lbs
 - iii. Heavy (MSS Type 33) 3000 lbs.
 - h. Side-Beam Brackets (MSS Type 34) For sides of steel or wooden beams.
 - i. Plate Lugs (MSS Type 57) For attaching to steel beams if flexibility at beam is required.
10. Saddles and Shields: Unless otherwise indicated and except as specified in piping system sections, install the following types:
- a. Steel Pipe Covering Protection Saddles (MSS Type 39) To fill interior voids with insulation that matches adjoining insulation.
 - b. Protection Shields (MSS Type 40) of length recommended in writing by manufacturer to prevent crushing insulation.
 - c. Thermal Hanger Shield Inserts: For supporting insulated pipe.
11. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system sections, install the following types:
- a. Spring Cushions (MSS Type 48) For light loads if vertical movement does not exceed 1 1/4 inches.
 - b. Spring Cushion Roll Hangers (MSS Type 49) For equipping Type 41 roll hanger with springs.
 - c. Variable Spring Base Supports (MSS Type 52) Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from base support.
12. Comply with MSS SP69 for trapeze pipe hanger selections and applications that are not specified in piping system sections.
13. Comply with MFMA102 for metal framing system selections and applications that are not specified in piping system sections.

3.02 HANGER AND SUPPORT INSTALLATION

1. Steel Pipe Hanger Installation: Comply with MSS SP69 and MSS SP89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
2. Trapeze Pipe Hanger Installation: Comply with MSS SP69 and MSS Sp89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers:
 - a. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
 - b. Field fabricate from ASTM A36/A36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1
3. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.
4. Thermal Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
5. Fastener System Installation:
 - a. Install powder actuated fasteners in concrete after concrete is placed and completely cured. User operators that are licensed by powder actuated tool manufacturer's operating manual.
 - b. Install mechanical expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

6. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
7. Equipment Support Installation: Fabricate from welded structural steel shapes.
8. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action to expansion joints, expansion loops, expansion bends, and similar units.
9. Install lateral bracing with pipe hangers and supports to prevent swaying.
10. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2½ and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
11. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
12. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.
13. Insulated Piping: Comply with the following:
 - a. Attach clamps and spacers to piping.
 - i. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - ii. Piping Operating below Ambient Air Temperature: Use thermal hanger shield insert with clamp sized to match OD of insert.
 - iii. Do not exceed pipe stress limits according to ASME B31.1 for power piping and ASME B31.9 for building services piping.
 - b. Install MSS Sp58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - c. Install MSS SP58, Type 40, protective shields on cold piping with vapor barrier. Shield shall span an arc of 180 degrees.
 - d. Shield Dimensions for Pipe: not less than the following:
 - i. NPS 1/4 to NPS 3½ : 12 inches long and 0.048 inch thick
 - ii. NPS 4: 12 inches long and 0.06 inch thick
 - iii. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick
 - iv. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick
 - v. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick
 - e. Pipes NPS 8 and Larger: Include wood inserts.
 - f. Insert Material: Length at least as long as protective shield
 - g. Thermal Hanger Shields: Install with insulation same thickness as piping insulation.

3.03 EQUIPMENT SUPPORTS

2. Fabricate structural steel stands to suspend equipment from structure overhead or to support equipment above floor.
3. Grouting: Place grout under supports for equipment and make smooth bearing surface.
4. Provide lateral bracing, to prevent swaying, for equipment supports.

3.04 METAL FABRICATIONS

1. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
2. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
3. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:

- a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
- b. Obtain fusion without undercut or overlap.
- c. Remove welding flux immediately.
- d. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.05 ADJUSTING

1. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

3.06 PAINTING

1. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA1 requirements for touching up field painted surfaces.
 - a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils..
2. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION 23 05 29

KING ARCHITECTS, INC

SECTION 23 05 53

SECTION 23 05 53 – HVAC IDENTIFICATION

PART 1 - GENERAL

1.01 SUMMARY

1. This section includes the following mechanical identification materials and their installation:
 - a. Equipment nameplates
 - b. Equipment markers
 - c. Equipment signs
 - d. Access panel and door markers

1.02 SUBMITTALS

1. Product Data: For each type of product indicated.

1.03 QUALITY ASSURANCE

1. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems", for letter size, length of color field, colors, and viewing angles of identification devices for piping.

PART 2 - PRODUCTS

2.01 EQUIPMENT IDENTIFICATION DEVICES

1. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
 - a. Data:
 - i. Manufacturer, product name, model number, and serial number.
 - ii. Capacity, operating and power characteristics, and essential data.
 - iii. Labels of tested compliances.
 - b. Location: Accessible and visible.
 - c. Fasteners: As required to mount on equipment.
2. Equipment Markers: Engraved, color-coded laminated plastic. Include contact-type, permanent adhesive.
 - a. Terminology: Match schedules as closely as possible.
 - b. Data:
 - i. Name and plan number.
 - ii. Equipment service.
 - iii. Design capacity
 - iv. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
 - c. Size: 2½ by 4 inches for control devices, dampers, and valves; 4½ by 6 inches for equipment.
3. Equipment Signs: ASTM D709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.
 - a. Data: Instructions for operation of equipment and for safety procedures.
 - b. Engraving: Manufacturers' standard letter style, of sizes and with terms to match equipment identification.
 - c. Thickness: 1/16 inch, unless otherwise indicated.
 - d. Fasteners: Self-tapping, stainless steel screws or contact type, permanent adhesive.
4. Access Panel and Door Markers: 1/16 inch thick, engraved laminated plastic, with abbreviated terms and numbers corresponding to identification. Provide 1/8 inch center hole for attachment.
 - a. Fasteners: Self-tapping, stainless steel screws or contact type, permanent adhesive.

2.02 DUCT IDENTIFICATION DEVICES

1. Duct Markers: Engraved, color coded laminated plastic. Include direction and quantity of airflow and duct service (such as supply, return, and exhaust). Include contact-type, permanent adhesive.

KING ARCHITECTS, INC

SECTION 23 05 53

PART 3 - EXECUTION

3.01 APPLICATIONS, GENERAL

1. Products specified are for applications referenced in other Division 15 sections. If more than single type material, device, or label is specified for listed applications, selection is installers' option.

3.02 EQUIPMENT IDENTIFICATION

1. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplates or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment. Edit five subparagraphs below to suit Project.
 - a. Pumps, compressors, chillers, condensers, and similar motor-driven units.
 - b. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 - c. Fans, blowers, primary balancing dampers, and mixing boxes.
2. Install equipment markers with permanent adhesive on or near each major item of mechanical equipment. Data required for markers may be included on signs, and markers may be omitted if both are indicated.
 - a. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 - b. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
 - c. Locate markers where accessible and visible. Include markers for the following general categories of equipment:
 - i. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
 - ii. Meters, gages, thermometers, and similar units.
 - iii. Pumps, compressors, chillers, condensers, and similar motor driven units.
 - iv. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 - v. Fans, blowers, primary balancing dampers, and mixing boxes.
3. Install access panel markers with screws on equipment access panels.

3.03 DUCT IDENTIFICATION

1. Install duct markers with permanent adhesive on air ducts in the following color codes:
 - a. Green: For cold-air supply ducts.
 - b. Yellow: For hot-air supply ducts
 - c. Blue: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
 - d. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
2. Locate markers near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.03 ADJUSTING AND CLEANING

1. Relocate mechanical identification materials and devices that have become visually blocked by other work.
2. Clean faces of mechanical identification devices.

END OF SECTION 23 05 53

SECTION 23 05 93 – TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 – GENERAL

A. RELATED DOCUMENTS

1. All Division 23 Specification Sections, drawings, and general provisions of the contract apply to work of this section, as do other documents referred to in this section.

B. SCOPE OF WORK

1. The Mechanical Contractor shall obtain the services of an independent test and balance company which specializes in the testing and balancing of heating, ventilating and air conditioning (HVAC) systems to test, adjust and balance all HVAC systems in the building(s). These services shall not be provided by the installing mechanical contractor on the project but shall be a direct subcontractor of the mechanical contractor.
 - a. Agency shall provide proof of having successfully completed at least five projects of similar size and scope. Work by this Agency shall be done under direct supervision of a qualified Heating and Ventilating Technician employed by Agency.
 - b. Instruments used by Agency shall be accurately calibrated and maintained in good working order.
 - c. If requested, conduct tests in presence of Engineer.
 - d. Agency shall be approved in writing by Engineer. Mechanical Contractor shall not be permitted to do this work. Submit qualifications for review.
2. The work included in this section consists of furnishing labor, instruments, and tools required in testing, adjusting and balancing the HVAC systems, as described in these Specifications or shown on accompanying drawings. Services shall include checking equipment performance, taking the specified measurements, and recording and reporting the results.
3. Test and Balance agency shall be present for factory start-up of equipment when factory startup is required.
4. Representatives of the test and balance company shall visit the job site at during installation of the HVAC equipment, piping and ductwork to review the installation. After each site visit, the test and balance company shall report to the Architect any items that are not installed properly, are missing from the Contract Documents or items that are required to enable him to perform the testing and balancing of the HVAC systems as per normal standard practice. After review, the Architect shall instruct the contractor to implement the recommendations at no additional cost to the Owner if these items were specified in the original scope of the project.
5. Upon completion of the HVAC system installation, the test and balance company shall perform all testing and balancing with the full cooperation of the contractor and his subcontractors. The contractor shall make changes and/or adjustments to the HVAC system components that are required by the test and balance company to accomplish proper balancing. The TAB agency shall not supply or install any materials or balancing devices such as pulleys, drives, belts, etc. All of this work by the contractor shall be performed at no additional cost to the Owner.
6. Balancing agency shall be represented at final inspection meeting by qualified testing personnel with balancing equipment and two (2) copies of air balancing test report.
7. The test and balance report shall be submitted to the Architect for review by his Mechanical Engineer. If the Mechanical Engineer agrees with the report, he shall sign it and return it to the Architect. If he does not concur with the report, he shall meet with the Test and Balance Company to determine what needs to be done to obtain a properly balanced system.
8. After the Mechanical Engineer signs the testing and balancing report, the Test and Balance Company shall supply four (4) copies of the final and complete report to the Architect for inclusion in the Operation and Maintenance Manuals.

C. The items requiring testing, adjusting, and balancing include (but are not restricted to) the following:

1. AIR SYSTEMS: Air Handling UnitsExhaust Fans
Zone Branch and Main Ducts
Diffusers, Registers, Grilles and DampersCoils (Air Temperatures)
Valves
Duct Smoke/Pressure Leak Testing

D. SCHEDULING

1. General Contractor shall award test and balance contract to approvedagency upon receipt of his contract to proceed to allow Agency to schedule this work in cooperation with other Sections involved and comply with completion date.

E. DEFINITIONS, REFERENCES, STANDARDS

1. All work shall be in accordance with the latest edition of the Associated Air Balance Council (AABC) National Standards or the latest standards ofthe National Environmental Balancing Bureau (NEBB). If these contract documents set forth more stringent requirements than the AABC National Standards or the NEBB Standards, these contract documents shall prevail.

F. QUALIFICATIONS

1. Agency Qualifications: The TAB agency shall be a current member of theAABC, NEBB or TABB.
2. Prior to working on this project, the technicians shall attend training provided by the manufacturer of the various equipment on this project on the specific aspects of balancing the equipment. Include letters or certificates from the manufacturer on attendance and satisfactory completion of the factory training. These certifications may be used for continuing education. At a minimum, the technicians shall receive training from the air distribution equipment manufacturer, air terminal unitmanufacturer, air unit manufacturer, pump manufacturer, air cooled chillermanufacturer and temperature controls manufacturer. This should be doneprior to any equipment start-ups.
3. Although acceptable to be bidding the project the TAB agency shall provide qualifications and certifications to provide the required services.

G. SUBMITTALS

1. Qualifications: The TAB agency shall submit a company resume listing personnel and project experience in air and hydronic system balancing and a copy of the agency's test and balance engineer or technician certificate.
2. Procedures and Agenda: The TAB agency shall submit the TABprocedures and agenda proposed to be used.
3. Sample Forms: The TAB agency shall submit sample forms, which shallinclude the minimum data required by the AABC National Standards or the NEBB Standards.
4. Submit continuing education training on each lead technician working onthe project.

H. TAB PREPARATION AND COORDINATION

1. Shop drawings, submittal data, up-to-date revisions, change orders, and other data required for planning, preparation, and execution of the TAB work shall be provided when available and no later than 30 days prior tothe start of TAB work.
2. System installation and equipment startup shall be witnessed by the TABagency. The TAB Agency's final Test and Balance shall begin when all factory start-ups are complete.
3. The building control system (BCS) contractor shall provide and install thecontrol system, including all temperature, pressure and humidity sensors. These shall be calibrated for accurate control. If applicable, the BCS contractor shall

install all necessary computers and computer programs, and make these operational. Assistance shall be provided as required for reprogramming, coordination, and problem resolution. The BCS contractor shall provide all necessary software to the TAB Agency at no additional cost.

4. All test points, balancing devices, identification tags, etc., shall be accessible and clear of insulation and other obstructions that would impede TAB procedures.
5. Qualified installation or startup personnel shall be readily available for the operation and adjustment of the systems. Assistance shall be provided as required for coordination and problem resolution.
6. If, upon commencing the work, the TAB contractor finds that the systems are not ready, or if a dispute occurs as to the readiness of the systems, the TAB contractor may request an inspection to be made by the Designer's Mechanical Engineer. This inspection shall establish to the satisfaction of the represented parties whether or not the systems meet the basic requirements for testing and balancing. Items that are determined to be not ready for testing and balancing shall be completed by the Mechanical Contractor and placed in operational readiness before TAB services are again requested.

I. TAB REPORTS

1. Final TAB Report: The TAB agency shall submit the final TAB report for review by the Engineer. On plans provided, all outlets, devices, HVAC equipment, etc., shall be identified, along with a numbering system corresponding to report unit identification. The TAB agency shall submit an AABC or NEBB "National Project Performance Guaranty" assuring that the project systems were tested, adjusted and balanced in accordance with the project Specifications and AABC or NEBB National Standards.
2. Submit four (4) copies of the final TAB report to the Architect for inclusion in the Operation and Maintenance Manuals.

PART 2 – INSTRUMENTATION

- A. All instruments used for measurements shall be accurate and calibrated. Calibration and maintenance of all instruments shall be in accordance with the requirements of AABC or NEBB National Standards.

PART 3 – EXECUTION

A. GENERAL

1. Mechanical Contractor shall put heating, ventilating, and cooling systems and equipment into full operation and continue their operation during each working day of testing and balancing.
2. Air Balance and Testing Agency shall perform tests specified, compile test data, and submit four (4) copies of complete test data to contractor for forwarding to Engineer for evaluation and approval.
 - a. Approved copies of report shall be bound in Operations and Maintenance manuals.
3. System shall be completely balanced, and all reports submitted to Engineer prior to prefinal inspection.
4. The specified systems shall be reviewed and inspected for conformance to design documents. Testing, adjusting, and balancing on each identified system shall be performed. The accuracy of measurements shall be in accordance with AABC or NEBB National Standards. Adjustment tolerances shall be + or -10 percent unless otherwise stated.
5. Equipment settings, including manual damper quadrant positions, valve indicators, fan speed control levers, and similar controls and devices shall be marked to show final settings.
6. All information necessary to complete a proper TAB project and report shall be per AABC or NEBB standards unless otherwise noted. The descriptions of work required, as listed in this section, are a guide to the minimum information needed.

7. TAB contractor shall cut insulation, ductwork and piping for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. Upon completion, patch insulation, ductwork and housings using materials identical to those removed. Seal insulation to reestablish integrity of the vapor barrier.
8. TAB work shall include additional inspection and adjustment of components during the season following the initial balance to include re- balance of any items influenced by seasonal changes or as directed by the Owner.

B. AIR SYSTEMS

1. TESTING PROCEDURE

Air Balance and Testing Agency shall perform following tests and balance system in accordance with following requirements. Perform the following tests at high and low speeds of multi-speed systems and single speed system.

- a. Make periodic inspections of the installation of the systems. Provide reports of each inspection. Inspections should be monthly when ductwork installation begins. Coordinate and verify the installation of all balancing dampers, fire dampers, etc.
 - b. Smoke test or pressure test each low pressure steel duct system to test for air tightness. Use zinc chloride smoke candles or titanium tetrachloride ampules (sticks) to generate smoke.
 - 1) If ducted systems leak, do not continue with air balance. Report findings to Engineer in writing and begin testing again after Mechanical Contractor has repaired ducts or applied duct sealers.
 - 2) If ducted systems appear air tight, proceed with air balance procedure as outlined below.
 - 3) Include in air balance report a letter indicating smoke testing has been accomplished and a report of findings regarding airtightness of each ducted system.
 - 4) Maximum leakage loss shall not exceed 2 percent. If losses are greater, the Mechanical Contractor shall correct the leakage, then the test and balance agency shall retest the ductwork.
 - c. Test and adjust blower rpm to design requirements.
 - d. Test and record motor full load amperes.
 - e. Make Pitot Tube traverse of main supply and return and obtain design cfm.
 - f. Test and record system static pressures, suction, and discharge.
 - g. Test and adjust system for design cfm air.
 - h. Test and adjust system for design cfm outside air.
 - i. Test and record entering air temperatures (db heating and cooling).
 - j. Test and record entering air temperatures (wb cooling).
 - k. Test and record leaving air temperatures (db heating and cooling).
 - l. Test and record leaving air temperatures (wb cooling).
 - m. Adjust main supply and return air ducts to proper design cfm.
 - n. Adjust zones to proper design cfm, supply and return.
 - o. Test and adjust each diffuser, grille, and register to within 10 percent of design requirements.
 - p. Identify each diffuser, grille, and register to location and area.
 - q. Identify and list size, type, and Manufacturer of diffusers, grilles, registers, and testing equipment. Use Manufacturer's rating on equipment to make required calculations.
 - r. In readings and tests of diffusers, grilles, and registers, include required fpm velocity and test fpm velocity and required cfm and test cfm after adjustments.
 - s. In cooperation with Mechanical Contractor, set adjustments of automatically operated dampers to operate as specified, indicated, or noted.
 - t. Adjust diffusers, grilles, and registers to minimize drafts.
 - u. Verify the calibration of temperature control devices, thermostats, etc.
 - v. Verify all control sequences with specifications.
 - w. Include manufacturer's performance data with reports.
 - x. Schedule three (3) inspections to verify original test and balance of systems within 90 days of acceptance by Owner. Make opposite season adjustment and inspection of systems at one year after acceptance by Owner. Submit reports after each inspection. Submit schedule as part of initial report. Submit schedules as part of initial report.
2. Where systems supplied to job site provides over 5 percent more air than schedule requirements, rooms supplied by that system shall have their supply air quantities increased by the ratio of the actual total air quantity supplied to the minimum air quantity required by the schedule.
 3. The TAB agency shall verify that all ductwork, splitters, extractors, dampers, grilles, registers, and diffusers have

been installed per design, are functional and set full open. Any leakage in the ductwork shall be repaired prior to the test. The TAB agency shall perform the following TAB procedures in accordance with the AABC National Standards or NEBB Standards:

- a. Exhaust Fans
 - 1) Fan Speeds--Test and adjust fan RPM to achieve design cfm requirements.
 - 2) Current and Voltage--Test and record motor voltage and amperage and compare data with the nameplate limits to ensure fan motor is not in or above the service factor.
 - 3) Pitot-Tube Traverse--Perform pitot-tube traverse of the main exhaust ducts to obtain total CFM. If a pitot-tube traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet.
 - 4) Static Pressure--Test and record system static pressure, including the static pressure profile of each exhaust fan.
- b. Zone, Branch, and Main Ducts
 - 1) Adjust ducts to within design cfm requirements. As applicable, at least one zone balancing damper shall be completely open. Multi-diffuser branch ducts shall have at least one outlet or inlet volume damper completely open.
- c. Diffusers, Registers, and Grilles
 - 1) Tolerances--Test, adjust, and balance each diffuser, grille, and register to within 10 percent of design requirements. Minimize drafts.
 - 2) Identification--Identify the type, location, and size of each grille, diffuser and register. This information shall be recorded on air outlet data sheets.
- d. Coils
 - 1) Air Temperature--Once air flow is set to acceptable limits, take wet bulb and dry bulb air temperatures on the entering and leaving side of each cooling coil. Dry bulb temperature shall be taken on the entering and leaving side of each heating coil.
- e. Heat Pump Units--Indoor Section:
 - 1) Location, manufacturer, model number, serial number, and manufacturer. Required and test data with unit operating at full air flow conditions (all space thermostats calling for cooling) for each of following: total CFM, return and outside air CFM, total static pressure, suction and discharge static pressures across unit fan, HP, amperage, voltage, fan RPM. Verify performance controls.
- f. Heat Pump--Outdoor Section:
 - 1) Both specified and test data for each unit. Verify voltage specified and actual. Full load amps at outdoor conditions. Refrigerant charge.
- g. Control Systems:
 - 1) Verify all control sequences and calibration of all thermostats and sensors.
- h. Equipment Start-up:
 - 1) The Test and Balance Contractor shall be on site to witness and record all factory start-up of mechanical equipment. Include start-up reports in final balancing report.

END OF SECTION 23 05 93

KING ARCHITECTS, INC

SECTION 23 07 00

SECTION 23 07 00 – MECHANICAL INSULATION

PART 1 – GENERAL

A. DESCRIPTION

1. Pipe insulation installation shall not begin until all work has been tested and found to be tight. All insulation shall be UL listed and have a flamespread of less than 25 and a developed smoke rating less than 50. All insulation shall be banded with aluminum bands, three per section. All insulation shall be continuous through walls, floors, ceilings, etc.

