

PROJECT MANUAL

**MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT**

WESTOVER, WEST VIRGINIA

**August 25, 2025
ISSUED FOR BIDDING & CONSTRUCTION**

AAI PROJECT NO. 2501003.00

**ALPHA ASSOCIATES, INCORPORATED
209 PRAIRIE AVENUE
MORGANTOWN, WEST VIRGINIA 26501**



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Payment Forms by Reference Only Copies of AIA standard forms may be obtained from The American Institute of Architects; <https://www.aiacontracts.org/>; email: docspurchases@aia.org; (800) 942-7732.

Change Order AIA Document G701-2017
Payment Application AIA Document G702-1992
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Certificate of Substantial Completion AIA Document G704-2017
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Note: Specifications related to solar array are noted on the drawings.

END OF PART TWO

DIVISION 00

DOCUMENT 000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled Bidding & Construction dated June 12, 2025 as modified by subsequent Addenda and Contract modifications.
- B. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:
 - G000 COVER SHEET
 - G001 ABBREVIATIONS AND SYMBOLS
 - A000 ROOF DEMOLITION PLAN
 - A100 PROPOSED ROOF SLOPES
 - A101 ROOF PLAN-NEW ROOFING
 - A102 ROOF PLAN-WALK PAD LAYOUT
 - A103 ROOF PLAN-REINSTALLATION OF SOLAR PANELS
 - A501 DETAILS
 - E001 ELECTRICAL COVER SHEET
 - E101 FLOOR PLANS POWER
 - E102 ROOF PLAN PV SYSTEMS DEMOLITION
 - E103 ROOF PLAN PV SYSTEMS NEW WORK
 - E201 POWER DISTRIBUTION DIAGRAM
 - E301 ELECTRICAL SPECIFICATIONS

END OF DOCUMENT 000115

DOCUMENT 001116 - INVITATION TO BID

1.1 PROJECT INFORMATION

- A. Notice to Bidders: **Qualified** bidders are invited to submit bids for Project as described in this Document according to the Instructions to Bidders.
- B. Project Identification: MOUNTAIN LINE TRANSIT AUTHORITY- REROOFING PROJECT (MLTA)
 - 1. Project Location: 420 DuPont Ave., Westover, WV
- C. Owner: Mountain Line Transit Authority
 - 1. Owner's Representative: Robert Pingley
- D. Architect: Alpha Associates, Inc., 209 Prairie Ave., Morgantown, WV 26501 304-296-8216
 - 1. Architect's Representatives: Rebecca Key Rebecca.key@thinkalphafirst.com
 - 2. Construction Administrator: Alex Haill alex.haill@thinkalphafirst.com
- E. Project Description: Project consists of re-roofing, including demounting existing solar panels and reinstalling after roof replacement..
- F. Construction Contract: Bids will be received for the following Work:
 - 1. General Contract:
 - a. General Building Construction.

1.2 BID SUBMITTAL AND OPENING

- A. Owner will receive sealed bids until the bid time and date at the location indicated below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
 - 1. Bid Date: **November 4, 2025**
 - 2. Bid Time: **2:00 PM.** local time.
 - 3. Location: Mountain Line Transit Authority, 420 Dupont Road, Westover, WV 26501
- B. Bids will be thereafter **publicly opened and read aloud.**

1.3 BID SECURITY

- A. Bid security shall be submitted with each bid in the amount of 5 percent of the bid amount. No bids may be withdrawn for a period of **30** days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

- B. Bids submitted and not withdrawn shall be good for 90 days. It is anticipated the MLTA board shall make it's award decision at the next MLTA Board meeting following the Bid Due Date.

1.4 RECOMMENDED PREBID CONFERENCE

- A. A pre-bid conference for all bidders will be held at MLTA on September 30, 2025 at 10:00 AM local time. It is recommended that all prospective bidders attend.
- B. Pre-Bid minutes shall be uploaded to MLTA website: www.busrider.org/procurement and uploaded to plan rooms and the Share File Link sent to prospective bidders that have contacted <https://thinkalphafirst.com/contact-us>

1.5 DOCUMENTS

- A. Documents are available at local plan rooms listed below and at the MLTA website listed above, and by contacting <https://thinkalphafirst.com/contact-us>

Construction Employer's Association of North Central West Virginia
ceaplanroom@ceawv.com