PART 2 - MATERIALS

A. CONDENSATE DRAIN PIPING

1. Insulate condensate drain piping with 1/2 inch thick closed cell rubber type insulation.

B. REFRIGERANT LINES

1. Insulate all refrigerant suction lines with 1 inch thick closed cell rubber insulation. Apply two (2) coats of black mastic where the lines are exposed to the weather. Refrigerant piping below grade shall be installed in watertight PVC sleeve.

C. EQUIPMENT ROOM WALLS

1. Provide sound absorbing 2 inches thick 3 pound density semi-rigid fiberglass board. The board shall be faced with 8 mil triple-ply laminate composed of a white polypropylene face, with a fiberglass scrim, and an aluminum foil back, all laminated with a flame retardant adhesive. The fiberglass board and the facing shall meet flame spread of not greater than 25, and a smoke developed rating of not greater than 50.

SOUND ABSORPTION COEFFICIENTS FREQUENCY Hz. 1" THICK

- a. Insulation shall be installed by impaling on stick-pins with a suitable adhesive (no self stick pins may be used). After material is impaled on pins, the tip of the pin shall be covered with a white dome-cap washer. All joints, corners, and exposed edges shall be covered with the facing material. Remove and replace any damaged insulation with new material.

D. AIR CONDITIONING DUCTWORK

1. Insulate all ducts above ceiling with one layer of 2 inch thick, 1 pound density flexible Fiberglass duct insulation with aluminum foil facing. Duct insulation to be applied with 2 inches lap of facing sealed with tape and outward clinch staples. Seal all joints with 2 inch wide vapor barrier tape. An additional band of tape shall be applied between the circumferential joints for a maximum 2 foot spacing of taped bands.
2. The ductwrap shall have a minimum installed R-value of 6.0 and shall comply with Energy Code requirements.

E. HORIZONTAL WASTE PIPING

1. All horizontal waste lines and traps above first floor slab which receive condensate from air conditioning equipment, roof drain bodies, shall be insulated same with 2 inch thick, 3/4 pound density fiberglass insulation with aluminum foil vapor barrier or closed cell rubber insulation.

F. INSULATION BANDS

1. All pipe insulation shall be banded with nylon tie-wrap bands, three (3) to a section, and with one band on each side of each fitting, valve, etc.

G. FLANGES, VALVES AND FITTINGS

1. All flanges, valves and fittings shall be insulated with fabricated fiberglass molded fitting insulation, using factory fabricated fittings up to 3 inches and fabricated mitered segments of pipe insulation equal in thickness to the insulation to the adjoining pipe. All fabricated mitered segments shall be covered with matching embossed vapor barrier laminate.

PART 3 - INSTALLATION

A. Provide clearance for installation of insulation and for access to valves, air vents, drains and unions.

1. Insulation Installation:
 - a. Do not install covering before piping has been tested and approved.
 - b. Ensure piping surface is clean and dry prior to installation.
 - c. Ensure insulation is dry before and during application.
 - d. Insulation shall be continuous through walls, floors and ceiling. Pack around pipes with fireproof self-supporting insulation material, fully sealed.
 - e. Insulate fittings and valves. The end of the insulation shall be fitted with a metal escutcheon plate with set screw or taped neatly with pressure sensitive fiberglass reinforcing cloth.
 - f. All joints shall be sealed with 3 inch wide fiberglass reinforcing cloth with pressure sensitive adhesive.
 - g. Pipe insulation at Hangers and Supports: Pipe insulation at hanger and support shall be protected with a half circular shield of the size of the insulation and 12 inches long constructed from 20 gauge galvanized steel. The shield shall be held in place with the fiberglass reinforcing cloth and pressure sensitive adhesive. Where pipes pass through walls, ceiling and floor in finished areas, escutcheon plates shall be installed to encompass pipe and insulation. Escutcheon plates shall be chromed brass or stainless steel and shall be either solid or the clamp on split type.
 - h. Painting of fiberglass pipe jacket is not required. Piping shall be painted colors as standard in this facility.

END OF SECTION 23 07 00

SECTION 23 07 13 – DUCT INSULATION

PART 1- GENERAL

A. SUMMARY

1. This section includes semi-rigid and flexible duct, insulating cements, field-applied jackets, AND accessories and attachments.

B. SUBMITTALS

1. Product Data: Thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.
2. Shop Drawings: Shop fabrication and installation details for the following:
 - a. Removable insulation sections at access panels.
 - b. Application of field-applied jackets.
 - c. Applications of linkages for control devices.

C. QUALITY ASSURANCE

1. Fire-Test-Response Characteristics: Provide products with flame-spread and smoke-developed indices of 25 and 50, respectively, according to ASTM E84 by testing agency acceptable to authorities having jurisdiction.

PART 2- PRODUCTS

A. MANUFACTURERS

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - a. Mineral Fiber Insulation:
 - i. CertainTeed Manson
 - ii. Knauf FiberGlass GmbH
 - iii. Owens Corning Fiberglass Corp.
 - iv. Schuller International Inc.
 - b. Flexible Elastomeric Thermal Insulation:
 - i. Armstrong World Industries, Inc.
 - ii. Rubatex Corp.

B. INSULATION MATERIALS

1. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C612, Type IB, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
2. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
3. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C534, Type II for sheet materials.
 - a. Adhesive: As recommended by insulation material manufacturer.
 - b. Ultraviolet-Protective Coating: As recommended by insulation manufacturer.
4. Field-Applied Jackets: ASTM C921, Type I, unless otherwise indicated.

KING ARCHITECTS, INC.

SECTION 23 07 13

- a. Foil and Paper Jacket: Laminated, glass fiber reinforced, flame retardant kraft paper and aluminum foil
 - b. PVC Jacket: High-impact, ultraviolet resistant PVC; 20 mils thick; roll stock ready for shop or field cutting and forming.
5. Accessories and Attachments:
- a. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq. yd.
 - b. Bands: Aluminum 3/4 inch wide.
 - c. Wire: 0.080 inch, nickel-copper alloy; 0.062 inch, soft annealed, stainless steel; or 0.062 inch, soft annealed, galvanized steel.
 - d. Weld Attached Anchor Pins and Washers: Copper-coated steel pin for capacitor discharge welding and galvanized speed washer. Pin length sufficient for insulation thickness indicated.
 - e. Adhesive Attached Anchor Pins and Speed Washers: Galvanized steel plate, pin, and washer manufactured for attachment to duct and plenum with adhesive. Pin length sufficient for insulation thickness indicated.

PART 3- EXECUTION

A. GENERAL APPLICATION REQUIREMENTS

- 1. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- 2. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; and free of voids throughout the length of ducts and fittings.
- 3. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- 4. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.
- 5. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.
- 6. Apply insulation with the least number of joints practical.
- 7. Apply insulation over fittings and specialties, with continuous thermal and vapor retarder integrity, unless otherwise indicated.
- 8. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor retarder mastic. Apply insulation continuously through hangers and around anchor attachments.
- 9. Insulation Terminations: For insulation application where vapor retarders are indicated, seal ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.
- 10. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
- 11. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and partitions, except fire-rated walls and partitions.
- 12. Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire/smoke damper sleeves for fire-rated wall and partition penetrations.
- 13. Floor Penetrations: Terminate insulation at underside of floor assembly and at floor support at top of floor.

B. DUCT AND PLENUM APPLICATION SCHEDULE

- 1. Service: Round, supply-air, return-air, and outside-air ducts, concealed.

KING ARCHITECTS, INC.

- a. Material: Mineral-fiber board, Mineral-fiber blanket, Flexible elastomeric.
 - b. Thickness: 2 inches
 - c. Number of Layers: One
- 2. Service: Rectangular, supply-air, return-air, and outside-air ducts, concealed.
 - a. Material: Mineral-fiber blanket with foil jacket.
 - b. Thickness: 2 inches
 - c. Number of Layers: One
- 3. Service: Round, supply-air, return-air, and outside-air ducts, exposed.
 - a. Material: Mineral-fiber blanket, vinyl reinforced jacket.
 - b. Thickness: 2 inches
 - c. Number of Layers: One
- 4. Service: Rectangular, supply-air, return-air, and outside-air ducts, exposed.
 - a. Material: Mineral-fiber blanket, vinyl reinforced jacket
 - b. Thickness: 2 inches
 - c. Number of Layers: One

END OF SECTION 23 07 13

SECTION 23 07 16 – EQUIPMENT INSULATION

PART 1 - GENERAL

1.01 SUMMARY

1. This section includes semi-rigid and flexible equipment insulation, insulating cements, field-applied jackets, accessories and attachments, and sealing compounds.

1.02 SUBMITTALS

1. Product Data: Thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.
2. Shop Drawings: Shop fabrication and installation details for the following:
 - a. Field application for each equipment type.
 - b. Removable insulation sections at access panels.
 - c. Applications of field-applied jackets.
 - d. Special shapes for insulation.

1.03 QUALITY ASSURANCE

1. Fire-Test-Response Characteristics: Provide products with flame-spread and smoke-developed indices of 25 and 50, respectively, according to ASTM 84 by testing agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - a. Mineral Fiber Insulation:
 - i. CertainTeed Manson
 - ii. Knauf FiberGlass GmbH
 - iii. Owens Corning Fiberglass Corp.
 - iv. Schuller International Inc.
 - b. Flexible Elastomeric Thermal Insulation:
 - i. Armstrong World Industries, Inc.
 - ii. Rubatex Corp.

2.02 EQUIPMENT INSULATION MATERIALS

1. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C612, Type IB, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
2. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
3. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C534, Type II for sheet materials.
 - a. Adhesive: As recommended by insulation material manufacturer.
 - b. Ultraviolet-Protective Coating: As recommended by insulation manufacturer.
4. Field-Applied Jackets: ASTM C921, Type I, unless otherwise indicated.
 - a. Foil and Paper Jacket: Laminated, glass fiber reinforced, flame retardant kraft paper and aluminum foil
 - b. PVC Jacket: High-impact, ultraviolet resistant PVC; 20 mils thick; roll stock ready for shop or field cutting and

forming.

5. Accessories and Attachments:
 - a. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq. yd.
 - b. Bands: Aluminum 3/4 inch wide.
 - c. Wire: 0.080 inch, nickel-copper alloy; 0.062 inch, soft annealed, stainless steel; or 0.062 inch, soft annealed, galvanized steel.
 - d. Weld Attached Anchor Pins and Washers: Copper-coated steel pin for capacitor discharge welding and galvanized speed washer. Pin length sufficient for insulation thickness indicated.

PART 3 - EXECUTION

3.01 GENERAL APPLICATION REQUIREMENTS

1. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
2. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; and free of voids throughout the length of ducts and fittings.
3. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
4. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.
5. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.
6. Apply insulation with the least number of joints practical.
7. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor retarder mastic. Apply insulation continuously through hangers and around anchor attachments.
8. Insulation Terminations: For insulation application where vapor retarders are indicated, seal ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.

3.02 TANK AND VESSEL INSULATION APPLICATION SCHEDULE

1. Equipment: Chilled-water air separators and compression tanks.
 - a. Operating Temperature: 35 to 75 deg F
 - b. Insulation Material: Flexible elastomeric
 - c. Insulation Thickness: 1/2 inch thick
 - d. Field-Applied Jacket: PVC
 - e. Finish: None
2. Equipment: Domestic hot-water storage tanks, not factory insulated.
 - a. Operating Temperature: 55 to 140 deg F.
 - b. Insulation Material: Mineral fiber
 - c. Insulation Thickness: 1 inch thick
 - d. Field-Applied Jacket: Glass cloth
 - e. Finish: None
3. Equipment: Heating hot-water air separators and compression tanks
 - a. Operating Temperature: 100 to 200 deg F.
 - b. Insulation Material: Mineral fiber
 - c. Insulation Thickness: 1 inch thick
 - d. Field-Applied Jacket: Glass cloth
 - e. Finish: None

4. Equipment: Heating hot-water heat exchanges and steam-to-water converters.
 - a. Operating Temperature: 100 to 450 deg F.
 - b. Insulation Material: Mineral fiber
 - c. Insulation Thickness: 2 inches thick
 - d. Field-Applied Jacket: Glass cloth
 - e. Finish: None

END OF SECTION 23 07 16

KING ARCHITECTS, INC

SECTION 23 09 00

SECTION 23 09 00 – TEMPERATURE CONTROLS

PART 1 – GENERAL

A. GENERAL REQUIREMENTS

1. Refer to Section 23 05 00, Section 23 05 03, Section 23 30 00 and Section 23 70 00, provisions of which apply to work under this Section.
2. All control systems shall be furnished complete and functioning.
3. Coordinate all control work with the mechanical and electrical contractors. Contact the Test and Balance Contractor and notify them as to when controls work shall be installed. Test and Balance controller shall verify controls systems installation and proper operations.

B. DESCRIPTION OF WORK

1. Provide a complete system of "hard-wired" automatic controls (wireless unacceptable) as indicated herein. Control system shall consist of all thermostats, sensors, actuators, operators, wiring, switches, relays and control panels necessary to accomplish the control sequence specified herein.

C. RELATED WORK IN OTHER SECTIONS

1. For extent of power wiring and connection to mechanical equipment under Electrical Work, refer to Division 26.
2. For control devices furnished with equipment, refer to equipment specifications and schedules. Any controls equipment not specifically called for elsewhere shall be provided by controls contractor. All control wiring shall be done by controls contractor.
3. All power for control devices such as actuators, operators, fire/smoke dampers, control dampers, etc. shall be furnished, installed and wired by the Controls Contractor. Controls Contractor may use 24 VAC or 120 VAC for the control system. The controls contractor shall be responsible for obtaining the necessary power and pay all costs associated with obtaining power to controls and controls equipment.
4. All interior control wiring shall be installed in galvanized EMT conduit. The last 6 inches at connection to equipment shall be flexible metal conduit. All control wiring on exterior of building shall be in Seal-Tite conduit and/ or Liquid Tight flexible conduit.
5. All control wiring shall be furnished and installed by this contractor.

D. SERVICE

1. Installing Contractor (Mechanical Contractor or subcontractor under the Mechanical Contractors) shall maintain adequate automatic control personnel on his payroll to provide back-up project control service on the automatic control system provided under this contract.

E. WARRANTY

1. Contractor shall warranty all work performed under this contract to be free of any defects in workmanship or material for a period of 1 year after final acceptance by the Owner's representative. The warranty shall include quarterly calibration and set-up checks of all controls. THIS WARRANTY DOES NOT START ON DATE THAT THE MECHANICAL EQUIPMENT IS STARTED.

F. SUBMITTAL

1. Submit shop drawings and product data sheets indicating configuration, general assembly, and materials used in

fabrication.

2. Submit manufacturer's installation instructions. Instructions shall include complete wiring diagrams drawn specifically for this project.

G. OPERATION AND MAINTENANCE

1. Include manufacturer's descriptive literature, operating instructions, and maintenance data.

H. QUALITY ASSURANCE

1. Manufacturer shall be a company specializing in products of the type specified in this section. All components shall be Class A quality commercial or industrial grade for installation in locations or environments shown on plans.

I. SYSTEM RESPONSIBILITY

1. The entire control system, shall be furnished by a single source manufacturer who shall be responsible for the entire system. The installation shall be by technicians employed by the controls system manufacturer.

PART 2 – PRODUCTS

A. FIRESTATS AND SMOKE DETECTORS

1. Duct smoke detectors shall be furnished and installed by mechanical contractor. Install a smoke detector per plans to stop the fan and close the outside air dampers in the event of excessive temperature or smoke. Firestats to be provided in the return air units of all units over 600 cfm.
2. Smoke detectors shall be addressable and compatible with the fire alarm system.
3. Where and when the building does not have a fire alarm system, provide a remote annunciator with remote reset for each detector.
4. All smoke detectors shall have remote reset.

B. WIRING

1. Factory mount and wire HVAC equipment controls. Mount electrical components in unit control box with removable cover. Provide clearance for access to controls (36 inch clearance).
2. Provide terminal strip(s) for field wiring of thermostat, communications and power source. DO NOT USE WIRE NUTS IN JUNCTION BOX.
3. All wiring shall comply with local and national electric codes and the manufacturer's published installation manual.
4. Provide terminal strip(s) for field wiring of air conditioning unit input connections, duct temperature sensor, velocity sensor, static pressure sensor, communications, start/stop devices, VFD controls, time clock, bypass damper motor and power wiring, etc. Do not use wire nuts on loose wire. All wire shall be in conduit, flexible conduit or wiring harness.

C. THERMOSTAT

1. Provide fully automatic room-type electronic programmable thermostat as indicated on plans to cycle outdoor unit on cooling cycle and heating cycles as required to maintain space conditions. Thermostat shall have the following features:

- a. Designed for use with the type of system used.
- b. "Auto-On" fan selector switch for constant or automatic fan operation.
- c. "Auto-Off" selector switch to energize unit to fully automatic change-over from heating to cooling mode.
- d. Temperature selector switch with concealed screw-type maximum set points for heating and cooling mode.
- e. Thermostat shall be programmable for automatic temperature set-up or setback for occupied and unoccupied times minimum two per day.
- f. Shall have an LED or LCD read out display.
- g. Battery back-up should in case of building power occur.
- h. Button type or touch sensitive keypad for data entry into the thermostat.
- i. Thermostat range of operation shall be 55 degrees Fahrenheit – 85 degrees Fahrenheit in heating or cooling mode.
- j. Thermostat shall maintain humidity setpoint. Humidity setpoint shall be adjustable by the user.

PART 3 – EXECUTION

A. INSTALLATION

- 1. Division 26, ELECTRICAL, shall be responsible for point to point wiring of all starters and starting switches not factory installed in the HVAC equipment.
- 2. Install all components of control systems under this Section using experienced control mechanics, all in the regular employ of the installing contractor, or the apparatus manufacturer.

B. WIRING

- 1. Install all control, pilot circuit and interlock wiring, including wiring through interposed safety or other auxiliary control devices within the confines of the mechanical equipment only. Wiring of thermostats shall be by the Mechanical Contractor.
- 2. All wiring shall conform to the Local and National Electrical Codes.
- 3. All control and interlock wiring shall be fused at conductor capacity as shown in the National Electrical Code.
- 4. No splices will be allowed except at junction boxes and control centers.
- 5. All wires to each control device must be different colors. All wires to each device must be laced or tied at point of entry into control panel and tagged as to its point of origin.
- 6. All wires shall be run directly from controller or controlled device to control center. There shall be no looping of wires from one device to another external to the control centers.
- 7. Control voltage shall be a maximum of 120-volt, unless otherwise indicated herein.
- 8. Control or interlock wiring shall not be run in conduit with any power wiring other than that serving the equipment controlled.
- 9. Refer to Division 26, ELECTRICAL, for extent of work under that Division. Provide other wiring systems required to accomplish the work of this Section, following requirements of Division 26 for products and execution.
- 10. Wiring connection to terminal posts shall be made by means of compression type lugs. Wire splices shall be made with screw locks.
- 11. Safety devices in motor control circuits shall be wired to interrupt the holding coil circuit regardless of the position of any selector switches in the circuit.
- 12. Control circuit conductors shall be sized for a maximum voltage drop of 10 percent of the circuit voltage.

13. All electrical power wiring shall conform in all respects with the provisions of the National Electrical Code and Division 26, ELECTRICAL, of the Specifications.
14. Provide all necessary contactors, switches, transformers to accomplish operating sequences.

C. SYSTEM CHECK-OUT

1. Check-out each system for control function through entire sequence, check calibration of instruments, reset instruments control points.
2. Owner maintenance personnel shall be made thoroughly familiar, by the contractor, with the operation and service of the project automatic temperature control circuits.

PART 4 – SEQUENCE OF OPERATION

A. HEAT PUMP SYSTEMS

1. When thermostat switch is set in the "on" position, the indoor unit fan shall run continuously. When thermostat fan switch is set in the "auto" position, the indoor unit fan shall cycle with compressor operation.
2. The thermostat shall cycle the compressor(s) as required to maintain thermostat set points in heating or cooling. Thermostat shall switch modes automatically. Thermostat shall energize auxiliary strip heater as required during low outdoor ambient periods and defrost cycles.
3. Thermostat shall be programmable for occupied and unoccupied time periods and temperatures.
4. Indoor units shall be electrically interlocked such that neither outdoor unit nor auxiliary strip heaters may not be energized unless indoor unit fan is running.
5. Smoke detector shall de-energize indoor unit fan on sensing smoke in the supply duct leaving the indoor unit.
6. Firestats shall de-energize indoor unit fan on high return air temperature (125 degrees Fahrenheit).

END OF SECTION 23 09 00

SECTION 23 30 00 – AIR DISTRIBUTION

PART 1 – GENERAL

1.01 GENERAL

A. GENERAL:

1. Furnish and install all ducts for Air Conditioning, Heating, and Ventilating Systems as shown on the plans and as may be required to provide complete system. Ductwork shall be complete with grilles, vanes, flashings, hangers, flexible connections, splitters, manual dampers, fresh air inlets, louvers, reinforcing angles, etc. All ductwork shall be concealed and insulated as hereinafter specified.

B. COORDINATION:

1. The General Contractor and Mechanical Contractor shall coordinate the space clearances required for ductwork with the structure, ceilings, lights, sprinklers, etc. In some cases, due to space limitations, it may be necessary to re-size ductwork to meet the conditions of the project. Any re-sizing required shall be part of this project and done without any additional cost to the project. **DO NOT MAKE DUCTWORK WITHOUT COORDINATION.**

- C. Sealing or flashing the building envelope due to penetrations in the building shall be the responsibility of the general contractor.

PART 2 – MATERIALS

2.01 DUCT HANGERS AND SUPPORTS

- A. All ductwork shall be properly braced to prevent rattling, breathing, or other unnecessary noise. No sharp edges or obstructions shall project into air stream.

2.02 LOW PRESSURE DUCTWORK

- A. All ductwork shall be galvanized steel and shall be of gauges and construction as recommended by ASHRAE Guide and Data Book and SMACNA guidelines. Gauges are as follows with longest side governing.

Dimension of longest side Sheet Metal Gauge	Low Pressure Ductwork
0"-12"	26-gauge
13"-30"	24-gauge
31"-54"	22-gauge
55"-84"	20-gauge

- B. Low pressure ductwork shall be all exhaust ducts, return air ducts, fresh air ducts and supply ducts.
- C. Joints and reinforcing shall be as per ASHRAE Guide and Data Book and all slips shall be installed without edge of internal part of slip facing downstream.
- D. Construction standard of Article 110, of the National Board of Fire Underwriters Bulletin 90, latest edition, shall apply throughout.
- E. Flashings shall be of sheet copper and shall be furnished and installed around all outside openings used for ducts of fans and wherever required. Roof flashings shall extend at least 8 inches above roof.

- F. All ducts shall be straight and true and installed in a neat and workmanlikemanner.
- G. All edges shall be straight and true, and all bends shall be made with veined turns. Where long radius turns cannot be used, the contractor shall use square turns and use air splitters spaced not more than 3 inches center to center, and of a length so air will be properly distributed over ducts.
- H. All ducts shown are metal to metal dimensions.
- I. Mastic shall be applied to both male and female connections (all seams and joints) to make all duct joints airtight (applies to all ductwork; round or rectangular). Surplus mastic shall be removed. Tape and re-mastic joints if necessary. Mastic (hard-cast or equivalent duct sealer: tape not acceptable) shall be applied to the joints during assembly so that sealant is on all mating surfaces of the joint.

2.03 FILTERS-PRIMARY

- A. Units shall be equipped with low velocity filter section with 30% efficient 2 inches thick pleated type (Continental air filters "cono plea" FARR 3030, American Air Filter or equal) throwaway filters.
- B. Provide and install one set of filters as called for in these specifications for initial testing and start-up and another complete set upon completion of the project.

2.04 DUCT ACCESSORIES

- A. Dampers of the fusible link operated type shall be provided in ductwork passing through floor or fire walls.
- B. Provide quadrant or adjustable splitters and mark shaft to give position of splitter damper in duct.
- C. Provide vanes behind every supply grille or diffuser. Splitters shall be provided where shown on plans and where located in concealed non-accessible space provided Young Regulators to operate splitter. Vanes shall be Tuttle and Bailey "Ducturns", Barber-Coleman, Uniflo, or equivalent. Shop fabricated vanes will be acceptable. All dampers shall be constructed of 14-gauge steel.

2.05 REGISTERS, GRILLES AND DIFFUSERS

- A. Ceiling supply outlets, unless otherwise indicated on plans shall be Metalaire, Krueger, Titus, Price, Nailor or approved equal. Outlets shall be mounted tight to the construction and shall have frame suitable for type of ceiling used unless otherwise noted.
- B. Return air grilles shall be as manufactured by Anemostat / Waterloo, Krueger, Metalaire, Titus, Price, Nailor or approved equivalent and shall be of style called for on plans.
- C. All supply outlets shall have sponge rubber gaskets.
- D. All grilles, diffusers, and registers shall be of sizes indicated on plans or scheduled drawings.
- E. Unless otherwise shown on drawings, all grilles installed in the ceiling shall be furnished with white baked-on enamel finish.

2.06 STATIONARY LOUVERS

- A. Louver shall be manufactured by Greenheck EHV-901 or approved equal, AMCA 550 listed with horizontal blades on exterior face. Louver shall meet AMCA 540 and AMCA 550 listing with the Air Movement and Control Association Certified Ratings Program.

- B. Louver Construction:
1. Fabrication: Extruded aluminum stationary louver style.
 - a. Frame: Double frame design.
 - 1) Frame Depth: Exterior frame depth is 2 inches (51 mm) and interior frame depth is 6 inches (153 mm).
Overall combined frame depth is 8 inches (203)nominal.
 - 2) Wall Thickness: 0.060-inch (1.5 mm) and 0.095-inch (2.4 mm) nominal.
 - 3) Material: Extruded aluminum, Alloy 6063-T6.
 2. Blades:
 - a. Style: Sight proof.
 - b. Material: Extruded aluminum, Alloy 6063-T6.
 - c. Wall Thickness: 0.080-inch (2.1 mm) and 0.062-inch (1.6mm) nominal.
 - d. Blade Depth: Exterior blades are 2 inches (51 mm) deep, interior blades are 6 inches (153 mm) deep.
 3. Sill: Sill Flashing: Formed aluminum, 0.081-inch (2.0 mm),upturned sides to prevent water leakage.
- C. Performance Data:
1. Performance Ratings: AMCA licensed.
 - a. Based on testing 48 inches by 48 inches (1219 mm by 1219mm) size unit in accordance with AMCA 500.
 2. Free Area: 31%, nominal.
 3. Maximum Recommended Air Flow through Free Area: 2261 feet per minute (11.5 m/sec).
 4. Air Flow: 11,375 cubic feet per minute (322 cu. m/min).
 5. Maximum Pressure Drop (Intake): 0.45 inches w.g. (0.11 KPa).
 6. Louver shall be certified to Miami-Dade standards TAS 201 (Large Missile Impact), TAS 202 (Uniform Static Air Pressure) and TAS 203 (Cyclic Wind Loading).
 7. Wind load Test Performance: Maximum wind load of ± 130 PSF (6.22 kPa) design wind loads tested per Miami-Dade County Uniform Wind Pressure Test TAS 202.
 8. Wind-Driven Rain Performance:
 - a. Effectiveness Ratio: 99.9% effective at preventing water penetration through louver when tested at 50 miles per hour (81 km/h) wind with 8 inches per hour (203 mm/h) rainfall and 2261 feet per minute (11.5 m/sec) airflow through the free area. Penetration Class 'A' in accordance with AMCA 500-L Wind Driven Rain Test.
 - b. Effectiveness Ratio: 99.9% effective at preventing water penetration through louver when tested at 29 miles per hour (46.4 km/h) wind with 3 inches per hour (76 mm/h) rainfall and 2247 feet per minute (11.4 m/sec) airflow through the free area. Penetration Class 'A' in accordance with AMCA 500-L Wind Driven Rain Test.
- D. Louvers shall be provided with rear mounted blade supports as required to comply with wind load criteria.
- E. Insect Screens:
1. Aluminum: 18-16 mesh, mill finish, .011-inch (0.3 mm) wire.
 2. Frame: Aluminum.
- F. Finish: 70% PVDF: Finish shall be applied at 1.2 mil total dry film thickness. Color as selected by Architect from manufacturer's standard and custom color charts.

2.07 PRE-INSTALLED FLEXIABLE DUCT

- A. Flexible duct shall be rated for a maximum pressure of 16 inches (4-10 inches I.D.) or 10 inches (12-16 inches I.D.) water column positive pressure and 2 inches water column maximum negative pressure and 6000 FPM maximum velocity and listed by Underwriters Laboratories, Inc. under UL Standard 181 as a Class 1 air duct complying with NFPA Standards 90A and 90B. Flexible air duct shall be factory-made and composed of an inner duct of woven and

coated fiber glass fabric providing an air seal and permanently bonded to coated steel wire helix, a fiber glass insulating blanket with minimum R-6.0 value (minimum 2 inch thickness) and low permeability outer vapor barrier of fiberglass reinforced metalized film laminate. Flexible air ducts shall be ThermaflexMK-C or Flexmaster type 4M with minimum R-6.0 insulation to meet ASHRAE 90.1 energy code. Maximum installed length shall not exceed 3-feet-0-inches without approval.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Ducts:

1. Ductwork shall be constructed and installed as follows:
 - a. Straight and smooth on inside with joints neatly finished unless otherwise directed.
 - b. Duct panels through 48-inch dimension having acoustic duct liner need not be crossbroken or beaded.
 - c. Crossbreak unlined ducts and duct panels larger than 48 inches or bead 12 inches on center.
 - d. Securely anchor ducts to building structure with specified duct hangers attached with screws.
 - e. Brace and install ducts so they shall be free of vibration under all conditions of operation.
 - f. Ducts shall not bear on the top of structural member.
 - g. Make duct take-offs to branches, registers, grilles, and diffusers as detailed on drawings.
 - h. Properly flash where ducts protrude above roof.
 - i. Install internal ends of slip joints in direction of flow. Make joints airtight using specified duct sealer.
2. Install flexible duct connections to each air handling unit.
3. Provide each take-off with an adjustable volume damper to balance that branch.
 - a. Anchor dampers securely to duct.
 - b. Install dampers in main ducts within insulation.
 - c. Dampers in branch ducts shall fit against sheet metal walls, bottom and top of duct, and be securely fastened.
 - d. Where concealed ceiling damper regulators are installed, provide a cover plate.
4. Install grilles, registers, and diffusers.

B. Air Turns:

1. Permanently installed, consisting of curved metal blades or vanes arranged to permit air to make abrupt turn without appreciable turbulence, in elbows of supply and above ground return ductwork.
2. Air turns shall be quiet and free from vibration when system is in operation.

END OF SECTION 23 30 00

KING ARCHITECTS, INC

SECTION 23 70 00 – AIR CONDITIONING

PART 1 – GENERAL

A. DESCRIPTION

1. The Air Conditioning System, in general, shall be for the entire building providing cooling and dehumidification in summer and heating in winter. A constant amount of fresh air shall be taken into the system and all air shall be filtered.
2. The General Contractor (Prime Contractor) who has the contracts with the Owner shall be responsible for installing the mechanical systems using qualified subcontractors and/or employees. Any incorrect or improper work shall be corrected by the General Contractor.
3. The General Contractor shall be the sole source responsible party to furnish and install the mechanical system. General Contractor shall be properly licensed to perform this work.

B. STANDARDS

1. All air conditioning equipment shall comply with the requirements of applicable ARI standards and shall be tested, rated, labeled, and listed accordingly.

C. SPACE REQUIREMENTS

1. General Contractor and Mechanical Contractor shall refer to architectural, structural and electrical drawings and install all equipment, piping, etc. to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit into the space provided or coordinate with other trades involved on the project.

D. COMPRESSOR WARRANTIES

1. On all packaged and/or split system DX equipment 5 tons and below, the manufacturer shall provide a full 5 year material warranty for any and all compressor failures during the warranty period.
2. If a longer warranty period is required elsewhere in these specs, the longer warranty period shall apply.

PART 2 – MATERIALS

A. PIPING

1. All piping shall be of materials as hereinbefore specified.

B. HEAT PUMP - OUTDOOR SECTION

1. Furnish and install heat pump - outdoor section where shown and with capacities scheduled on plans. Unit shall be completely factory assembled and tested.
2. Condenser coil shall be of nonferrous construction with aluminum plated fins mechanically bonded to seamless copper tubes.
3. Condenser fan shall be propeller type, direct driven. Motor shall have inherent protection and be of the permanently lubricated type, resiliently mounted. Fans shall have safety guards.
4. Units shall be designed for operation down to 0 degrees Fahrenheit outdoor temperature.
5. Compressor shall be of sealed hermetic design with external spring isolators. Compressors shall have five year replacement warranty by the unit manufacturer (not the compressor manufacturer). Warranty period shall start when project is accepted by the Owner.

6. All controls shall be factory wired and shall consist of high and low pressure stats, compressor and condenser fan overload devices, etc., as required by manufacturer for complete unit protection.
7. Casing shall be fully weatherproof for outdoor installation and shall be bonderized steel with baked enamel finish. Panels shall be removable to provide access for servicing.
8. Unit shall be Trane, Lennox, York or Carrier. Units shall be furnished with factory start-up and check by factory service representative; provide report to Architect. Factory start-up shall not be performed by the installing contractor.

C. HEAT PUMP - INDOOR SECTION

1. Furnish and install heat pump - indoor section of size and type as scheduled on the drawings. Units shall be Trane, York, Lennox or Carrier.
2. Units shall be complete with fan, motor, drive, direct expansion cooling coil, grease fittings, drain pan, etc., and shall have capacities scheduled on plans. All units shall be factory insulated on the interior with not less than 3/4 pound density neoprene coated fiberglass cemented in place with waterproof adhesive.
3. Each unit shall be mounted on a suitable base to allow return air and designed for continuous operation at the maximum rated static pressure. Fan capacities shall be rated with the fans in the units, and horsepower specified shall include all losses.
4. Casings shall be suitable for operation at the pressures specified and constructed of bonderized steel.
5. Cooling coils shall be of the nonferrous tube and nonferrous fin type and shall be tested at 400 psi air pressure. Cooling coil face velocity shall not exceed that guaranteed by manufacturer for no moisture carry-over.
6. Electric strip heaters shall be as hereinafter specified and shall be mounted inside unit housing. Coordinate electric service to heaters and blower with Electrical Contractor.
7. Filter shall be 1 inch thick throw-away mounted in factory filter rack in unit.

D. AUXILIARY ELECTRIC STRIP HEATERS

1. Provide UL and CSA approved electric heat modules for installation directly on fan discharge. Electric heaters shall be furnished in capacities as scheduled with one or two stage control, single-point electric power connection and terminal strip connections.
2. Electric heater elements shall be constructed of heavy duty nickel chromium elements internally wye connected on 480/600 volt, three-phase and delta connected on 208/240 volt, three-phase.
3. All terminal studs, nuts and washers shall be stainless steel, insulated with phenolic terminal bushings. Terminals shall be machine crimped to coils and heater shall be tested at 2000 volts before shipment. All voltages and phases shall be as scheduled.
4. Heaters shall be provided with built-in contactors with one internally fused terminal block with separate contactors for each stage of heating. Heater shall be internally wired at factory to receive one electrical source of power for air unit-heater combination.
5. Each 208/240 volt heater shall have pilot duty with secondary backup fuselinks for automatic reset of high limit controls. Each 480/600 volt heater shall have automatic line break high limit controls.
6. Control circuit transformer shall be built into heater terminal box and sized to carry full contactor holding coil load. Heaters shall be listed by UL.
7. Heater shall be equipped with built-in pressure type air flow switch.

8. Heater shall be installed inside unit housing as recommended by equipment manufacturer.

E. CEILING MOUNTED EXHAUST FANS

1. The fan housing shall be constructed of heavy gauge galvanized steel. The housing interior shall be lined with 1/2 inch thick acoustical insulation. The discharge duct connection shall be adaptable to horizontal or vertical positions. The access for wiring shall be external. The motor disconnect shall be internal and of the plug in type. The motor shall be mounted on vibration isolators. The fan shall have a forward curved centrifugal wheel(s). All fans shall be licensed to bear the AMCA seal for air and sound performance.
2. Unless noted otherwise fans shall be furnished with integral grille and backdraft damper.
3. The fans shall be Greenheck Model SP, Acme V-Series, Loren-Cook Gemini Series, Broan or equal.

PART 3 - EXECUTION

A. INSTALLATION

1. Install air conditioning systems in accordance with Section 23 05 00.
2. Mount equipment on pads complete with piping system, install air unit complete with air distribution system, and provide for power connection.
3. Complete structural, mechanical, and electrical connections in accordance with manufacturer's installation instructions.
4. Furnish and install all valves, hangers, floor and ceiling plates, etc., to make the system complete.

B. TESTING

1. Refrigerant lines shall be tested under 200 psi carbon dioxide pressure for five hours using soap suds at joints to test for leaks. Evacuate system and charge with refrigerant.
2. All line testing shall be witnessed by the Test and Balance Agency (TAB). TAB Agency shall record results and include in final TAB report.

END OF SECTION 23 70 00

SECTION 26 00 01 – ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

- A. The General Conditions and all pertinent sections are a part of this specification and the Contractor shall consult them in detail for instructions pertaining to his work. He shall consult all other sections relative thereto.
- B. The term "Architect" in this specification may be his agent such as the Consulting Engineer.
- C. The *EXTENT* of the work is shown on the drawings and specified herein.

1.01 SCOPE OF WORK

- A. The work contemplated under this specification comprises the furnishing of all labor and materials required and necessary for the complete installation of electrical wiring for lighting, power, and control circuits from the various panel boards to each ultimate outlet hereinafter specified and / or shown on the accompanying drawings. The work also includes the demolition necessary to accomplish the new construction. Work shall be done in accordance with the National Electrical Code, *NFPA* Codes related to the specific occupancy, and State and local codes & ordinances. This work includes raceways and pull wires for systems to be furnished and installed by others.
- B. This work includes the installation of connection wiring, both feeders and controls for all motors, controls, safety devices and miscellaneous electrical equipment of this project.
- C. The specifications are intended to describe a complete, workable, electric distribution system and bidders shall report any discrepancies or omissions preventing such workability *ten (10) days* prior to the time their bids are submitted.
- D. The work covered by this specification shall be as shown on the drawings and called for herein.
 - 1. Furnish and install all conduit, wire ways, and conductors for service, feeder, branch circuit, and control wiring.
 - 2. Furnish and install panel boards, disconnect switches, motor starters, etc.
 - 3. Furnish and install lighting units complete with controls, and lamps.
 - 4. Provide service entrance complete with service conductors, raceway, and pole in accordance with utility company requirements for overhead service. Pay all utility service fees and charges for obtaining power to the site and or service revisions as required.
 - 5. Provide electrical service and control wiring for mechanical devices requiring same.
 - 6. Furnish and install raceway system, complete with pull wire for telephone, computer and CATV systems as noted.
 - 7. Pay all fees and charges for all inspections and permits and utility company service.
 - 8. Remove all existing electrical equipment wiring and devices not reused on this project. Owner has right to retain any or all equipment, wiring, or devices removed. Any equipment, wiring or devices not retained by Owner shall be disposed of at Contractor's expense.
- E. See *Division 15* for Mechanical Equipment Specifications.
- F. Equipment installed shall be installed in strict accordance with the instructions of the manufacturer.
- G. The Contractor is referred to the Architectural and structural plans for information in regard to Architectural details. His work shall be done in strict accordance with the local and state ordinance governing this class or work. He shall install his work to meet existing conditions as found at the building site and to accommodate the work of other trades. He shall be held responsible for the timely placing of conduits and switch and outlet boxes in walls and partitions while same are under construction.

1.02 REJECTED WORK AND MATERIALS

- A. Any materials and / or equipment different from those called for in specifications, drawings, or approved by Architect must, on notification from the Architect or his designatee be immediately removed from the project and replaced by those authorized.

1.03 SUBMITTALS

- A. Before proceeding with work and/or within *thirty (30) days* after award of the General Contract for this work, the Contractor shall furnish to the Architect *six (6)* complete sets of shop and working drawings of such apparatus, equipment, controls, etc., to be provided in this project. These drawings shall give dimensions, weights, mounting data, performance curves, and other pertinent information. The submittals shall include lighting fixtures, panel boards, distribution panels, motor control, disconnects, starters, lighting controls, specialty boxes, special wire ways, fire alarm systems, and all specialty equipment.
- B. The Contractor may be required to submit shop drawings on any other material he supplies in construction of this project. These drawings shall be submitted at the time requested by the Architect.
- C. The Architect's approval of shop drawings shall not relieve the Contractor from responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings, or specifications, even though approved by the Architect, shall not relieve the Contractor from furnishing and erecting same.
- D. Upon completion of the work, the Contractor shall furnish *six (6)* bound sets of equipment brochures, parts list, operating instructions, and maintenance manuals of materials furnished on this project.

1.04 MINOR DEVIATIONS

- A. The accompanying drawings show approximate location of feeders, branch circuits, light and power circuits, etc. Complete and accurate details in regard to location of outlets, apparatus, etc., from location indicated shall be made before roughing-in without additional cost to owner.

1.05 STANDARD OF MATERIALS AND WORKMANSHIP

- A. All materials shall be new and listed by *UL* as conforming to its standards. Work shall be executed in a workmanlike manner and present a neat finished appearance when complete.

1.06 LAWS, PERMITS, AND INSPECTIONS

- A. This Contractor shall, at his own cost, obtain necessary permits, pay all legal fees and charges, required by safety laws, ordinances, and regulations relating to the building and the public health and safety. The work shall be inspected before being concealed. Certificates of inspection shall be provided to the Architect and Engineer.

1.07 CUTTING AND PATCHING

- A. Cut only where necessary with approval of the Architect or his designatee any structural beams or joists. Coordinate all raceways and conduit runs with mechanical equipment so as to minimize penetrations through wall partitions in ceiling space. Seal around all penetrations equal to the rating of the wall or ceiling penetrated.

1.08 SAFETY PRECAUTIONS

- A. Furnish and place proper guards for prevention of accidents. Provide and maintain any other necessary construction required to secure safety of life or property.

1.09 SUPERVISION

- A. Constantly supervise the work done from beginning to completion and final acceptance. Keep the same foreman and workman throughout the project duration.

- B. During the progress of the work, it shall be subject to inspection by the representatives of the Engineers, and at these time, the Contractor shall furnish the required information.

1.10 SITE INSPECTION

- A. Visit site and study difficulties attendant to the successful execution of the work before bidding.