Ohio Valley Construction Employer's Council
ovcec@ovcec.com

Contractor's Association of West Virginia
planroom@cawv.org

Parkersburg-Marrietta Contractors Association
pmcadesk@gmail.com

1.6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

- A. Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time. **Work is subject to liquidated damages.**
 - 1. Work **on site** to begin Spring 2026.
 - 2. Upon completion of re-roofing, roof shall be inspected and punch list developed along with roofing manufacturer's representative.
 - 3. Roofing must be completed prior to reinstallation of solar panels.
 - 4. Solar panel reinstallation cleaning and testing shall be complete within 30 days after roofing completion.
 - 5. Final Completion no later than **150 days** after work begins **on site**.
- B. Liquidated Damages shall be assessed if substantial completion is not attained within 150 days, once work begins on site.

SECTION 002213 - SUPPLEMENTARY GENERAL CONDITIONS

The following supplements modify, delete, or add to the General Conditions of the Contract for Construction (AIA Document A201-2017), which is hereby made a part of this Project Manual. Where any article, paragraph, or subparagraph in the document is supplemented by one of the following paragraphs, the remaining provisions of such article, paragraph, or subparagraph shall remain in effect and the supplemental provisions shall be considered as added thereto. Where any article, paragraph, or subparagraph in the document is amended, voided, or suspended by any of the following paragraphs, the provisions of such article, paragraph, or subparagraph not so amended, voided or superseded shall remain in effect.

ARTICLE 1 - GENERAL PROVISIONS

A. Add to Paragraph 1.1.4:

1.1.4.1 The Project shall be known as:

Mountain Line Transit Authority
Re-Roofing Project

B. Add the following terms to Section 1.1:

1.1.9 THE WORDS:

- (a) "Directed", "requested", "required", or words of like import, see Division 1.
- (b) "Approved", "acceptable", "satisfactory", or words of like import, see Division 1.
- (c) "Necessary", "suitable", "equivalent", or words of like import, shall mean necessary, suitable, or equal in the opinion of the Engineer.
- (d) "Furnish", "install", and "provide", or words of like import, see Division 1.
- (e) "Reasonable time" shall mean ten (10) days.
- (f) "Reasonable promptness" or "promptly" shall mean fourteen (14) days.
- (g) "Timely" shall mean three (3) consecutive working days (Saturdays and Sundays excluded).

ARTICLE 2 - OWNER

A. Add the following paragraph:

2.1.3 The Owner for this Project is:
Mountain Line Transit Authority
420 DuPont Road
Westover, WV

B. DELETE: Section 2.3.6 in it's entirety.
ADD the following paragraph:

2.3.6. The contractor shall be supplied with a pdf version of the plans and specifications, delivered electronically. Contractor shall be responsible for reproduction of plans and specifications for own use and distribution to subcontractors and suppliers as necessary.

ARTICLE 3 - CONTRACTOR

A. Add the following paragraph:

3.7 - PERMITS AND LICENSES

3.7.1.1 For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, notices, receipt for fee payments, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

ARTICLE 4 - ARCHITECT

A. Add the following paragraph:

4.1.1.1 The Architect for this Project is:
Alpha Associates, Incorporated
209 Prairie Avenue, Suite 209
Morgantown, West Virginia 26501
PHONE: (304) 296-8216
Fax: (304) 296-8245

ARTICLE 5 - SUBCONTRACTORS

(No Modifications to this Article)

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

(No Modifications to this Article)

ARTICLE 7 - CHANGES IN THE WORK

A. Add the following paragraphs to Section 7

7.2. - Change Orders:

7.2.2 A claim for additional Work, commonly referred to as an "Extra", over and above the intent of the Contract Documents, shall be submitted to the Architect for review with the Owner. The claim shall be in an itemized breakdown form which clearly indicates the following items necessary to complete the additional Work requested:

- (a) All labor by number of hours and wage rates.
- (b) All material by quantities and direct costs.
- (c) Related credits.
- (d) Reasonable allowance for overhead and profit.
- (e) Current City Taxes, if applicable.
- (f) The number of additional days estimated to complete the additional Work.