1.11 INSERTS AND OPENINGS

- A. Furnish and install all inserts and hangers required to support conduit, cables, pull boxes, wireways, disconnect switches, etc.

1.12 CONDUCTORS AND WIRING METHODS

- A. All wiring shall be installed in conduit as shown on the drawings. Nonmetallic sheath cable may be used in sizes #12 and #10 for branch circuit wiring only. No common neutral branch circuits are permitted on this project.
- B. Conduit and electrical metallic tubing shall be hot dipped galvanized. *EMT* connectors shall be compression type and, where required, only connectors approved as raintight may be used.
- C. Where conduit runs across or is installed parallel to hot water lines, conduit shall be installed at a minimum distance of 6" from same.
- D. All conductors #8 and smaller shall be copper with *THWN / THHN* 600 volt insulation. All conductors #6 and larger shall be copper with *THW* 600 volt insulation.
- E. Conductors in system shall be color coded throughout system. Said color coding shall be carried unchanged throughout the system. Color code shall be different between 480 volt system and 208 volt system.
- F. Conductors shall be identified at all access points by color coding. On larger conductors 6" long taped bands shall be used. In no case will tags be acceptable.
- G. All junction boxes shall be 4" square sheet metal with minimum of 18 *cu. in.* capacity, supported independently of conduit or wire entering it. Boxes in masonry walls shall be rated as such.
- H. Connectors shall be wire nuts sized in accordance with the size and number of conductors being connected.
- I. All conductors shall be copper. No aluminum conductor will be installed on project.
- J. All low voltage wiring installed in air handling spaces shall be plenum rated.

1.13 DISCONNECT, SWITCHES, FUSIBLE, AND NON-FUSIBLE

- A. Switches shall be Heavy Duty unless otherwise noted, and where installed outdoors shall be weatherproof. Where required, said switches shall be horsepower rated.

1.14 TESTS

- A. After installation is complete and at such time as the Architect may direct, Contractor shall conduct an operating test for approval. Equipment shall be demonstrated to operate in accordance with requirements of this specification. Tests shall be performed in the presence of the Architect. Furnish all instruments and personnel required for the test.

1.15 GUARANTEE

- A. The Contractor shall be required to keep the work installed by him in repair and perfect working order for one year from date of completion and final acceptance; said guarantee shall be based on defective materials and sub-standard workmanship. Contractor shall furnish, at his own cost, all materials and labor necessary to comply with this

guarantee.

1.16 UTILITY COMPANY FEES & CHARGES

- A. Contractor shall coordinate service with the local electrical utility company and telephone company. Contractor shall pay all fees & charges associated with services or outages required in the execution of this work.

1.17 PAINTING ELECTRICAL EQUIPMENT

- A. The Contractor shall allow for the painting of panelboards, switchgear of any exposed electrical equipment. All painting shall be done by the painting sub-contractor at the direction of the Architect. This does not include the equipment in electrical equipment rooms, air handling rooms or mechanical rooms or spaces.

1.18 AS-BUILT DRAWINGS

GENERAL: The Contractor shall provide the Architect with *two (2)* sets of blue line prints, of the original bidding documents, as required and at Contractor's expense, as follows:

- A. If the Contractor shall elect to vary from the Contract Documents, and secures prior approval of the Architect, for any phase of the work other than those listed below, he shall record in a neat readable manner, all such variances on the blueprint in *RED*.
- B. For Electrical work, "As-Built" drawings shall be maintained by the Contractor as the work progresses and as follows:
1. All deviations from sizes, locations and from all other features of all installations shown in Contract Documents shall be recorded.
 2. In addition it shall be possible using these drawings to correctly and easily locate, identify, and establish sizes of all conduit, panels and like, as well as all other features of work which will be concealed underground and /or in the finished building.
 3. Locations of underground work shall be established by dimensions to columns, lines, or walls, locating all turns, etc.
 4. For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases this may be by dimension. In others it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. Architect's decision in his manner will be final.
- C. The following requirements apply to all "As-built" drawings:
1. They shall be maintained at the Contractor's expense.
 2. All such drawings shall be done carefully and neatly and in a form approved by the Architect.
 3. Additional drawings shall be provided as necessary for clarification.
 4. They shall be kept up-to-date during the entire course of the Work and shall be available upon request for examination by the Architect and, when necessary, to establish clearances for other parts of the Work.
 5. The "As-Built" drawings shall be returned to the Architect upon completion of the Work and are subject to the approval of the Architect.

PART 2 PRODUCTS: *(not applicable)*

PART 3 EXECUTION: *(not applicable)*

END OF SECTION 26 00 01

SECTION 26 05 01 – BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - 1. Electrical equipment coordination and installation.
 - 2. Sleeves for raceways and cables.
 - 3. Sleeve seals.
 - 4. Common electrical installation requirements.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.03 QUALITY ASSURANCE

- A. Test Equipment Suitability and Calibration: Comply with NETA ATS, "Suitability of Test Equipment" and "Test Instrument Calibration".

1.04 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
 - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
 - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
 - 3. To allow right of way for piping and conduit installed at required slope.
 - 4. So connecting raceways, cables and wireways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Coordinate electrical testing of electrical, mechanical, and architectural items, so equipment and systems that are functionally interdependent are tested to demonstrate successful interoperability.

PART 2 – PRODUCTS

2.01 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 7 Section "Through-Penetration Firestop Systems".

PART 3 – EXECUTION

3.01 COMMON REQUIREMENT FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment

and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

- E. Right of Way: Give to raceways and piping systems installed at a required slope.

3.02 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 7 Section "Through-Penetration Firestop Systems".
- C. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Extend sleeves installed in floors two (2) inches above finished floor level.
- F. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed.
- G. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- H. Interior Penetrations of Non-Fire Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 7 Section "Joint Sealants" for materials and installation.
- I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway cable penetration sleeves with firestop materials. Comply with Division 7 Section "Through-Penetration Firestop Systems".
- J. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

3.03 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Through-Penetration Firestop Systems". Provide documentation on UL assembly rating of each firestop system.

END OF SECTION 26 05 01

SECTION 26 05 19 – CONDUCTORS AND CABLES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.02 SUBMITTALS

- A. Field quality-control test reports.

1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.02 CONDUCTORS AND CABLES

- A. Refer to Part 3 “Conductor and Insulation Applications” Article for insulation type, cable construction, and ratings.
- B. Conductor Material: Copper complying with NEMA WC 5 or 7; stranded conductor.
- C. Conductor Insulation Types: Type THW, THHN-THWN, and XHHW and complying with NEMA WC 5 or 7.
- D. Multiconductor Cable: Type SO.

2.03 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 – EXECUTION

3.01 CONDUCTOR AND INSULATION APPLICATIONS

- A. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and in Crawlspace: Type THHN-THWN, single conductors in raceway.
- D. Exposed Branch Circuits, including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceways.

- F. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.
- G. Cord Drops and Portable Appliance Connections: Type SO, hard service cord.
- H. Fire Alarm Circuits: Type THHN-THWN, in raceway Power-limited, fire-protective, signaling circuit cable.
- I. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- J. Class 2 Control Circuits: Type THHN-THWN, in raceway, Power-limited cable, concealed in building finishes.

3.02 INSTALLATION

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure valves.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 16 Section "Basic Electrical Materials and Methods".
- F. Seal around cables penetrating fire-rated elements according to Division 7 Section "Through-Penetration Firestop Systems".
- G. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification".
- H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- I. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.03 FIELD QUALITY CONTROL

- A. Testing: Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1 Certify compliance with test parameters.
- B. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 26 05 19

SECTION 26 05 26 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes grounding of electrical systems and equipment. Requirements specified in this Section may be supplemented by requirements of other Sections.

1.02 SUBMITTALS

- A. Product Data: For ground rods.
- B. Field quality-control test reports.

1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled under UL 467 as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements.

2.02 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Division 26 Section "Conductors and Cables".
- B. Equipment Grounding Conductors: Insulated with green-colored insulation.
- C. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe. On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.
- D. Grounding Electrode Conductors: Stranded cable.
- E. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulated spacer.
- F. Connectors: Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items. Bolted type, compression type, or exothermic-welded type, in kit form, selected per manufacturer's written instructions.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Use only copper conductors for both insulated and bare grounding conductors.
- B. In all raceways, use insulated equipment grounding conductors.
- C. Exothermic-Welded Connections: Use for connections to structural steel.
- D. Equipment Grounding Conductors: Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
 - 1. Install insulated equipment grounding conductors in feeders, branch circuits, lighting circuits, and receptacle

-
- circuits.
2. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.
 3. Air-Duct Equipment Circuits: Install an insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct.
 4. Signal and Communication Systems: For telephone, alarm, voice and data, and other communication systems, provide No. 2 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
 - a. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
 - b. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.
- E. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- F. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers or supports is not transmitted to rigidly mounted equipment. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.
- G. Connections: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
 2. Make connections with clean, bare metal at points of contact.
 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
 6. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
 7. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
 8. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.
 9. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.
 10. Compression-Type Connections: use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
 11. Moisture Protection: If insulated, grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

END OF SECTION 26 05 26

SECTION 26 05 29 – HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.02 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

PART 2 – PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 2. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, [zinc-coated] [stainless] steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - 6. Toggle Bolts: All-steel springhead type.

7. Hanger Rods: Threaded steel.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 – EXECUTION

3.01 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.02 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 1. To Wood: Fasten with lag screws or through bolts.
 2. To New Concrete: Bolt to concrete inserts.
 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 4. To Existing Concrete: Expansion anchor fasteners.
 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 7. To Light Steel: Sheet metal screws.

8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 033000 "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.05 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 26 05 29

SECTION 26 05 33 – RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. See Division 7 Section "Through-Penetration Firestop Systems" for firestopping materials and installation at penetrations through walls, ceilings, and other fire-rated elements.
- C. See Division 26 Section "Basic Electrical Materials and Methods" for supports, anchors, and identification products.
- D. See Division 26 Section "Wiring Devices" for devices installed in boxes.

1.02 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets indicated.

1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

2.02 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. EMT and Fittings: ANSI C80.3.
 - 1. Fittings: Compression type.
- C. FMC: Zinc-coated steel.
- D. LFMC: Flexible steel conduit with PVC jacket.
- E. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

2.03 METAL WIREWAYS

- A. Manufacturers:
 - 1. Hoffman
 - 2. Square D
- B. Material and Construction: Sheet metal sized and shaped as indicated, NEMA 1, 3R, or 12.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

- D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.
- E. Wireway Covers: Hinged type and as indicated.
- F. Finish: Manufacturer's standard enamel finish.

2.04 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
- B. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.

2.05 BOXES, ENCLOSURES, AND CABINETS

- A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.
- C. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- D. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- E. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- F. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.06 FACTORY FINISHES

- A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 – EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors:
 - 1. Exposed: Rigid steel.
 - 2. Concealed: Rigid steel.
 - 3. Connection to Vibrating Equipment: LFMC
 - 4. Boxes and Enclosures: NEMA 250, Type 3R.
- B. Indoors:
 - 1. Exposed: Surface raceways.
 - 2. Concealed: EMT for branch circuits.
 - 3. Riser through floor slab: Rigid steel
 - 4. Connection to Vibrating Equipment: LFMC.
 - 5. Damp or Wet Locations: Rigid steel conduit
 - 6. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
 - a. Damp or Wet Locations: NEMA 250, Type 3R.
 - b. As called for on drawings.
- C. Minimum Raceway Size: ¾-inch trade size.

- D. Raceway Fittings: Compatible with raceways and suitable for use and location.

3.02 INSTALLATION

- A. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- B. Complete raceway installation before starting conductor installation.
- C. Support raceways as specified in Division 16 Section "Basic Electrical Materials and Methods".
- D. Install temporary closures to prevent foreign matter from entering raceways.
- E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above finished slab.
- F. Make bends and offsets so ID is not reduced. Keep legs of bends in same plane and keep straight legs of offsets parallel, unless otherwise indicated.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
1. Install concealed raceways with a minimum of bends in shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
- H. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
1. Run parallel or banked raceways together on common supports.
 2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- I. Join raceways with fittings designed and approved for that purpose and make joints tight.
1. Use insulating bushings to protect conductors.
- J. Terminations:
1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
 2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
 3. Where raceways are terminated in boxes in damp locations, Myers type hubs shall be used.
- K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wire.
- L. Signal System Raceways, 2-inch Trade Size and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.
- M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where otherwise required by NFPA 70.
- N. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor.
- O. Flexible Connections: Use maximum of 72 inches of flexible conduit for recessed and semi-recessed lighting fixtures;

for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections. MC cable shall not be used.

- P. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.

3.03 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION 26 05 33

SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - 1. Identification for conductors and communication and control cable.
 - 2. Warning labels and signs.
 - 3. Equipment identification labels.

1.02 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

- B. Comply with ANSI A13.1

1.04 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout project.

PART 2 – PRODUCTS

2.01 CONDUCTOR AND COMMUNICATION - AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Marker Tape: Vinyl or vinyl -cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.02 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
- C. Warning label and sign shall include, but are not limited to, the following legends:
 - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 - 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES".

2.03 EQUIPMENT IDENTIFICATION LABELS

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with black letters on a white background. Minimum letter height shall be 3/8 inch.

PART 3 – EXECUTION

3.01 APPLICATION

- A. Auxiliary Electrical Systems Conductor and Cable Identification: Use marker tape to identify field-installed alarm, control, signal, sound, intercommunications, voice, and data wiring connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and cable pull points. Identify by system and circuit designation.
 - 2. Use system of designations that is uniform and consistent with system used by manufacturer for factory-

installed connections.

- B. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
 - 1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
 - c. Others as required.
 - 2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
- C. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 - 1. Labeling Instructions:
 - a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label.

Unless otherwise indicated, provide a single line of text with ½-inch high letters on 1 ½-inch high label; where 2 lines of text are required, use labels 2 inches high.
 - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label, drilled for screw attachment.
 - c. Elevated Components: Increase sizes of labels and legend to those appropriate for viewing from the floor.
 - 2. Equipment to be Labeled:
 - a. Panelboards, electrical cabinets, and enclosure.
 - b. Electrical switchgear and switchboards.
 - c. Transformers.
 - d. Variable frequency controllers.
 - e. Disconnect switches.
 - f. Enclosed circuit breakers.
 - g. Motor starters.
 - h. Push-button stations.
 - i. Power transfer equipment.
 - j. Contactors.

3.02 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
- F. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for underground service, feeder, and branch-circuit conductors.
 - 1. Color shall be factory applied.

2. Colors for 208/120-V Circuits:
 - a. Phase A: Black
 - b. Phase B: Red
 - c. Phase C: Blue
 - d. Neutral: White

END OF SECTION 26 05 53

SECTION 26 05 83 – WIRING METHODS

PART 1 - GENERAL

- A. General provisions are referred to in Section 26 00 01.
- B. Quality: All equipment shall be U. L. approved and bear U. L. label where such listing and/or labeling exist. All wiring devices to be specification grade for commercial use.

PART 2 - MATERIALS

- A. Raceways:
 - 1. Raceways shall be rigid galvanized steel conduit, intermediate metal conduit, electrical metallic tubing, schedule 40 PVC, and liquid tite flexible metal conduit.
 - 2. Underground conduits shall be schedule 40 PVC unless otherwise noted. Schedule 40 PVC shall bear U. L. label for use intended.
 - 3. Minimum conduit shall be 3/4" unless otherwise noted on plans. Flexible metal conduit used for lighting fixture connections may be 6' lengths of 1/2" trade size.
 - 4. EMT couplings and connectors shall be of the compression type. Couplings and connectors shall be as manufactured by Raco, T&B, or Gedney.
 - 5. Flexible conduit connectors shall be approved for the purpose.
 - 6. Liquid tite flexible metal conduit shall have external bonding jumper.
 - 7. All rigid conduit and IMC fittings shall be threaded conduit outlet bodies with appropriate cover and gasket.
 - 8. Weatherproof hubs shall be equal to Myers, Appleton, or T&B.
- B. Wire and Cable:
 - 1. All conductors shall be copper, shall conform to applicable ASTM specifications as to conductivity, and shall be free from kinks and defects when installed.
 - 2. All wire shall be copper. Service and feeder conductors shall have type THW 600V insulation for conductors #6 and larger unless otherwise noted. Branch circuit and feeder conductors #8 and smaller shall have type THWN/THHW 600V insulation. Minimum conductor size shall be #12 unless otherwise noted. Nonmetallic sheath cable in sizes #12 and #10 may be used for branch circuit wiring only.
 - 3. All insulated wire and cable shall meet the applicable requirements of the latest IPCEA specifications.
 - 4. Where lighting fixture manufacturer recommends the use of high temperature wire in the fixture junction box, NEC type SF-2 shall be used.
 - 5. Service and feeder conductors shall have type THW 600V insulation for conductors #6 and larger unless otherwise noted. Branch circuit and feeder conductors #8 and smaller shall have type THWN/THHW 600V insulation. Minimum conductor size shall be #12 unless otherwise noted.
 - 6. Thermostat cable shall be plenum rated.
- C. Outlet, Junction Boxes, and Condulets:
 - 1. Outlet and junction boxes shall be sheet metal of minimum size of 4" square by 1 1/2 " deep. Boxes shall be as manufactured by Steel City, Appleton, or Raco.
 - 2. Manufactured pull boxes and junction boxes shall be as manufactured by the Hoffman Company, the Wegman Company, or Appleton.
 - 3. Condulets shall be Crouse-Hinds, Gedney, Appleton, or equal, "FS" or "FD" series shall be used for switch outlets. All condulets shall be equipped with rubber gaskets and sheet metal covers, where required. In corrosive areas, malleable iron fittings shall be used.
- D. Grounding:
 - 1. Ground rods shall be 3/4" x 10' long, copperclad.
 - 2. Grounding bushings shall be of the insulated type.

PART 3 - EXECUTION

3.01 CONDUCTORS AND WIRING METHODS

- A. All wiring shall be installed in conduit as shown on the drawings.

- B. All raceways shall be concealed unless otherwise indicated.
- C. All exposed (indoor and outdoor) conduit, feeder conduit, and conduit larger than 1", shall be heavy-wall hot dip galvanized steel conduit except where specifically indicated otherwise. Indoor exposed conduit and indoor feeder conduits may be hot hip galvanized intermediate metal conduit.
- D. Minimum conduit size shall be 3/4" unless otherwise noted on plans. Flexible metal conduit used for lighting fixture connections may be 6' lengths of 1/2" trade size.
- E. Rigid galvanized conduit shall be used for all exposed outdoor locations and all stub-up.
- F. The Contractor shall be held responsible for the timely placing of conduits in slabs before same are poured and switch and outlet boxes in walls and partitions while same are under construction.
- G. This Contractor shall furnish and install all inserts and hangers required to support conduit, cables, pull boxes, wireways, disconnect switches, etc.
- H. EMT may be used for interior work that is concealed.
- I. EMT may not be embedded in concrete.
- J. PVC conduit may not be used within the building unless specifically called for on the plans.
- K. All conduit runs shall be run straight with the structure and supported by clips or straps intended for its use. No tie wire supports will be allowed.
- L. Pull boxes and junction boxes shall be used as required for proper installation of conductors or splicing.
- M. Expansion joints shall be included at approximately 150-foot intervals in all straight exposed conduit runs.
- N. Conduits shall be kept at least 6" from parallel runs of hot water piping, flues, or other hot objects.
- O. Where conduits rise through concrete, the curved portion shall not be visible above the finished floor. Approved conduit sealing fittings and compound shall be used where underground conduits enter building.
- P. Approved conduit sealing fittings and compound shall be used where all conduits enter building.
- Q. Spacing of conduit supports for horizontal and vertical runs shall be in accordance with National Electrical Code and field conditions. Conduit may not be supported from ceiling support wires.
- R. Galvanized steel strut type construction shall be used when practical for supporting conduits and equipment. Tie wire is not acceptable. Heat treated spring steel clips may be used for supporting 1" EMT or smaller, in the ceiling space to the grid system.
- S. Stainless steel shims, 1/16" thickness, or approved equal, shall be used between aluminum and steel surfaces to prevent galvanic action.
- T. During construction, all outlet boxes and conduit stub-ups shall be suitably protected against the entrance of foreign material.
- U. Watertight hubs shall be installed on all rigid conduit terminations in damp locations. Double locknuts and bushings are required on other rigid conduit terminations. Where rigid conduit is an extension of a PVC conduit run, grounding bushing shall be used.
- V. Underground ducts shall be separated, and duct lines shall slope downward away from buildings with a pitch of not less than 3" per 100 feet. All underground ducts are to be incased in red concrete where called for on the drawings a minimum of 3" encasement around exterior of duct is required.

- W. Underground raceways below building slabs do not require red concrete encasement. Raceways shall be installed below slab with a minimum of 3" cover.
- X. Duct separators shall be of plastic and the joints of the conduit shall be staggered so as to provide a duct line having maximum strength. All spare conduit shall be identified and location of both ends recorded.
- Y. All ducts shall have a mandrel and brush drawn through them to make sure they are open and clean.
- Z. All empty ducts shall have #14 galvanized iron pull-wire installed.