7.2.3 "Reasonable allowance for overhead and profit" shall be as follows:

- (a) For each the Contractor, for any Work performed by the Contractor's own forces, 15% of the cost.
- (b) For each the Contractor, for Work performed by the Contractor's Subcontractor, 10 % of the amount due the Subcontractor.
- (c) For each Subcontractor or Sub-subcontractor involved, for any Work performed by that Subcontractor's own forces, 15% of the cost.
- (d) For each subcontractor, for Work performed by the Subcontractor's sub-subcontractors, 10 % of the amount due the Sub-subcontractor.
- (e) Overhead and Profit shall apply to the following:
 - .1 The cost of materials, including sales tax and cost of delivery,
 - .2 The cost of labor, including fringe benefits required by agreement or custom, social security, old age and unemployment insurance and worker's compensation insurance, and
 - .3 The rental value of equipment and machinery.
- (g) Overhead shall include the following:
 - .1 Bond and insurance premiums,
 - .2 Supervision and superintendence,
 - .3 Wages of time keepers, watchmen, and clerks,
 - .4 Small tools and incidentals,

- .5 General office expenses, and
- .6 All other expenses not included in the cost of the Work, except City Taxes.
- .7 Where applicable, City Taxes shall be itemized and shall be calculated on the cost of the Work, Overhead, and Profit.

7.2.4 In order to facilitate checking of quotations for extras or credits, all proposals, except those values at less than \$250.00, shall be accompanied by a complete itemization of costs including labor, material, equipment, and Subcontractor's costs. Labor, material, and other costs shall be completely itemized as prescribed above so that the Architect and the Owner can determine if these charges are reasonable and fair. Where major cost items are Subcontractors, they shall also be itemized as prescribed above. In no case will a change involving Work valued over \$250.00 be revised without such itemization (breakdown).

7.2.5 For substituted Work, overhead and profit shall be limited to the difference between the cost of overhead and profit of the specified Work and the cost of overhead and profit of the substituted work.

7.2.6 Overhead and profit shall not be calculated on changes in the Work involving unit prices. Unit prices are to have overhead and profit included in the price quote.

7.2.7 In no case shall the Owner, or Architect, accept a request for additional Work thirty (30) days past the date of the review for Substantial Completion.

ARTICLE 8 - TIME

A. Delete Paragraph 8.1.2 entirely; replace with the following:

8.1.2 The date of commencement of the Work shall be the date established during the Preconstruction Conference.

ARTICLE 9 – PAYMENTS AND COMPLETION

A. Revise Section 9.2 as follows:

- (a) In Paragraph 9.2 delete the phrase "Before the first Application for Payment, ..."
- (b) and replace the phrase with "At the first Progress Meeting, ..."

B. Delete Paragraph 9.3.1 entirely; replace with the following:

9.3.1 On a specified day of each month, each Contractor shall submit to the Architect an itemized and notarized Application and Certificate for Payment (AIA Document G702) supported by such data, the Itemized Schedule of Values (AIA Document G703), substantiating the Contractor's right to payment and reflecting Retainage as provided in Paragraph 9.3.1.1, once the rough draft (pencil copy) has been approved by the Architect. The Architect will forward it with recommendations to the Owner within seven days.

C. Add the following paragraph to Section 9.3:

9.3.4 - RETAINAGES

9.3.4.1 The Owner will pay 90% of the portion of the Contract Sum properly allocable to labor, material and equipment incorporated in the work, and of materials and equipment suitably stored at the site or at some other location agreed upon in writing, for the period covered by the most current submitted Application for Payment, less the aggregate of previous payments made by the Owner, until the contracted work is 50% complete. After 50% completion and upon the Contractor's written request, if the contractor has met all bid document and contract requirements, and the architect and owner agree, on future Applications for Payment to reduce the retainage to zero, authorizing the remaining applications for payment to be paid in full. The contract retainage of (10%) may be reinstated at anytime if the methods, manner, progress and subsequent completion of work do not remain satisfactory. This will be determined by the Architect/Engineer and Owner.

9.3.4.2 The Owner will pay upon Substantial Completion of the Contracted Work, a sum sufficient to increase the total payments to 95% of the Contract Sum, less such amounts as the Architect and the owner shall determine for all incomplete work, rejected work and unsettled claims as provided in the contract Documents. The final 5% retainage shall not be released until the Architect/Engineer has received satisfactory evidence of the completion of all work required by the contract documents, including all rejected work and the resolution of all unsettled claims.