3.02 WIRE AND CABLE

- A. No wires shall be pulled in until the conduit system is complete. Only approved type pulling lubricant shall be used.
- B. Feeder conductors shall be continuous from point of origin to point of termination without splices unless otherwise noted on drawings.
- C. No splices or taps will be permitted in control or indication circuits except at terminals on control devices, and on terminal boards in junction boxes or equipment, unless noted on drawings.
- D. Control and indication circuit terminations at equipment, devices and terminal boards shall be made with spade type crimp connectors. Shake-proof lock washers, jamb nuts, or other suitable means for preventing loosening of connections shall be used on all connections subject to vibration.
- E. For #10 AWG and smaller conductors in lighting circuits, splices and taps shall be made with insulated "thread-on" type connectors.
- F. For #8 AWG and larger conductors, splices and taps shall be made by solderless, bolted type or compression type cable connectors. All such connections shall be taped having an insulation value at least equal to that of the conductor insulation.
- G. All tape shall be suitable for use intended.
- H. Conductors for branch circuits shall be color coded throughout system. Said color coding shall be carried unchanged throughout system.
- I. Conductors shall be identified at all access points by color coding. On larger conductors painted or taped bands shall be used. In no case will tags be acceptable.
- J. Control, indication, and power wiring shall be identified at all terminal points with wire markers. Painted numbers of colors or other non-permanent marking will not be acceptable. Numbering of wires in the actual installation shall correspond to the wire numbers shown on schematic wiring diagrams.
- K. Wire in panelboards shall be neatly formed and tied with self-locking nylon ties in a workmanlike manner.
- L. Cables not in conduit and subjected to tension shall be properly supported by the use of cable grips.
- M. Connectors shall be wirenuts sized in accordance with the size and number of conductors being connected.

3.03 OUTLET AND JUNCTION BOXES

- A. All boxes shall be sized in accordance with National Electrical Code requirements.
- B. All boxes shall be supported independently of conduits entering them.

- C. 4" square sheet metal boxes with plaster rings and/or covers as required shall be used for wiring devices and telephone outlets for a neat and workmanlike installation.
- D. Weatherproof and dustproof type boxes and fittings, having threaded hubs and threaded or bolted type covers shall be used outdoors. Indoors, sheet metal boxes shall be used except for surface mounting where cast type boxes shall be used.
- E. Contractor shall furnish and install pull boxes as required in the raceway system for proper installation of the conductors, but in no case shall pull boxes be spaced more than 150 feet apart in any conduit run.

3.04 GROUNDING

- A. All electrical equipment and other facilities and devices shall be grounded as required by the National Electrical Code, as shown on the drawings and as further specified herein.
- B. Grounding shall be installed as shown on plans and inspected by the Engineer prior to concealment. Building steel, water piping, etc., shall be bonded together as per NEC and connection shall be inspected by the Engineer prior to concealment.
- C. Bonding jumpers shall be used around concentric or eccentric knockouts on service equipment.
- D. Equipment grounding conductors shall be sized per NEC Table 250-95. An equipment grounding conductor shall be run with each feeder and branch circuit.
- E. When branch circuits are grouped in common raceway, an equipment grounding conductor shall be run with each branch circuit or multi-wire branch circuits. (Common neutral)

END OF SECTION 26 05 83

SECTION 26 09 23 – LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following lighting control devices:
 - 1. Outdoor photoelectric switches.
 - 2. Indoor occupancy sensors.

1.02 DEFINITIONS

- A. LED: Light emitting diode.
- B. PIR: Passive infrared.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show installation details for occupancy and light level sensors.
 - 1. Lighting plan showing location, orientation, and coverage area of each sensor.
 - 2. Interconnection diagrams showing field installed wiring.
- C. Field quality control test reports.
- D. Operation and maintenance data.

1.04 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS

- A. Line Voltage Surge Protection: An integral part of the devices for 120- and 277-V solid state equipment. For devices without integral line voltage surge protection, field mounting surge protection shall comply with IEEE C62.41 and with UL 1449.

2.03 OUTDOOR PHOTOELECTRIC SWITCHES

- A. Manufacturers:
 - 1. Fisher Pierce
 - 2. Intermatic, Inc.
 - 3. Lithonia Lighting
 - 4. Paragon Electric Co.
 - 5. Square D
 - 6. TORK
 - 7. Touchplate Technologies, Inc.
 - 8. Watt Stopper (The)

- B. Description: Solid state, with SPST dry contacts rated for 1800-VA tungsten or 1000-VA inductive, to operate connected relay, contactor coils, microprocessor input, and complying with UL 773A.
1. Light Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
 2. Time Delay: 15-second minimum, to prevent false operation.
 3. Surge Protection: Metal-oxide varistor type, complying with IEEE C62.41 for Category A1 locations.
 4. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the North sky exposure.

2.04 INDOOR OCCUPANCY SENSOR

- A. Manufacturers:
1. Hubbell Lighting, Inc.
 2. Leviton Mfg. Company, Inc.
 3. Lithonia Lighting
 4. Sensor Switch, Inc.
 5. TORK
 6. Unenco Electronics; a Hubbell Company
 7. Watt Stopper (The)
- B. Description: Wall- or ceiling-mounting, solid-state, PIR-type units with a separate relay unit.
1. Operation - Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
 2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
 3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
 4. Mounting:
 - a. Sensor: Suitable for mounting in any position on a standard outlet box.
 - b. Relay: Externally mounted through a ½-inch knockout in a standard electrical enclosure.
 - c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
 5. Indicator: LED to show when motion is being detected during testing and normal operation of the sensor.
 6. Bypass Switch: Override the on function in case of sensor failure.
 7. Detector Sensitivity: Detect occurrences of 6-inch minimum movement of any portion of a human body that presents a target of at least 36 sq. in.
 8. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1,000 sq. ft. when mounted on a 96-inch high ceiling.

2.05 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than no. 12 AWG, complying with Division 16.
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 18 AWG, complying with Division 16 Section "Conductors and Cables".
- C. Class 1 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 14 AWG, complying with Division 16 Section "Conductors and Cables".

PART 3 – EXECUTION

3.01 SENSOR INSTALLATION

- A. Install and aim sensors in locations in achieve at least 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.02 WIRING INSTALLATION

- A. Wiring Method: Comply with Division 16 Section "Conductors and Cables". Minimum conduit size shall be 3/4" inch.
- B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Separate power-limited and nonpower limited conductors according to conductor manufacturer's written instructions.
- C. Install field-mounting transient voltage suppressors for lighting control devices in Category A locations that do not have integral line-voltage surge protection.
- D. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull and outlet boxes; terminal cabinets; and equipment enclosures.

3.03 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 16 Section "Basic Electrical Materials and Methods".
- B. Label time switches and contactors with a unique designation.

3.04 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. After installing switches and sensors, and after electrical circuitry has been energized, adjust and test for proper polarity, ground continuity, and compliance with requirements.
 - 2. Operational Test: Verify actuation of each sensor and adjust time delays.
- B. Remove and replace lighting control devices where test results indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 26 09 23

SECTION 26 24 16 – PANELBOARDS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 6. Include wiring diagrams for power, signal, and control wiring.
 - 7. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.
- C. Field quality-control reports.
- D. Panelboard schedules for installation in panelboards.
- E. Operation and maintenance data.

1.03 QUALITY ASSURANCE

- 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. Comply with NEMA PB 1.
- C. Comply with NFPA 70.

1.04 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- B. Enclosures: Flush- and surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1 or Type 12. See drawings.

- b. Outdoor Locations: NEMA 250, Type 3R.
 - 2. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 3. Directory Card: Inside panelboard door, mounted in transparent card holder.
- C. Incoming Mains Location: Top and bottom.
- D. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity.
- E. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Hard-drawn copper, 98 percent conductivity.
 - 2. Main and Neutral Lugs: Mechanical type.
 - 3. Ground Lugs and Bus Configured Terminators: Mechanical type.
 - 4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 - 5. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
- F. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- G. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include size and type of allowable upstream and branch devices and listed and labeled for series-connected short-circuit rating by an NRTL.
- H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.02 DISTRIBUTION PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Square D; a brand of Schneider Electric.
- B. Panelboards: NEMA PB 1, power and feeder distribution type.
- C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
- D. Mains: Circuit breaker, as indicated on plans.
- E. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
- F. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

2.03 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Square D; a brand of Schneider Electric.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

- C. Mains: Circuit breaker or lugs as indicated on plans.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Square D; a brand of Schneider Electric.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 - 2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground- fault protection (6-mA trip).
 - 3. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high- intensity discharge (HID) lighting circuits.
 - d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground- fault indicator.
 - e. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.
 - f. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
 - g. Handle Lock Device: Loose attachment, for holding circuit-breaker handle in on position.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Receive, inspect, handle, store and install panelboards and accessories according to NEMA PB 1.1.
- B. Mount top of trim 90 inches above finished floor unless otherwise indicated.
- C. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- D. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- E. Install filler plates in unused spaces.
- F. Stub four 1-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future.
- G. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
- H. Comply with NECA 1.

3.02 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.03 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 26 24 16

SECTION 26 27 00 – DISTRIBUTION EQUIPMENT

PART 1 - GENERAL

- 1.01 General provisions are referred to in Section 26 00 01.
- 1.02 Quality: All equipment shall be U. L. listed and bear U. L. label where such lists and/or labeling exist.
- 1.03 Equipment Identification: All circuit breakers, safety switches, lighting panels, starters, etc., shall be identified by an engraved bakelite nameplate attached to the enclosure by brass screws. Engraved letters shall be a minimum of ½" high.

PART 2 – PRODUCTS

2.01 PRODUCTS

- A. Distribution Equipment as manufactured by General Electric, Square D, or approved equal.
- B. Lighting and Distribution Panels:
1. Panel boards shall be as indicated on the plans. They shall be distributed phase, dead front type, equipped with thermo-magnetic molded case circuit breakers. Panel boards shall have copper bus and a full sized neutral.
 2. Indoor enclosures shall be NEMA 1. A circuit directory frame and card with a clear covering shall be provided on the inside of the door with a typed circuit directory.
 3. Side wire gutters shall be adequate for wire size used but 4" minimum for lighting panel boards and 5½" for distribution panel boards. Minimum enclosure width shall be 20".
 4. Fronts shall be complete with door and chrome plated combination cylinder lock and catch, with all locks keyed alike. Fronts shall be full finish steel with prime coat and finish coat of baked enamel in manufacturer's standard color, with indicating type adjustable concealed trim clamps and directory with transparent covers. Doors shall have flush hinges and operators.
 5. Service entrance panel shall be marked suitable for service entrance equipment and have minimum of 25,000 A. I. C. rating of all over current devices.
 6. All panels shall be equipped with equipment ground bus.
 7. All 120/240V breakers shall be rated 10,000 A. I. C. unless otherwise noted.
 8. All panels shall be equipped with copper buses.
 9. All molded-case main and branch circuit breaker types for each circuit, with toggle handles that indicate when tripped. Where multiple-pole breakers are indicated, provide with common trip so overload on one pole will trip all poles simultaneously. Breaker shall not trip to OFF position.
 10. Lighting panels shall be U. L. listed and bear the U. L. label. Panels shall be Square D, type NQOB, General Electric type AQ or equal.
 11. Distribution panel boards shall be U. L. listed and bear U. L. label. Panels shall be Square D, HCN, G. E. CCB or equal.
 12. Keys for all equipment furnished must be properly identified by tag for submittal to Architect and Owner.
- C. Safety Switches:
1. Safety switches shall be heavy duty type (unless otherwise noted), with quick-make, quick-break operation, visible blades, and line terminal shields.
 2. All switches shall be U. L. listed, horsepower rated, meeting Federal Specifications WS-865c, and NEMA Spec KS-1-1969.
 3. All switches shall have front cover mounted nameplates with catalog number Hp ratings and an equipment identification nameplate per Equipment Identification Section of this Specification.
 4. Switch assembly plus operating handle shall be an integral part of the enclosure base.
 5. Switch shall be pad-lockable in the OFF position and shall have tool defeatable door interlocks that prevent door from operating when handle is in the ON position.
 6. All safety switches shall be fusible unless noted.
 7. Three phase four wire units shall have solid neutral.
 8. Enclosures shall be NEMA 1 indoors, NEMA 3R outdoors, unless otherwise noted.
 9. Safety switches shall be manufactured by General Electric, Square D, or approved equal.

- D. Circuit Breakers:
1. Molded case circuit breakers shall meet NEMA standards, Federal Spec No. W-C-37a, where applicable and bear U. L. label. 120/240V breakers shall have minimum 10,000 A. I. C., unless otherwise noted on drawings.
 2. Breakers shall be quick-make and quick-break type.
 3. Two and three pole breakers shall have internal common trip not just tie handle.
 4. Enclosures shall be NEMA constructed for service and area of intended use.
 5. Breakers shall be thermo-magnetic type unless noted.
- E. Fuses:
1. Fuses shall be Buss dual element "Fusetron" or approved equal, unless noted. Rating shall be as noted on drawings or as recommended by equipment manufacturer of the equipment the fuse is protecting.
 2. Lighting unit fuses shall be as recommended by the fixture manufacturer.
- F. Starters:
1. Manual starting switches shall be surface or flush type as indicated. They shall be as manufactured by Square D, Allen-Bradley, Westinghouse, G. E., or approved equal. Plates for flush units shall be stainless steel. Units shall have an ON indicating light and overload protection.
 2. Three phase starters shall be combination type with thermo-magnetic circuit breakers as shown on drawings. They shall be equipped with control power transformer and have an HOA switch and run light in the door. Contractor shall have a minimum of four auxiliary field convertible contacts. Motor starters shall have single phase/phase-reversal protection.
- G. Factory Installed Variable Frequency Drive(s) / Disconnects:
1. Combination Variable Frequency Drive / Disconnects shall be properly sized, mounted, wired to the fan motor, and commissioned by the AHU manufacturer. Combination VFD / Disconnects shall include the VFD, a circuit breaker disconnect, and a Hand-Off-Auto (H-OA) switch. [An oversized control transformer, and on/off binary output, and all interfacing wiring between the VFD and the DDC controller shall be provided with factory mounted controls.] Factory mounting will facilitate temporary heating, cooling, ventilation, and/or timely completion of the project.
 2. Disconnects: VFD / Disconnects shall be supplied with 600 VAC, 3 pole, magnetic instantaneous short circuit trip circuit breaker. A through-the-door interlocking handle shall be spring loaded and designed to rest only in the full "ON" or "OFF" state. A concealed defeater mechanism will allow entry into the enclosure when the handle is in the "ON" position. A heavy-duty snap action flange operated fusible disconnect switch is also acceptable. A terminal guard shall be supplied on the line side terminals. NEMA Class R fuse clips and fuses shall be provided.
 3. Enclosures: VFD / Disconnects shall have NEMA Type 1 steel open ventilated enclosures.
 4. Variable Frequency Drives: The VFD / Disconnects shall be supplied with a high-performance pulse width modulated (PWM) AC drive that generates a sine-code, variable voltage / frequency, three phase output for optimum speed control. Insulated gate bipolar output transistors (IGBT's) shall insure a low audible magnetic motor noise (@ 60 Hz) of less than 2 Db (@1 meter) above across the line operation. Power electronics shall provide at least 97% efficiency. The VFD shall have one 15-bit microprocessor control logic circuit board for all horsepower ratings. All programming shall be maintained in non-volatile RAM memory so the program will be maintained when power is removed. A digital operator keypad and display shall provide local control and readout for: run/stop/jog, speed, reset, volts, amps, kilowatts, and diagnostics. Output current overload should be rated at 125% of motor FLA for one minute. The VFD shall have the following minimal protective features: current limited stall prevention, auto restart after momentary power loss, speed search for starting into rotating motor, anti-windmill w/DC injection before start, phase to phase short circuit protection, and ground fault protection. Ambient service temperature rating of 10 to 40 degrees C, and humidity rating to 95% non-condensing. The VFD shall meet or exceed UL, CSA, IEEE 444 (ANSI-C343), and IEC: 146A.
 5. Factory Mounting: VFD / Disconnects shall be mounted externally on the drive side of the air handling unit fan section. Ensure four feet of the mechanical room clearance in front of the starter for serviceability.
 6. Factory Wiring: VFD / Disconnects shall be wired to fan motor in "liquid tight" conduit and junction boxes. Units with factory mounted controls shall also include power wiring from the starter control transformer to the control system transformers. All binary start-stop signal, and an analog speed signal shall be wired complete from the direct digital controller to the VFD. Wiring methods shall comply with the National Electric Code and NFPA 90.

7. Factory Commissioning: Trained factory personnel shall ensure proper operation of the VFD by a thorough factory test. The VFD shall be properly set for the voltage and full load amps of the actual motor supplied.

PART 3 - EXECUTION

- A. Distribution Equipment shall be installed in complete accordance with the manufacturer's instructions.
- B. Panel boards shall have a typed circuit directory.
 1. Before connection of any apparatus, all insulated wires, cables, and buses will be tested for continuity, proper phasing and freedom from phase or ground faults.
 2. Upon completion of the installation, a complete operating and load test will be conducted for approval. Contractor shall furnish all instruments and personnel required for tests. Tests shall be made in the presence of the Architect. Failures shall be corrected in a manner satisfactory to the Architect.
- C. Upon completion of the electrical installation, Contractor shall restore and patch concrete building, siding, and any other work damaged, defaced, or modified in accomplishing the electrical installation. Patching and painting shall be accomplished so as to match finished materials, paint, or other finish to the satisfaction of the Architect.
- D. The Contractor shall allow for the painting of panel boards, switchgear, or any exposed electrical equipment. All painting shall be done at the direction of the Architect.
- E. All fuse holders shall be permanently marked with the correct fuse rating.

END OF SECTION 26 27 00

SECTION 26 27 26 – WIRING DEVICES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - 1. Single and duplex receptacles, ground-fault circuit interrupters, and integral surge suppression units.
 - 2. Single- and double-pole snap switches and dimmer switches.
 - 3. Device wall plates.
 - 4. Floor service outlets and multioutlet assemblies.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Field quality control test reports.

1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Wiring Devices:
 - a. Hubbell Incorporated; Wiring Device-Kellems
 - b. Leviton Mfg. Company, Inc.
 - c. Pass & Seymour/Legrand; Wiring Devices Div.
 - 2. Multioutlet Assemblies:
 - a. Hubbell Incorporated; Wiring Device-Kellems
 - b. Wiremold Company (The)

2.02 RECEPTACLES

- A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498.
- B. Straight-Blade and Locking Receptacles: Heavy-Duty grade
- C. GFCI Receptacles: Straight blade, feed-through type, Heavy-Duty grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying the UL 498 and UL 943. Design units for installation in a 2-3/4-inch- deep outlet box without an adapter.

2.03 PENDANT CORD/CONNECTOR DEVICES

- A. Description: Matching, locking-type plug and receptacle body connector, NEMA WD 6, Configurations L5-20P and L5-20R, Heavy-Duty grade.
 - 1. Body: Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.
 - 2. External Cable Grip:

2.04 SWITCHES

- A. Single- and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20.
- B. Snap Switches: Heavy-Duty grade, quiet type.
- C. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible frequency and EMI/RFI filters.
 - 1. Control: Continuously adjustable slider; with single-pole or three-way switching to suit connections.
 - 2. Incandescent Lamp Dimmers: Modular, 120V, 60 Hz with continuously adjustable slider; single-pole with EMI/RFI filter to eliminate interference; and 5-inch wire connecting leads.
 - 3. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 1 percent of full brightness.

2.05 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
 - 2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
 - 3. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations".

2.06 FINISHES

- A. Color:
 - 1. Wiring Devices Connected to Power System: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install devices and assemblies level, plumb, and square with building lines.
- B. Install wall dimmers to achieve indicated rating after derating for ganging.
- C. Install unshared neutral conductors on line and load side of dimmers.
- D. Arrangement of Devices: Unless otherwise indicated, mount flush with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
- E. Remove wall plates and protect devices and assemblies during painting.
- F. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.02 IDENTIFICATION

- A. Comply with Division 16 Section "Electrical Identification".
 - 1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing on face of plate, and durable wire markers or tags inside outlet boxes.

3.03 CONNECTIONS

- A. Ground equipment according to Division 16 Section "Grounding and Bonding".
- B. Connect wiring according to Division 16 Section "Conductors and Cables".

3.04 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
 - 2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
- B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION 26 27 26

SECTION 26 51 00 – INTERIOR LIGHTING

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Interior lighting fixtures with lamps and ballasts.
 - 2. Lighting fixtures mounted on exterior building surfaces.
 - 3. Emergency lighting units.
 - 4. Exit signs.
 - 5. Accessories

1.02 SUBMITTALS

- A. Product Data: For each type of lighting fixture scheduled, arranged in order of fixture designation. Include data on features, accessories, and finishes.
- B. Shop Drawings: Show details of non-standard or custom fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.
 - 1. Include wiring diagrams.
- C. Product Certifications: For each type of ballast for dimmer-controlled fixtures, signed by product manufacturer.
- D. Operation and maintenance data.

1.02 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.
- C. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Products: Subject to compliance with requirements, provide one of the products specified.

2.02 LIGHTING FIXTURES

- A. See Light Fixture Schedule on the drawings.

2.03 FLOURESCENT LAMP BALLASTS

- A. Description: Include the following features, unless otherwise indicated.
 - 1. Designed for type and quantity of lamps indicated at full light output except for emergency lamps powered by in-fixture battery-packs.
- B. Electronic ballasts for linear lamps shall include the following features, unless otherwise indicated:
 - 1. Comply with NEMA C82.11
 - 2. Ballast Type: Rapid start, unless otherwise indicated.

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3. Sound Rating: A
 4. Total harmonic distortion rating of less than 10 percent according to NEMA C82.11
 5. Transient Voltage Protection: IEEE C62.41, Category A
 6. Operating Frequency: 20kHz or higher.
- C. Ballasts for compact lamps in recessed fixtures shall have the following features, unless otherwise indicated:
1. Type: Electronic
 2. Power Factor: 90 percent, minimum.
 3. Flicker: less than 5 percent
 4. Lamp end-of-life detection and shutdown circuit.
 5. Transient Protection: Comply with IEEE C62.41 for Category A1 locations.
- D. Ballasts for compact lamps in non-recessed fixtures shall have the following features, unless otherwise indicated:
1. Power Factor: 90 percent, minimum
 2. Ballast Coil Temperature: 65°C, maximum
 3. Transient Protection: Comply with IEEE C62.41 for Category A1 locations.
- E. Ballasts for dimmer-controlled fixtures shall comply with general and fixture-related requirements above for electronic ballasts and the following features:
1. Dimming Range: 100 to 1 percent of rated lamp lumens.
 2. Ballast Input Watts: Can be reduced to 20 percent of normal.
 3. Compatibility: Certified by manufacturer for use with specific dimming system indicated.

2.04 EXIT SIGNS

- A. General: Comply with UL 924; for sign colors and lettering size, comply with authorities having jurisdiction.
- B. Internally Lighted Signs:
- C. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
1. Battery: Sealed, maintenance-free, nickel-cadmium type with special warranty.
 2. Charger: Fully automatic, solid-state type with sealed transfer relay.
 3. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of normal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

2.05 EMERGENCY LIGHTING UNITS

- A. General: Self-contained units complying with UL 924.
1. Battery: Sealed, maintenance-free, lead-acid type with minimum 10-year nominal life and special warranty.
 2. Charger: Fully automatic, solid-state type with sealed transfer relay.
 3. Operation: Relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 4. Wire Guard: Where indicated, heavy-chrome-plated wire guard protects lamp heads or fixtures.
 5. Integral Time-Delay Relay: Holds unit on for fixed interval when power is restored after an outage; time delay permits high-intensity-discharge lamps to restrike and develop adequate output.

2.06 FLUORESCENT EMERGENCY LIGHTING FIXTURES

- A. Internal Type: Self-contained, modular, battery-inverter unit factory mounted within fixture body. Comply with UL 924.

1. Emergency Connection: Operate one or two fluorescent lamps continuously at a minimum of 1100 lumens total output. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
2. Night Light Connection: Operate one fluorescent lamp continuously.
3. Test Switch and Light-Emitting-Diode Indicator Light: Visible and accessible.
4. Battery: Sealed, maintenance-free, nickel-cadmium type with minimum seven-year nominal life.
5. Charger: Fully automatic, solid-state, constant-current type.

2.07 FLUORESCENT LAMPS

- A. Low-Mercury Lamps: Comply with Federal toxic characteristic leaching procedure test, and yield less than 0.2 mg of mercury per liter, when tested according to NEMA LL 1.
- B. T8 rapid-start low-mercury lamps, rated 32 W maximum, 2900 initial lumens (minimum), CRI of 75 (minimum), color temperature of 3500 K, and average rated life of 20,000 hours, unless otherwise indicated.
- C. Compact Fluorescent Lamps: CRI 80 (minimum), color temperature 3500, average rated life of 10,000 hours at 3 hours operation per start, unless otherwise indicated.
 1. T4, Twin Tube: Rated 5 W, 250 initial lumens (minimum)
 2. T4, Twin Tube: Rate 7 W, 400 initial lumens (minimum)
 3. T4, Twin Tube: Rate 9 W, 600 initial lumens (minimum)
 4. T4, Twin Tube: Rate 13 W, 825 initial lumens (minimum)
 5. T4, Double-Twin Tube: Rated 13 W, 900 initial lumens (minimum)
 6. T4, Double-Twin Tube: Rated 18 W, 1200 initial lumens (minimum)
 7. T4, Double-Twin Tube: Rated 26 W, 1800 initial lumens (minimum)

2.08 FIXTURE SUPPORT COMPONENTS

- A. Comply with Division 16 Section "Basic Electrical Materials and Methods" for channel- and angle-iron supports and non-metallic channel and angle supports, unless otherwise indicated.
- B. Single-Stem Hangers: ½ -inch
- C. Twin-Stem Hangers: Two, ½-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.
- D. Wires: ASTM A 641/A641M, Class 3, soft temper, zinc-coated, 12 gage.
- E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.
- F. Rod Hangers: 3/16-inch minimum diameter, cadmium plated, threaded steel rod.
- G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
- B. Support for Fixtures in or on Grid-Type Suspended Ceilings: Use grid for support.
 1. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than 6 inches from fixture corners.
 2. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
 3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.

4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.
- C. Suspended Fixture Support: As follows:
1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
- D. Adjust aimable fixtures to provide required light intensities.

END OF SECTION 26 51 00

SECTION 26 51 19 - LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior solid-state luminaires that use LED technology.
 - 2. Lighting fixture supports.
- B. Related Requirements:
 - 1. Section 26 09 23 "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.2 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, arranged by designation.
- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of luminaire.
- B. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

- B. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

- 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. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.
- C. Recessed Fixtures: Comply with NEMA LE 4.
- D. CRI of minimum 80. CCT of 3500 K.
- E. Rated lamp life of 50,000 hours.
- F. Lamps dimmable from 100 percent to 0 percent of maximum light output.
- G. Internal driver.
- H. Nominal Operating Voltage: 120 V ac.
 - 1. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
- I. Housings:
 - 1. Extruded-aluminum housing and heat sink.

2.2 DOWNLIGHT

- A. Minimum 1,000 lumens. Minimum allowable efficacy of 80 lumens per watt.
- B. Universal mounting bracket.
- C. Integral junction box with conduit fittings.

2.3 RECESSED LINEAR

- A. Minimum 2,000 lumens. Minimum allowable efficacy of 95 lumens per watt.
- B. Integral junction box with conduit fittings.

2.4 STRIP LIGHT

- A. Minimum 750 lumens. Minimum allowable efficacy of 95 lumens per watt.
- B. Integral junction box with conduit fittings.

2.5 SURFACE MOUNT, LINEAR

- A. Minimum 750 lumens. Minimum allowable efficacy of 95 lumens per watt.
- B. Integral junction box with conduit fittings.

2.6 SUSPENDED, LINEAR

- A. Minimum 2000 lumens. Minimum allowable efficacy of 95 lumens per watt.

2.7 MATERIALS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging
- B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- C. Diffusers, and Globes:
 - 1. Tempered Fresnel glass, prismatic glass, diffuse glass, clear glass, prismatic acrylic, or clear, UV-stabilized acrylic, as shown on Drawings.
 - 2. Acrylic: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - 3. Glass: Annealed crystal glass unless otherwise indicated.
 - 4. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
- D. Housings:
 - 1. Extruded-aluminum housing and heat sink.

2.8 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.9 LUMINAIRE SUPPORT COMPONENTS

- A. Comply with requirements in Section 16073 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 gage.
- D. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Supports: Sized and rated for luminaire weight.
- D. Flush-Mounted Luminaire Support: Secured to outlet box.
- E. Wall-Mounted Luminaire Support:
 - 1. Attached to structural members in walls or Attached to a minimum 20 gauge backing plate attached to wall

- structural members.
 - 2. Do not attach luminaires directly to gypsum board.
- F. Suspended Luminaire Support:
 - 1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
 - 2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
 - 3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and tubing or rod and wire support for safety cable for suspension for each unit length of luminaire chassis, including one at each end.
 - 4. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.
- G. Ceiling-Grid-Mounted Luminaires:
 - 1. Secure to any required outlet box.
 - 2. Secure luminaire using approved fasteners in a minimum of four locations, spaced near corners of luminaire. Support with tie wires at two locations.
- H. Comply with requirements in Section 16120 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.
- I. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 16075 "Identification for Electrical Systems."

3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 26 51 19

SECTION 26 52 13 – EMERGENCY AND EXIT LIGHTING

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. Emergency lighting.
 - 2. Exit signs.
 - 3. Materials.
 - 4. Luminaire support components.

1.03 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Emergency Lighting Unit: A lighting unit with internal or external emergency battery powered supply and the means for controlling and charging the battery and unit operation.
- D. Fixture: See "Luminaire" Paragraph.
- E. Lumen: Measured output of lamp and luminaire, or both.
- F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of emergency lighting unit, exit sign, and emergency lighting support.
 - 1. Include data on features, accessories, and finishes.
 - 2. Include physical description of the unit and dimensions.
 - 3. Battery and charger for light units.
 - 4. Include life, output of luminaire (lumens, CCT, and CRI), and energy-efficiency data.
 - 5. Include photometric data and adjustment factors based on laboratory tests, complying with IES LM-45, for each luminaire type.
 - a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Product Schedule:
 - 1. For emergency lighting units. Use same designations indicated on Drawings.
 - 2. For exit signs. Use same designations indicated on Drawings.

1.05 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in emergency, operation, and maintenance manuals.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.07 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two year(s) from date of Substantial Completion.
- B. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Emergency Power Unit Batteries: Five years from date of Substantial Completion. Full warranty shall apply for first year and prorated warranty for the remaining four years.
 - 2. Warranty Period for Self-Powered Exit Sign Batteries: Five years from date of Substantial Completion. Full warranty shall apply for first year and prorated warranty for the remaining six years.

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS FOR EMERGENCY LIGHTING

- 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. NRTL Compliance: Fabricate and label emergency lighting units, exit signs, and batteries to comply with UL 924.
- C. Comply with NFPA 70 and NFPA 101.
- D. Internal Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body.
 - 1. Emergency Connection: Operate lamp(s) continuously at an output of 1100 lumens each upon loss of normal power. Connect unswitched circuit to battery- inverter unit and switched circuit to luminaire ballast.
 - 2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 - 3. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Ambient Temperature: Less than 0° F or exceeding 104° F, with an average value exceeding 95° F over a 24-hour period.
 - b. Ambient Storage Temperature: Not less than minus 4° F and not exceeding 140° F.
 - c. Humidity: More than 95 percent (condensing).
 - d. Altitude: Exceeding 3300 feet.
 - 4. Test Push-Button and Indicator Light: Visible and accessible without opening luminaire or entering ceiling space.
 - a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
 - b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
 - 5. Battery: Sealed, maintenance-free, nickel-cadmium type.
 - 6. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.

2.02 EMERGENCY LIGHTING

- A. General Requirements for Emergency Lighting Units: Self-contained units.
- B. Emergency Luminaires:
 - 1. Emergency Luminaires: as indicated on Lighting Fixture Schedule on plans and Drawings, with the following additional features:
 - a. Operating at nominal voltage of 120 V ac.
 - b. Internal emergency power unit.
 - c. Rated for installation in damp locations, and for sealed and gasketed luminaires in wet locations.
- C. Remote Emergency Lighting Units:
 - 1. Emergency Lighting Unit: as indicated on Lighting Fixture Schedule and Drawings.
 - 2. Operating at nominal voltage of 120 V ac.
 - 3. Wall with universal junction box adaptor.
 - 4. UV stable thermoplastic housing, rated for damp locations.
 - 5. Two LED lamp heads.
 - 6. External emergency power unit.

2.03 EXIT SIGNS

- A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.
- B. Internally Lighted Signs:
 - 1. Operating at nominal voltage of 120 V ac.
 - 2. Lamps for AC Operation:
 - a. LEDs; 50,000 hours minimum rated lamp life.
 - 3. Self-Powered Exit Signs (Battery Type): Internal emergency power unit.
 - 4. Master/Remote Sign Configurations:
 - a. Master Unit: Comply with requirements above for self-powered exit signs and provide additional capacity in LED power supply battery for power connection to remote unit.
 - b. Remote Unit: Comply with requirements above for self-powered exit signs, except omit power supply, battery, and test features. Arrange to receive full power requirements from master unit. Connect for testing concurrently with master unit as a unified system.

2.04 MATERIALS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.
- B. Doors, Frames, and Other Internal Access:
 - 1. Smooth operating, free of light leakage under operating conditions.
 - 2. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally.
- C. Housings:
 - 1. Extruded aluminum housing.

2.05 METAL FINISHES

- A. 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.

2.06 LUMINAIRE SUPPORT COMPONENTS

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Support Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of luminaires.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Examine walls, floors, roofs, and ceilings for suitable conditions where emergency lighting luminaires will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Supports:
 - 1. Sized and rated for luminaire and emergency power unit weight.
 - 2. Able to maintain luminaire position when testing emergency power unit.
 - 3. Provide support for luminaire and emergency power unit without causing deflection of ceiling or wall.
 - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire and emergency power unit weight and vertical force of 400 percent of luminaire weight.
- D. Wall-Mounted Luminaire Support:
 - 1. Attached to structural members in walls.
 - 2. Do not attach luminaires directly to gypsum board.
- E. Ceiling Grid Mounted Luminaires:
 - 1. Secure to any required outlet box.
 - 2. Secure emergency power unit using approved fasteners in a minimum of four locations, spaced near corners of emergency power unit.
 - 3. Use approved devices and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

3.03 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.04 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:

1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

3.05 ADJUSTING

- A. Adjustments: Within 12 months of date of Substantial Completion, provide on-site visit to do the following:
 1. Inspect all luminaires. Replace emergency power units, batteries, signs, or luminaires that are defective.
 - a. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 2. Conduct short-duration tests on all emergency lighting.

END OF SECTION 26 52 13

SECTION 31 00 00 – EARTHWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This section is intended for earthwork that has to be accomplished after Demolition, if any, has been accomplished.
- B. This Section includes the following:
 - 1. Preparing and grading sub-grades for slabs-on-grade, walks, pavements, and landscaping.
 - 2. Drainage and moisture-control fill course for slabs-on-grade.
 - 3. Subbase course for walks and pavements.
 - 4. Subsurface drainage backfill for walls and trenches.
 - 5. Excavating and backfilling for underground mechanical and electrical utilities and appurtenances.
 - 6. Concrete encasings, cradles, and appurtenances for utility systems.

1.03 DEFINITIONS

- A. Excavation Consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer between the sub-grade and base course in a paving system or the layer placed between the sub-grade and surface of a pavement or walk.
- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- F. Drainage Fill: Course of washed granular material supporting slab-on-grade placed to cut off upward capillary flow of pore water.
- G. Unauthorized excavation: consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- I. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.04 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specifications Sections.
- B. Test Reports: In addition to test reports required under field quality control, submit the following:
 - 1. Laboratory analysis of each soil material proposed for fill and backfill from on-site and borrow sources.
 - 2. One optimum moisture-maximum density curve for each soil material.

1.05 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Testing and Inspection Service: Owner shall employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

1.06 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt existing utilities servicing facilities occupied by the Owner or others except when permitted in writing by the Architect and then only after acceptable temporary utility services have been provided. Coordinate all earthwork with mechanical and electrical work.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site.
- B. Satisfactory Soil Materials: Structural clay fill to be used to bring areas up to design grade for pavement sections shall consist of low-plasticity clay soils. The structural clay fill should have a liquid limit of less than 40 (preferably less than 35) and a plasticity index between 10 and 20. Structural clay fill should be free of organics and deleterious materials and have an effective clod diameter of 3 inches or less.
- C. Backfill and Fill Materials: Satisfactory soil materials.
- D. Engineered Fill: Subbase or base materials.
- E. Bedding Material: Subbase or base materials with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 8 sieve.
- G. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2 inch sieve and 0 to 5 percent passing a NO. 50 sieve.

2.02 ACCESSORIES

- A. Warning Tape: Acid-and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick minimum, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 2'-6" deep.
 - 1. Tape Colors: Provide tape colors to utilities as follows:
 - a. Red: Electric
 - b. Yellow: Gas, oil, steam, and dangerous materials.
 - c. Orange: Telephone and other communications.
 - d. Blue: Water systems.
 - e. Green: Sewer systems.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operators.

- B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.02 DEWATERING

- A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.03 EXCAVATION

- A. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

3.04 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

3.05 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.06 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.
- B. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- C. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
- D. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduit. Remove stones and sharp objects to avoid point loading.

3.07 APPROVAL OF SUB-GRADE

- A. Notify Architect when excavations have reached required sub-grade.
- B. When Architect determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.
- D. Reconstruct sub-grades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Architect.

3.08 STORAGE OF SOIL MATERIALS

There will be no storage of soil materials on site.

3.09 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:

1. Acceptance of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Testing, inspecting, and approval of underground utilities.
4. Concrete form work removal.
5. Removal of trash and debris from excavation.
6. Removal of temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.10 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.
- C. Provide 4-inch-thick concrete base slab support for piping or conduit less than 2'-6" below surface of roadways. After installation and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- D. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
- E. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- F. Coordinate backfilling with utilities testing.
- G. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
- H. Place and compact final backfill of satisfactory soil material to final sub-grade.
- I. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.11 FILL

- A. Once the final cut grade is obtained, the exposed subgrade shall be proof-rolled with a fully loaded dump truck or an equivalent heavy, wheeled vehicle to identify soft or weak zones. At least two complete passes shall be made over the area. The second pass is to be made perpendicular to the first pass. Weak or soft materials observed during proof-rolling shall be removed and replaced with properly compacted structural clay fill.
- B. When sub-grade or existing ground surface to receive fill has a density of less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and re-compact to required density.
- C. Place fill material in layers to required elevations for each location listed below.
- D. Under grass, use satisfactory excavated or borrow soil material.
- E. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrow soil material.
- F. Under steps and ramps, use subbase material.

3.12 MOISTURE CONTROL

- A. Uniformly moisten or aerate sub-grade and each subsequent fill or backfill layer before compaction to within 1 percent dry and 3 percent wet of optimum moisture content.

- B. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- C. Remove and replace or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.
- D. Stockpile or spread and dry removed wet satisfactory soil material.

3.13 COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than 95 percentage of maximum dry density according to ASTM D 698 (Standard Proctor):

3.14 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Provide a smooth transition between existing adjacent grades and new grades.
- B. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- C. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish sub-grades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
 - 2. Walks: Plus or minus 0.10 foot.
 - 3. Pavements: Plus or minus ½ inch.

3.15 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place subbase course material on prepared sub-grades. Place base course material over sub-bases to pavements.
- B. Compact subbase and base courses at optimum moisture content to required grades. Lines, cross sections and thickness to not less than 95 percent of ASTM C 4254 relative density.
- C. Shape subbase and base to required crown elevations and cross-slope grades.
- D. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
- E. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.16 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test each sub-grade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
- B. Perform field in-place density tests to confirm the in-place density as recommended by the Geotechnical Consultant approved by the Architect.
- C. Paved Areas: At each compacted fill and backfill layer, perform at least one density test for every 10,000 sq. ft. or less of paved area, but in no case fewer than three tests.

- D. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 500 feet or less of trench, when outside of areas to be paved.
- E. Where trenches cross areas to be paved, a test shall be performed at each pavement crossing. Where trenches are under paved areas, one test for every 150 linear feet of trench shall be performed.
- F. When testing agency reports that sub-grades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, re-compact and retest until required density is obtained.

3.17 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
- C. Scarify or remove and replace material to depth directed by the Architect; reshape and re-compact at optimum moisture content to the required density.
- D. Settling: Where settling occurs during the Project correction period, removed finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
- E. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIAL

Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 31 00 00

KING ARCHITECTS, INC

SECTION 31 10 00

SECTION 31 00 00 – SITE CLEARING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01, apply to this Section.
- B. Refer to Document 00 21 13, Instructions to Bidders, for substitution of materials and products.
- C. Addenda issued during the bidding period that affect this section of the specifications.

1.2 SUMMARY

- A. Section includes protecting existing vegetation to remain, removing existing vegetation, clearing and grubbing, and stripping and stockpiling topsoil.
- B. Related Sections:
 - 1. Section 01 50 00, Temporary Facilities and Controls
 - 2. Section 01 57 19, Temporary Environmental Controls
 - 3. Section 31 00 00, Earthwork

1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project Site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious and black or a darker shade of brown, gray or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials or other non-soil materials.
- D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project Site.

1.5 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or videotape.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks and other adjacent occupied or used facilities during site clearing operations.
 - 1. Do not close or obstruct streets, walks or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternated routed around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises.
- C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion and sedimentation control are in place.
- E. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation of other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- F. Do not direct vehicle or equipment exhaust towards protection zones.
- G. Prohibit heat sources, flames, ignition sources and smoking within or near protection zones.
- H. Soil Stripping, Handling and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 00 00, Earthwork. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Protect existing site improvements to remain from damage during construction. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Comply with the requirements of Section 01 50 00, Temporary Facilities and Control and Section 01 57 19, Temporary Environmental Controls.

3.3 EXISTING UTILITIES

- A. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupies by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services necessary to serve the Owner's operations:

1. Notify the Architect not less than 10 days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip vegetation, topsoil, existing pavement/flatwork, and other debris/unsuitable material to depth necessary to prevent intermingling with underlying subsoil or other waste materials, but in no case less than 6 inches.
 1. Remove subsoil and non-soil materials from topsoil including clay lumps, gravel, and other objects more than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 1. Limit height of topsoil within protection zones.
 2. Do not stockpile topsoil within protection zones.
 3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below- grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 31 10 00

SECTION 31 31 16 – TERMITE CONTROL

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide soil treatment for termite control.

1.02 QUALITY ASSURANCE

- A. Engage a professional pest control operator, licensed in accordance with regulation of governing authorities.

1.03 RESTRICTIONS

- A. Do not apply soil treatment solution until excavating, filling, and grading operations. To ensure penetration, do not apply soil treatment to frozen or excessively wet soils or during inclement weather. Comply with handling and application instruction of the soil toxicant manufacturer.

1.04 SPECIFIC PRODUCT WARRANTY

- A. Furnish written warranty certifying that applied soil poisoning treatment will prevent infestation of termites, and that if subterranean termite activity is discovered during the five (5) year warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.

PART 2 – PRODUCTS

2.01 SOIL TREATMENT SOLUTION

- A. Use an emulsible concentrate insecticide for dilution with water, specially formulated to prevent infestation by termites. Fuel oil will not be permitted as a diluent. Provide a working solution of one of the following chemical elements and concentrations:
 - 1. Aldrin, 0.5% in water emulsion.
 - 2. Dieldrin, 0.5% in water emulsion.
 - 3. Heptachlor, 0.5% in water emulsion.

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

- A. Remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen and level soils to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placement of compacted fill under slabs, if recommended by toxicant manufacturer.

3.02 APPLICATION RATES

- A. Apply soil treatment solution as follows:
 - 1. Under slab-on-grade structures treat soil before concrete slabs are placed using either power sprayer or tank-type garden sprayer.
 - a. Apply 4 gallons of chemical solution per 10 lin.ft. to soil in critical areas under slab, including entire inside perimeter inside of foundation walls, along both sides of interior partition wall, around plumbing pipes and electric conduit penetrating slab, and around interior column footers.

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- b. Apply one gallon of chemical solution per 10 sq. ft. as an overall treatment under slab and attachment slab areas where fill is soil or unwashed gravel. Apply 1-1/2 gallons of chemical solution to areas where fill is washed gravel or other coarse absorbent material.
 - c. Apply 4 gallons of chemical solution per 10 lin. ft. of trench, for each foot of depth from grade to footing, along outside edge of building. Dig a trench 6" and 8" wide along outside of foundation to a depth of not less than 12". Punch holes to top of footing at not more than 12" o.c. and apply chemical solution. Mix chemical solution with the soil as it is being replaced in trench.
 - 2. Under crawlspace and basement structures, treat soil along exterior and interior walls of foundations with shallow footings as specified above for exterior of slab-on-grade structures. Treat soils under or around crawl-space structures as follows:
 - a. Apply 4 gallons of chemical solution per 10 lin. ft. of trench along outside of foundation walls, along both sides of interior partitions, and around piers and plumbing. Do not apply an overall treatment in crawlspaces.
 - b. Apply 4 gallons of chemical solution per 10 lin. ft. of trench, for each foot of depth from grade to footing, along outside of foundation walls, including part beneath entrance platform porches, etc.
 - c. Apply 4 gallons of chemical solution per 10 lin. ft. along the inside and outside of foundation walls of porches.
 - d. Apply one gallon per 10 sq.ft. of soil surface as an overall treatment, only where attached concrete platform and porches are on fill or ground.
 - B. At hollow masonry foundations or grade beams, treat voids at rate of 2 gallons per 10 lin. ft. poured directly into the hollow spaces.
 - C. At expansion joints, control joints, and areas where slabs will be penetrated, at rate of 4 gal. per 10 lin. ft. of penetration.
 - D. Allow not less than 12 hours for drying after application before beginning concrete placement or other construction activities.
 - E. Post signs in areas of application warning workers that soil poisoning has been applied. Remove signs when areas covered by other construction.
 - F. Reapply soil treatment solution to areas disturbed by subsequent excavation or other construction activities following application.

END OF SECTION 31 31 16

SECTION 32 13 13 – CONCRETE PAVING AND RELATED ITEMS

PART 1 - GENERAL

1.01 SCOPE

- A. This section of the specifications, together with the Contract Documents and the applicable design drawings, covers portland cement concrete paving, sidewalks, tracks and related work as specified herein and required by the drawings.
- B. Work shall comply with OSHA requirements and local codes.
- C. Generally, required items of work include:
 - 1. Portland cement concrete paving and parking areas.
 - 2. Portland cement concrete sidewalk areas.
 - 3. Cast-in-place concrete curbs in conjunction with concrete paving.

1.02 WORK NOT INCLUDED IN THIS SECTION

- A. The following are covered under other sections of the specifications:
 - 1. Preparation and compaction of sub-grades for paved areas, construction of drainage ditches, furnishing and installing culverts. *See Section 02355.*
 - 2. Concrete and cement work associated with buildings. *See Section 03110.*

1.03 PROTECTION

- A. Provide, erect and maintain safeguards for protection of the public, construction personnel, equipment and materials. Protect finished construction to prevent marring and defacement. Remove safeguards on completion of work.

1.04 PAVING BASE

- A. Inspect base before starting paving work, and report any unsatisfactory conditions to the Owner's Representative, so that he may arrange for corrections by those responsible. Thereafter, it will be the Paving Contractor's responsibility to ensure that required concrete thicknesses are met and design grades maintained.

1.05 COOPERATION

- A. Cooperate with others requiring ingress and egress across areas to be paved so that production and progress of the project, as a whole, is neither interrupted no delayed.

1.06 LOCATIONS AND ELEVATIONS

- A. Preserve principal base lines, bench marks, elevations, etc., as shown on drawings and established in the field. Set and maintain supplementary grades for use by equipment operators.

1.07 CONSTRUCTION IN GENERAL

- A. Paving work shall conform to appropriate provisions of the Department of Transportation, State of Louisiana, Standard Specifications except as otherwise specified herein. References therein to method of measurement and basis of payment do not apply.
- B. Depth of concrete and construction details shall be as required by the drawings.
- C. Curing shall start immediately after final finishing.

1.08 PORTLAND CEMENT CONCRETE PAVING

- A. Conform to the referenced Highway Specifications, as applicable, with exceptions and choices specified herein.

- B. Concrete: *3,000 psi* minimum compressive strength at *28 days*.
- C. Portland Cement: *Type I or Type II ASTM C150-83a*.
- D. Air Entrainment: Concrete shall contain 6 percent plus or minus 2 percent entrained air introduced by admixture conforming to *ASTM C260-86* and as defined in the referenced Highway Specifications.
- E. Finish with non-slip broom finish per specification *section 03110*.

1.09 WELDED WIRE FABRIC REINFORCEMENT

- A. Smooth wire fabric conforming to *ASTM A185-79* or *AASHTO M55*. Use flat mats instead of rolls of fabric and take care to prevent curling of the corners. Lap edges *6 inches* minimum as ends and slides.
- B. Securely tie welded wire fabric to high chair supports in proper position where concrete is cast full thickness as one time.
- C. In lieu of high chairs, screed the concrete to level of mesh; set the mesh reinforcing on fresh concrete and place the remaining concrete as soon as possible, without disturbing the position of the mesh and avoiding cold joints.
- D. Setting of welded wire fabric on grade and subsequent lifting or "*hooking it up*" through the plastic concrete will not be permitted.

1.10 JOINTS

- A. Expansion/Isolation Joint: Conform to the reference Highway Specifications, for asphalt board. Use this at locations where expansion/isolation joints are indicated on the project design drawings.
- B. Joint Sealant: Conform to the referenced Highway Specifications, for two component, synthetic polymer, cold-pourable, self-leveling joint sealing material. Use this, as detailed on the drawings, at control joints and elsewhere as shown on the project design drawings.

1.11 CONCRETE SIDEWALKS

- A. Conform to the referenced Highway Specifications, using *Class B* concrete, air entrained, and as specified herein for concrete paving.
- B. Finish with non-slip broom finish per specification *section 03110*.

1.12 CAST-IN-PLACE CONCRETE CURBS

- A. Conform to the referenced Highway Specifications, using *Class B* concrete, air-entrained, and as specified herein for concrete paving.

1.13 TRANSITIONS

- A. Create all necessary transitions and warping to existing paving, drains, and other installations, as may be required to complete concrete paving in a workmanlike manner.

1.14 INSPECTION AND TESTS

- A. The contractor will engage and pay for the services of a testing laboratory, which shall be subject to the approval of the Owner, to make tests as specified herein as the work progresses and submit reports to the Owner.
- B. Prepare four cylinders and four beam molds for each *100 yard* of concrete or part thereof used in one day's placing of concrete. When *Type I or Type II* cement is used, test one cylinder and beam at *7 days* and *two at 28 days* and the fourth when directed.

- C. Make and cure cylinders and beam molds according to *ASTM C31-87* and send to approved testing laboratory for testing according to *ASTM C39-86* and *C78-84*.
- D. In the event that the concrete in the paving, as indicated by the tests specified herein or in the opinion of the Owner after careful inspection, is below the strengths specified herein, the Owner's Representative will order additional tests. Drilled cores and/or sawed beams shall be obtained from the questionable portions of the work in accordance with *ASTM C42-84a* and tested in accordance with *C78-84*. The cost of drilled core or sawed beam testing will be borne by the Owner. Should the results of the above tests show defective work, all defective work shall be removed and replaced to specified standards by the Paving Contractor without cost to the owner.
- E. Make slump tests twice daily or as required in accordance with *ASTM C143-78* for checking consistency of concrete mixture. Slump shall be 3 inch maximum.
- F. Air content tests for air-entrained concrete shall be made for each set of test cylinders and at such other times as deemed necessary by the Owner's Representative. Tests shall conform to *ASTM C231-82*.

1.15 FINAL CLEARING UP

- A. At completion and before acceptance of this work, clear away all equipment, barricades, surplus materials and rubbish, leaving site in a neat, presentable condition acceptable to the Owner's Representative.

1.16 TRAFFIC AND ZONE MARKING

- A. Painting of Lane Markers, parking areas, curbs and other markings to be in accordance with the referenced highway specifications and as noted on the drawings. Surface preparation, application, protection and curing shall be in strict accordance with material manufacturer's instructions. Material used shall be specifically formulated and produced for traffic zone marking on the pavement specified here-in.

END OF SECTION 32 13 13

SECTION 32 16 00 – CURBS, GUTTERS, SIDEWALKS AND DRIVEWAYS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This work consists of the construction of concrete sidewalks, driveways, parking areas, curbs and gutters, small slabs, head walls, embedment for posts, foundations for light standards and sign structures and other miscellaneous formed and unformed concrete in accordance with these specifications and in reasonably close conformity with the lines, grades and dimensions shown on the plans or established by the Engineer.

PART 2 - MATERIALS

2.01 PORTLAND CEMENT CONCRETE

- A. The concrete shall have a minimum compressive strength at twenty-eight (28) days as shown on the plans when tested in accordance with DOTD Designation: TR 230. Concrete shall have a minimum compressive strength of 3,000 psi unless otherwise specified on the plans. Portland cement shall comply with the standard specifications for Portland cement and shall be Type 1.

2.02 PREFORMED JOINT FILLERS

- A. Preformed joint fillers shall be used in joints when specified in accordance with the project and specifications. Unless otherwise specified, the Contractor has the option of using any of these approved preformed fillers. Other preformed fillers may be approved by the Engineer and specified in the project plans or specifications.

2.03 BITUMINOUS TYPE PREFORMED JOINT FILLER

- A. Bituminous preformed expansion joint filler shall consist of bituminous (asphalt or tar) mastic composition, formed and encased between two (2) layers of bituminous impregnated felt. The preformed filler shall conform to ASTM Designation: D 944.

2.04 REDWOOD JOINT FILLER

- A. The boards shall be clear heart redwood. Occasional medium surface checks will be permitted provided the board is free of any defects that will impair its usefulness for the purpose intended. No board of a length less than 6 feet may be used, and the separate pieces shall be held securely to form a straight line. When a section is less than 6 feet is required, no spliced board will be accepted.
- B. The dimensions shall be as specified and a tolerance of +1/16 inch thickness, +1/8 inch depth, and +/-1/4 inch length will be permitted.
- C. The load required to compress the material in an over-dry condition to 50% of its original thickness shall not exceed 1,800 psi.

2.05 PREFORMED CLOSED CELL POLYETHYLENE JOINT FILLER

- A. The joint filler shall be formed by the expansion of polyethylene base resin, extruded as a multicellular, closed cell, homogeneous section of foamed polyethylene. This material shall be used with an adhesive as recommended by the manufacturer. The joint filler and adhesive shall be approved products on the DOTD Qualified Products List. The dimensional requirements for the joint filler shall be as shown on the plans.

2.06 PREFORMED GALVANIZED KEYED JOINT FORMS

- A. The joint form shall be galvanized steel of the dimensions and thickness indicated on the plans or directed by the Engineer. The form shall be shaped such that it forms a tongue and groove joint. The form shall be of sufficient strength to resist the pressure of the concrete without springing.

2.07 POURED JOINT SEALERS

- A. These joint sealers shall be used in sealing joints when specified in accordance with the project plans and specifications. If not specified, the Contractor may use any of the poured joint sealers in Section 1005.02 of the DOTD Standard Specifications for Roads and Bridges. Other sealants may be approved by the Engineer and specified in the project plans or specifications.

2.08 REINFORCING STEEL

- A. Re-enforcing steel for concrete reinforcement shall conform to the following specifications:
- B. Billet-Steel Deformed and Plain Bars, ASTM Designation: A 615
- C. Rail-Steel Deformed and Plain Bars, ASTM Designation A 616
- D. Axle-Steel Deformed and Plain Bars, ASTM Designation A 617
- E. Cold-Drawn Steel Wire, ASTM Designation: A 82, with the following amendment: For material testing over 110,000 psi tensile strength in high strength application such as spirals and ties, the 25% minimum reduction in area shall be reduced 5% for each 10,000 minimum psi increment of tensile strength exceeding 110,000 psi.
- F. Welded Steel Wire Fabric, ASTM Designation: A 185
- G. Number 2 bars need not be deformed and shall conform to Headings 1, 2 or 3 above. Wire conforming to Heading 4 above may be used in lieu of Number 2 bars when furnished in Size W 5

2.09 CURING MATERIALS

- A. Curing materials shall conform to the following:
 - 1. Liquid Membrane - Forming Compounds
 - a. This material shall conform to AASHTO Designation: M 148, except that specimens tested for drying time shall be maintained at a temperature of 100 degrees Fahrenheit, +/-2 degrees Fahrenheit and a relative humidity of 32 +/-2%. When so tested, the membrane-forming compound shall dry to touch in not more than two (2) hours.
 - 2. Burlap Cloth Made from Jute or Kenaf
 - a. This material shall conform to AASHTO Designation: M 182, Class c.
 - 3. Waterproof Paper
 - a. This material shall conform to AASHTO Designation: M 171.
 - 4. White Polyethylene Sheeting
 - a. This material shall conform to AASHTO Designation: M 171.
 - 5. Combined Burlap and White Polyethylene Sheeting
 - a. These materials shall conform to AASHTO Designation: M 171.

2.10 FORMED CONCRETE

- A. Formed concrete shall include those items of construction which are constructed or reinforced concrete and have specified size, shape and dimensions, such as concrete headwalls, slabs and others as shown in the plans or specified by the Engineer. Formed concrete shall be constructed in accordance with these specifications.
- B. Reinforcing steel shall be bent to the shapes shown on the plans. All steel reinforcing shall be placed as near as practicable to the position shown on the plans and firmly held in place during placing of the concrete. When placed in structure, reinforcing steel shall be free from dirt, case rust, loose scale, paint, oil, grease or other foreign material.

- C. Splices of reinforcement shall be staggered as far as possible. Unless shown otherwise on the plans, bars shall be lapped a minimum of 30 bar diameters. Construction joints shall not be made within the limits of the lapped bars.

2.11 UNFORMED CONCRETE

- A. When shown on the plans or specified by the Engineer, unformed concrete shall be used for splash aprons, concrete collars and for other uses other than for patching. The concrete shall have a compressive strength of 3,000 psi at twenty-eight (28) days and shall be unreinforced.

PART 3 - EXCAVATION AND BACKFILL

Excavation shall be made to the required depth and to a width that will permit the installation and bracing of the forms. The subgrade shall be shaped and compacted to a firm, even surface conforming to the section shown on the plans. All soft and yielding material shall be removed and replaced with approved material, at the Contractor's expense, and thoroughly compacted.

Backfill shall be approved material free of grass, weeds and other objectionable material. The backfill material shall be spread in successive layers not exceeding 8 inches loose depth and shall be compacted by an approved method of 95% maximum density, determined in accordance with DOTD Designation: TR 418. When subsurface drainage structures are to be placed under parking areas, curb and gutter, sidewalks, driveways or other formed concrete, the excavation and backfilling for them shall be completed and compacted before the sub-grade is prepared as specified herein.

Excavation and backfill will not be measured as a separate item, but shall be considered as incidental to the work.

3.01 FORMS

- A. Forms shall be of wood or metal and shall extend for the full depth of concrete. All forms shall be straight, clean, and free from warp and of sufficient strength to resist the pressure of the concrete without springing.
- B. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal.
- C. Metal ties or anchorage within the forms shall be so constructed as to permit their removal to a depth of at least 1/2 inch from the face of the structure without damage to the concrete. In case ordinary wire ties are permitted, all wires, upon removal of the forms, shall be cut back at least 1/4 inch from the face of the concrete with chisels or nippers; for green concrete, nippers are necessary. Fittings for metal ties shall be of such design that, upon their removal, cavities which are left will be of the smallest possible size. The cavities shall be filled with cement mortar and the surface left sound, smooth, even and uniform in color. For curbs, a mechanical curb forming machine may be used.

3.02 JOINTS

A. CURBS AND GUTTERS

1. Joints shall be formed in integral curbing to correspond with transverse joints in the pavement slab. All joints shall extend entirely under the curb and gutter section and through the curb and gutter and shall be finished and filled with prescribed filler.
2. All other types of curbing shall be provided with 1/2 inch expansion joints at all drainage structures and at the beginning and end of all curves; the maximum distance between expansion joints shall not exceed 200 feet. pre-molded joint filler shall be placed through the entire cross section of the curb and gutter at all expansion joints. Dummy joints shall be formed at intervals of 15 feet. Dummy joints shall be approximately 1/4 inch wide and shall extend the concrete for at least 1/4 of the depth.

B. SIDEWALKS AND DRIVEWAYS

1. Expansion joints shall be of the dimensions specified and shall be filled with a pre-formed expansion joint filler. Dummy joints shall be formed with a jointing tool or by other acceptable means as directed. The dummy joints shall extend into the concrete for at least 1/4 of the depth and shall be approximately 1.8 inch wide. Unless otherwise specified, the spacing of dummy joints for sidewalks shall be equal to the width of the

walk but not less than 4 feet. A longitudinal dummy joint shall be formed along the centerline of driveways more than 16 feet wide and transverse dummy joints shall be formed in driveways at not more than 16 foot intervals.

2. Construction joints shall be formed around all appurtenances such as manholes, etc., extending into and through the paving. Unless otherwise specified, 1/2 inch preformed expansion joint filler shall be installed in these joints. Expansion joint filler of the thickness indicated shall be installed between concrete paving and any fixed structure such as a building or bridge. The expansion joint filler shall extend for the full depth of the paving.
3. Expansion joint filler for sidewalks shall be 1/2 inch thick and shall be placed at intervals not exceeding 28 feet and at all junctions of new concrete with curbs, existing walks and driveways.

C. PARKING AREAS

1. Construction joints shall be placed concrete parking areas at intervals not to exceed 15 feet in length or width, unless noted otherwise on the plans. The joints shall be tongue and groove joints, formed with a preformed galvanized keyed joint form as specified in Article 2, Paragraph B4 of this section. All construction joints shall be contraction joints except around fixed objects. At all fixed objects, such as buildings, construction joints shall be formed and 1/2 inch preformed joint filler shall be placed in these joints unless otherwise specified. The joint filler shall extend for the full depth of paving. Expansion joints shall be formed as specified and shall be filled with a preformed expansion joint filler.

3.03 DEPOSITING CONCRETE

- A. The sub-grade shall be thoroughly moistened immediately prior to placing concrete. The concrete shall be placed on the prepared sub-grade, struck-off and compacted to the required thickness. All concrete shall be spaded or vibrated sufficiently to eliminate all voids and shall be tamped to bring the mortar to the surface. The surface shall be finished smooth and even with a wooded float. All edges shall be rounded with an approved finishing tool.
- B. For integral type curbing, after the pavement has been struck-off, the curb shall be clamped or otherwise securely fastened in place on the slab form and the additional concrete shall then be deposited and thoroughly tamped. The additional concrete shall be placed within thirty (30) minutes after the pavement slab has been finished and care shall be taken to ensure monolithic construction. The Contractor shall then proceed in accordance with these specifications.
- C. At the contractor's option, integral type curbing may be placed after completion of the pavement, provided dowels are placed in the pavement of the size, type and spacing shown on the plans. No additional cost to the Owner shall result from placing curb by this method.
- D. At the contractor's option, concrete curbing may be placed by slip-form methods. Slip-formed concrete shall be placed with an approved machine designed to spread, vibrate, consolidate and finish the concrete in one (1) pass of the machine in such manner that a minimum of hand finishing will be necessary to provide a dense, homogeneous unit. The sliding forms shall be rigidly held together to prevent spreading of forms, and after passing there shall be no noticeable slumping of concrete. The concrete shall be held at uniform consistency with a 1/2 inch to 2 inch slump unless directed otherwise by the Engineer.

3.04 FINISHING

- A. Forms on curbing shall be removed within twenty-four (24) hours after the concrete has been placed and honeycombed areas and other defects shall be filled with a mortar composed of Portland cement and sand, mixed in the same proportion as provided for the concrete. Plastering will not be permitted on the faces of curbs and all rejected concrete shall be removed and replaced without additional compensation.
- B. On parking areas, sidewalks and driveways, the forms shall remain in place for at least twenty-four (24) hours after placement of the concrete. Defective areas shall be filled in with a mortar composed of Portland cement and sand, mixed in the same proportions as provided for the concrete. The surface of sidewalks and driveways shall be finally brushed in order to leave a slightly rough finish.

- C. The forms shall remain in place for seven (7) days on formed concrete. Defective areas shall be corrected as specified for curb and gutter, sidewalks and driveways.
- D. When a rubbed finish is specified, completed concrete shall be finished by rubbing the exposed surfaces with Carborundum or other abrasive to a smooth surface and to remove all form marks. Non-exposed surfaces shall have the form finish, except that all holes and defects shall be corrected.

3.05 CURING

- A. Concrete shall be cured for at least seventy-two (72) hours. Curing shall be done with the use of white pigmented liquid membrane curing compound or by other approved methods. During the curing period, traffic detrimental to the structure shall not be permitted.

3.06 COLD WEATHER CONCRETING

- A. Unless authorized in writing by the Engineer, mixing and concreting operations shall be discontinued when a descending air temperature in the shade and away from artificial heat reached 40 degrees Fahrenheit, and not resumed until an ascending air temperature in the shade and away from artificial heat reaches 35 degrees Fahrenheit.
- B. If the air temperature is 35 degrees or less at the time of placing concrete, the Engineer may require the water or the aggregates to be heated to not less than 70 degrees Fahrenheit nor more than 150 degrees Fahrenheit. No concrete shall be placed on a frozen subgrade nor shall frozen aggregates be used in the concrete.

3.07 REMOVE AND REPLACE CONCRETE SIDEWALKS AND DRIVEWAYS

- A. The Contractor shall remove sidewalks and driveways where designated on the plans by making a neat sawed joint. The removed concrete shall be removed from the site at no additional cost to Owner.
- B. The sidewalk or driveway shall be replaced to match the finish grade to the original width and thickness. However, in no event shall it be less than 4 inches thick.
- C. Construction of sidewalks and driveways shall conform to this section of the specifications. Wire mesh fabric reinforcing shall be required only where original concrete sidewalks and driveways were reinforced.

3.08 SAWED JOINTS

- A. Where required on the plans or directed by the Engineer, the contractor shall remove pavement, drives and walks by making a neat sawed joint. All work shall be performed with an approved saw and blade. The minimum depth of the saw cut shall be 2 inches unless specified otherwise with 0.125 inches minimum width. Damages to pavement surface designated to remain shall be repaired by the contractor at no cost to the Owner.

END OF SECTION 32 16 00

SECTION 32 92 13 – HYDROMULCH

PART 1 – GENERAL

1.01 SUBMITTALS

- A. Product Data; Hydro Mulch: Manufacturer's specifications and application rate.
- B. Product Data; Erosion Control Blanket: Manufacturer's specifications.

1.02 QUALITY ASSURANCE

- A. Field Examples: Seed samples will be taken by the Director's Representative 30 days before sowing and sent to the New York State Experiment Station, Geneva, NY 14456, for testing. Test analysis will indicate species, purity, percent of germination, and weed content. Results will be sent directly to the Director for acceptance or rejection based on these tests. Pay all expenses incurred for testing.

1.03 DELIVERY STORAGE AND HANDLING

- A. Deliver fertilizer in manufacturer's standard size bags or cartons showing weight, analysis, and the name of the manufacturer. Store as approved by Director's Representative.
- B. Store all seed at the site in a cool dry place as approved by the Director's Representative. Replace any seed damaged during storage.

1.04 SCHEDULING

- A. Time For Seeding: Sow grass seed between April 1st and May 15th or between August 15th and October 1st, except as otherwise approved in writing by the Director.

PART 2 – PRODUCTS

2.01 FERTILIZER

- A. Fertilizer: Mixed commercial fertilizers shall contain total nitrogen, available phosphoric acid and soluble potash in the ratio of 10-6-4 (50% N/UF). 50% of total nitrogen shall be derived from ureaform furnishing a minimum of 3.5% water insoluble nitrogen (3.5% WIN). The balance of the nitrogen shall be present as methylene urea, water soluble urea, nitrate and ammoniacal compounds.
- B. Other fertilizers meeting DOT Specification Section 713-03 Fertilizer can be used.

2.02 SEED

- A. Furnish fresh, clean, new-crop seed mixed in the proportions specified for species and variety and conforming to Federal and State Standards.
- B. Acceptable material in a seed mixture other than pure live seed consists of nonviable seed, chaff, hulls, live seed of crop plants and inert matter. The percentage of weed seed shall not exceed 0.1 percent by weight.
- C. All seed will be rejected if the label or test analysis indicates any of the following contaminants: Timothy, Orchard Grass, Sheep Fescue, Meadow Fescue, Canada Blue Grass, Alta Fescue, Kentucky 31 Fescue, and Bent Grass.
- D. Provide the following seed mixture:

A = Min. Percentage of Germination
B = Min. Purity Percentage
C = Weight Pure Live Seed in Mixture

SEED MIX

Name	Variety	A	B	C
Tall Fescue (Festuca arundinacea)	Alta, Kentucky 13 or an approved equal.	95	---	15
Creeping Red Fescue (Festuca rubra trichophylla)	Ensylva	95	97	20
Kentucky Bluegrass * (Poa pratensis)	Baron, Flying, Glade, or an approved equal.	75	95	25
Perennial Ryegrass ** (Lolium perenne)	Manhattan II, Pennfine, Yorktown II, or an approved equal.	90	95	40

*Approximately equal proportions of 2 or more improved Bluegrass varieties as listed in the Cornell Recommendations for Turfgrass.

**One or more of the improved Ryegrass varieties as listed in the Cornell Recommendations for Turfgrass.

2.03 MULCH

- A. Dry Application, Straw: Stalks of oats, wheat, rye or other approved crops which are free of noxious weeds. Weight shall be based on a 15 percent moisture content.
- B. Hydro Application: Colored wood cellulose fiber product specifically designed for use as a hydro- mechanical applied mulch. Acceptable Product: Conwed Hydro Mulch, Conwed Fibers, 231 4th Street SW, Hickory, NC.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Seed Bed: Scarify soil to a depth of 3 inches in compacted areas. Smooth out unsightly variations, bumps, ridges, and depressions which will hold water. Remove stones, litter, or other objectionable material.
 - 1. Obtain written approval of seed bed from the Director's Representative before commencing seeding operations.

3.02 FERTILIZING

- A. Apply 10-6-4 fertilizer evenly at the rate of 40 pounds per 1000 sq ft or 2 pounds of nitrogen per 1000 sq ft.

3.03 SEEDING

- A. Assume all risks when seed is sowed before approval of seed analysis.
- B. Do not seed when the wind velocity exceeds 5 miles per hour.
- C. Application Rate:
 - 1. Seed Mix: 5 pounds per 1,000 sq. ft..
- D. Dry Application: Sow seed evenly by hand or seed spreader on dry or moderately dry soil.
- E. Hydroseeding:
 - 1. Apply seeding materials with an approved hydroseeder.
 - 2. Fill tank with water and agitate while adding seeding materials. Use sufficient fertilizer, mulch, and seed to obtain the specified application rate. Add seed to the tank after the fertilizer and mulch have been added. Maintain constant agitation to keep contents in homogeneous suspension. Prolonged delays in application or agitation that may be injurious to the seed will be the basis of rejection of material remaining in tank.

3. Distribute uniformly a slurry mixture of water, seed, fertilizer, and mulch at a minimum rate of 57 gallons per 1000 sq ft (2500 gallons per acre). The Director's Representative may order the amount of water increased if distribution of seeding materials is not uniform.

3.04 MULCHING

- A. Dry Application: Within one day after seeding, cover the seeded areas with a uniform blanket of straw mulch at the rate of 100 pounds per 1000 sq ft of seeded area.
- B. Hydro Application: Apply approved mulch in accordance with the manufacturer's written instructions and recommended rates of application.

3.06 LAWN ESTABLISHMENT

- A. Maintain the grass at heights between 2-1/2 inches and 3-1/2 inches and include a minimum of 2 mowings.
- B. Water and protect all seeded areas until final acceptance of the lawn.

3.07 FINAL ACCEPTANCE

- A. Final acceptance of lawn areas will be granted when a uniform stand of acceptable grass is obtained, with a minimum of 95 percent coverage. Portions of the lawn areas may be accepted at various times at the discretion of the Director's Representative.
- B. Unacceptable lawn areas, hydro application: Reseed, fertilize, and mulch at one-half the specified rate, use full water rate.
- C. Once accepted, the Owner will assume all maintenance responsibilities.

END OF SECTION 32 92 13

SECTION 33 10 00 – WATER DISTRIBUTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes water-distribution piping and specialties outside the building for the following:

1. Water services
2. Fire-service mains

1.02 SUBMITTALS

A. Product Data: For the following:

1. Valves and accessories
2. Backflow preventers and assemblies
3. Fire department connections

B. Wiring Diagrams: Power, signal, and control wiring.

C. Field quality-control test reports.

D. Operation and Maintenance Data: For the following:

1. Valves
2. Backflow preventers

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with FM's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.

E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

F. NFPA Compliance:

1. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.04 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.

1.05 COORDINATION

- A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product section:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.02 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

2.03 PIPE AND FITTINGS

- A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.
 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- B. Soft Copper Tube: ASTM B 88, Type L, water tube, annealed temper.
 1. Copper Fittings: ASME B16318, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- C. PVC, AWWA Pipe: AWWA C900, Class 150, with bell end with gasket and spigot end.
 1. Comply with UL 1285 for fire-service mains if indicated.
 2. PVC Fabricated Fittings: AWWA C900, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
 3. PVC Molded Fittings: AWWA C907, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.

2.04 JOINING MATERIALS

- A. Refer to Division 2 Section "Utility Materials" for commonly used joining materials.
- B. Brazing Filler Metals: AWS A5.8, B Cup Series.
- C. Soldering Flux: ASTM B 813, water-flushable type.
- D. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.

2.05 VALVES

- A. UL/FM, Cast-Iron Gate Valves:

1. Manufacturers:
 - a. Central Sprinkler Company
 - b. Crane Co.; Crane Valve Group; Stockham Div.
 - c. Grinnell Corporation; Mueller Co.; Water Products Div.
 - d. McWane, Inc.; Kennedy Valve Div.
 - e. McWane, Inc.; M & H Valve Company Div.
- B. UL/FM, Nonrising-Stem Gate Valves: UL 262, FM-approved iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
 1. Minimum Working Pressure: 175psig.
 2. End Connections: Flanged

2.06 VALVE ACCESSORIES AND SPECIALTIES

- A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER", bottom section with base of size to fit over valve, and approximately 5-inch diameter barrel.
 1. Operating Wrenches: Steel tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
- B. Vertical-Type Indicator Posts: UL 789, FM-approved, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

2.07 BACKFLOW-PREVENTION DEVICES

- A. Manufacturers:
 1. Ames Co., Inc.
 2. Cla-Val Co.
 3. Grinnell Corporation; Mueller Co.; Hersey Meters
 4. Watts Industries, Inc.; Water Products Div.
 5. Zurn Industries, Inc.; Wilkins Div.
- B. General: ASSE standard, backflow preventers.
 1. Working Pressure: 150 psig minimum, unless otherwise indicated.
 2. NPS 2 and Smaller: Bronze body with threaded ends.
 3. NPS 2½ and Larger: Bronze, cast-iron, steel, or stainless-steel body with flanged ends.
 - a. Interior Lining: AWWA C550 or FDA-approved, epoxy coating for backflow preventers having cast-iron or steel body.
 4. Interior Components: Corrosion-resistant materials.
 5. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.
- C. Reduced-Pressure-Principle Backflow Preventers: ASSE 1013 or AWWA C511, suitable for continuous pressure application. Include outside screw and yoke gate valves on inlet and outlet, and strainer on inlet; test cocks; and pressure-differential relief valve with ASME A112.1.2, air-gap fitting located between two positive-seating check valves.
 1. Maximum Pressure Loss: 5 psig through middle 1/3 of flow range.

PART 3 - EXECUTION

3.01 PIPING APPLICATIONS

- B. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.
- C. Underground Water-Service Piping: Use any of the following piping materials for each size range:

1. NPS 3/4 to NPS 2: Soft copper tube, Type L; wrought-copper fittings; and soldered joints.
 2. NPS 2½ to NPS 4: Soft copper tube, Type L; wrought-copper fittings; and soldered joints.
- D. Underground Fire-Service-Main Piping: Ductile-iron, mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.

3.02 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FM, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FM, Cast-iron, nonrising-stem gate valves with indicator post.

3.03 JOINT CONSTRUCTION

- A. See Division 2 Section "Utility Materials" for basic piping joint construction.
- B. Make pipe joints according to the following:
1. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194
 2. Copper Tubing Soldered Joints: ASTM B 828. Use flushable flux and lead-free solder.
 3. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Utility Materials" for joining piping of dissimilar metals.

3.04 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Comply with NFPA 24 for fire-service-main piping materials and installation.
- C. Install copper tube and fittings according to CDA's "Copper Tube Handbook".
- D. Install PVC, AWWA pipe according to AWWA M23 and ASTM F 645.
- E. Bury piping with depth of cover over top at least 30 inches, with top at least 12 inches below level of maximum frost penetration.
- F. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.
1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.
- G. Sleeves are specified in Division 2 Section "Utility Materials", and Division 15 Section "Basic Mechanical Materials and Methods".
- H. Mechanical sleeve seals are specified in Division 15 Section "Basic Mechanical Materials and Methods".
- I. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
- J. Anchor service-entry piping to building wall.

3.05 ANCHORAGE INSTALLATION

- A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
 - 1. Fire-Service-Main Piping: According to NFPA 24
 - 2. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.06 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FM Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.

3.07 BACKFLOW-PREVENTER INSTALLATION

- A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.
- B. Do not install backflow preventers with relief drain in vault or other space subject to flooding.
- C. Do not install bypass piping around backflow preventers.
- D. Support NPS 2½ and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

3.08 CONNECTIONS

- A. Piping installation requirements are specified in other Division 2 Sections. Drawings indicate general arrangement of piping and specialties.
- B. See Division 2 Section "Utility Materials" for piping connections to valves and equipment.
- C. Connect water-distribution piping to interior domestic-water and fire-suppression piping.
- D. Ground equipment according to Division 16 Section "Grounding and Bonding".

3.09 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than 1½ times working pressure for 2 hours.
 - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits. Test fire main at 200 psig for 2 hours.
- C. Prepare reports of testing activities.

3.10 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. See Division 2 Section "Earthwork" for underground warning

tapes.

- B. Permanently attach equipment nameplate or marker, indicating plastic water-service piping, on main electrical meter panel. See Division 2 Section "Utility Materials" for identifying devices.

3.11 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:
 - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - c. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION 33 10 00

SECTION 33 30 00 – SANITARY SEWERAGE

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes gravity-flow, non-pressure sanitary sewerage outside the building, with the following components:
 - 1. Clean-outs
 - 2. Pre-cast concrete manholes.

1.02 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Non-pressure, Drainage-Piping Pressure Rating: 10-foot head of water.

1.03 SUBMITTALS

- A. Shop Drawings: For manholes. Include plans, elevations, sections, details, and frames and covers.
- B. Coordination Drawings: Show pipe sizes, locations, and elevations.
- C. Field quality-control test reports.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, fitting, and joining materials.

2.03 PVC PIPE AND FITTINGS

- A. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D 3034, SDR 21, with bell-and-spigot ends for gasket joints with ASTM F 477, elastomeric seals.

2.04 NON-PRESSURE-TYPE PIPE COUPLINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground non-pressure piping. Include ends of same sizes as piping to be joined and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1.. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - 2. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC
 - 3. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-

metal tension band and tightening mechanism on each end.

1. Manufacturers:
 - a. Dallas Specialty & Mfg. Co.
 - b. Fernco Inc.
 - c. Plastic Oddities, Inc.
- D. Shielded, Flexible Couplings: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
 1. Manufacturers:
 - a. Cascade Waterworks Mfg.
 - b. Dallas Specialty & Mfg. Co.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
- E. Ring-Type, Flexible Couplings: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.
 1. Manufacturers:
 - a. Fernco Inc.
 - b. Logan Clay Products Company (The)
 - c. Mission Rubber Company; a division of MCP Industries, Inc.

2.05 CLEAN-OUTS

- A. Gray-Iron Clean-outs: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
 1. Manufacturers:
 - a. Josam Company
 - b. Smith, Jay R. Mfg. Co.
 - c. Wade Div.; Tyler Pipe
 - d. Watts Industries, Inc.
 - e. Watts Industries, Inc.; Enpoco, Inc. Div.
 - f. Zurn Specification Drainage Operation; Zurn Plumbing Products Group
 2. Top-Loading Classification: Medium duty
 3. Sewer Pipe Fitting and Riser to Clean-out: ASTM A 74, Service class, cast-iron soil pipe and fittings.

2.06 MANHOLES

- A. Standard Precast Concrete Manholes: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
 1. Diameter: 48 inches minimum, unless otherwise indicated.
 2. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
 3. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slip or base section with integral floor.
 4. Riser Sections: 4-inch minimum thickness, and of length to provide depth indicated.
 5. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top type is indicated. Top of cone size that matches grade rings.
 6. Joint Sealant: ASTM C 990, bitumen or butyl rubber
 7. Resilient Pipe Connectors: ASTM C 923, Cast or fitted into manhole walls, for each pipe connection

8. Steps: ASTM A 615/A 615M, deformed, ½-inch steel reinforcing rods encased in ASTM D 4101, PP steel reinforcing rods encased in ASTM D 4101, PP, wide enough to allow worker to place both feet on 1 step and designed to prevent lateral slippage off of step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.
9. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, to match diameter of manhole frame and cover.
10. Manhole Frames and Covers: Ferrous; 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange and 26-inch diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER".
 - a. Material: ASTM A 536, Grade 60-40-18 ductile iron, unless otherwise indicated.

2.07 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318/318R, ACI 350R, and the following:
 1. Cement: ASTM C 150, Type II
 2. Fine Aggregate: ASTM C 33, sand
 3. Coarse Aggregate: ASTM C 33, crushed gravel.
 4. Water: Potable.
- B. Portland Cement Design Mix: 4000psi minimum, with 0.45 maximum water/cementitious materials ratio.
 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
 2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.
- C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.
 1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
 - a. Invert Slope: 1 percent through manhole.
 2. Benches: Concrete, sloped to drain into channel.
 - a. Slope: 4 percent
 3. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.
 4. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain
 5. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel

PART 3 - EXECUTION

3.01 PIPING APPLICATIONS

- A. Pipe couplings and fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.
 1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping, unless otherwise indicated.
 - a. Shielded flexible couplings for same or minor difference OD pipes.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.02 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and

arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.
- C. Install manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.
- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. Install gravity-flow, non-pressure, drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise indicated.
 - 2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place-concrete supports or anchors.
 - 3. Install piping below frost line.
 - 4. Install hub-and-spigot, cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook".
 - 5. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.
- F. Clear interior of piping and manholes of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

3.03 PIPE JOINT CONSTRUCTION

- A. Basic piping joint construction is specified in Division 2 Section "Pipe Utilities - Basic Materials and Methods". Where specific joint construction is not indicated, follow piping manufacturer's written instructions.
- B. Join gravity-flow, non-pressure, drainage piping according to the following:
 - 1. Join hub-and-spigot, cast-iron piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
 - 2. Join hub-and-spigot, cast-iron soil piping with calked joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for lead and oakum calked joints.
 - 3. Join ductile-iron, gravity sewer piping according to AWWA C600 for push-on joints.
 - 4. Join PVC sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-gasket joints.
 - 5. Join dissimilar pipe materials with non-pressure type, flexible couplings.

3.04 MANHOLE INSTALLATION

- A. General: Install manholes complete with appurtenances and accessories indicated.
- B. Install precast concrete manhole sections with sealants according to ASTM C 891.
- C. Form continuous concrete channels and benches between inlets and outlets.
- D. Set taps of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3

inches above finished surface elsewhere, unless otherwise indicated.

3.05 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 - 1. Use light-duty, top-loading classification cleanouts in earth or unpaved foot traffic areas.
 - 2. Use medium-duty, top-loading classification cleanouts in paved foot traffic areas.
 - 3. Use heavy-duty, top-loading classification cleanouts in vehicle traffic service areas.
 - 4. Use extra-heavy-duty, top-loading classification cleanouts in roads.
- B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 18 by 19 by 12 inches deep. Set with tops above surrounding grade.
- C. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.

3.06 CONNECTIONS

- A. Connect non-pressure, gravity-flow drainage piping to building's sanitary building drains specified in Division 15 Section "Sanitary Waste and Vent Piping".
- B. Make connections to existing piping and underground manholes.
 - 1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.

3.07 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
 - 1. Submit separate report for each system inspection.
 - 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.05 percent of piping diameter.
 - c. Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 - 3. Replace defective piping using new materials, and repeat instructions until defects are within allowances specified.
 - 4. Reinspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
 - 1. Do not enclose, cover, or put into service before inspection and approval.
 - 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 - 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 - 4. Submit separate report for each test.
 - 5. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having

jurisdiction and the following:

- a. Allowable leakage is maximum of 50 gal./inch of nominal pipe size per mile of pipe, during 24-hour period.
 - b. Close openings in system and fill with water.
 - c. Purge air and refill with water.
 - d. Disconnect water supply
 - e. Test and inspect joints for leaks.
 - f. Options: Test ductile-iron piping according to AWWA C600, "Hydrostatic Testing" Section. Use test pressure of at least 10 psig.
6. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:
- a. Option: Test plastic gravity sewer piping according to ASTM F 1417
 - b. Option: Test concrete gravity sewer piping according to ASTM C 924
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 33 31 00