D. Add the following paragraph to Section 9.10:

9.10.5.1 Each Contractor shall submit an affidavit (AIA Documents G706 and G706A) indicating his release and waiver of liens arising out

of the Contract. The final payment to the Contractor shall be due thirty (30) days after the date the Architect's issuance of the Final Certificate for Payment.

E. Add the following Sections:

9.11 - CONSTRUCTION PROJECT CLOSE-OUT

9.11.1 Immediately prior to final Application for Payment, the Contractor shall submit the following documents:

- (a) Contractor's Affidavit of Payment and Debts and Claims (AIA Document G706).
- (b) Contractor's Affidavit of Release of Liens (AIA Document G706).
- (c) Consent of Surety Company to Final Payment (AIA Document G707) with effectively dated powers of attorney attached.
- (d) Bound and indexed Operation and Maintenance Manuals.
- (e) Certificate of Insurance (AIA Document G705) covering required/specified products and completed operations.
- (f) One complete set of reproducible as built drawings, specifications and change orders in good order and clearly marked to show installation of work where the actual installation varies substantially from the work as originally shown.
- (g) Certificate of Release from the Department of Tax and Revenue stating all appropriate taxes have been paid.

9.12 - LIQUIDATED DAMAGES

9.12.1 The contractor agrees that from the compensation otherwise to be paid, the Owner may retain a sum in accordance with the following schedule for each day thereafter, Sundays and holidays included, that the work remain uncompleted, which sum is agreed upon as the proper measure of liquidated damages which the Owner will sustain per diem by the failure of the contractor to complete the work at the stipulated time, and the sum is not to be construed in any sense a penalty.

9.12.2 Liquidated damages will be assessed as follows:

\$500 per day

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

(No Modifications to this Article)

ARTICLE 11 - INSURANCE AND BONDS

A. Add to Paragraph 11.1.4:

11.1.4.1 Each Contractor shall furnish the Owner through the Architect a completed copy of the Statement of Insurance Compliance, The Contractor shall also furnish copies of any endorsements that are subsequently issued amending coverage or limits. All original insurance policies shall be made available for inspection by the Owner on request.

B. Delete Paragraph 11.2.1 entirely; replace with the following:

11.2.1 Each Contractor agrees to indemnify and hold harmless the Owner and the Architect against any costs incurred by the Owner and the Architect (including without limitation amounts paid pursuant to the judgments or settlements and as counsel fees) in consequence of any claims by a third party against the Owner and the Architect, including without limitation any claim by an employee of the Owner, the Contractor, or a Subcontractor and any claims by a Subcontractor or another Contractor, whether filed before or after final payment, based on actual or alleged damage to or destruction of property or injury to persons allegedly caused by the Contractor or any Subcontractor, or by their respective employees, in connection with the work.

C. Add the following paragraph:

11.2.2 Each party to the Contract shall promptly notify the other of the assertion of any claim against which such party as held harmless pursuant to this Article, shall give such other party the opportunity to defend any such claim, and shall not settle any such claim without the approval of the indemnifying party.

D. Add the following Section:

11.1 - CONTRACTOR INSURANCE

11.1.3.1 In furtherance of Article 11 of the General Conditions, each contractor furnishing labor and materials shall furnish insurance in the following categories and for the stated minimum amounts. All insurance shall be written to show evidence of the following: The Architect and Owner shall be ADDITIONALLY INSURED on the contractor's policy. The Contractor shall be the NAMED INSURED.

- (a) Worker's Compensation/Employers Liability
Statutory - State of W V - Compensation thru State Fund.
Employer's Liability
Limits Required:

- \$500,000 - each employee
 - \$500,000 - each accident
 - \$500,000 - aggregate
 - (b) Contractor's Public Liability Insurance
 - Limits Required:
 - \$2,000,000 - General Aggregate
 - \$1,000,000 - Products Complete Operation Aggregate
 - \$1,000,000 - Personal & Advertising Injury Limit
 - \$1,000,000 - Each Occurrence Limit
 - (c) Commercial General Liability must include:
Explosion, Collapse and Underground Property Damage.
Coverage required if contractor's operations warranty such coverage.
Also, if blasting operations, separate blasting coverage is required.
 - (d) Automobile Liability Insurance
 - Limits Required:
 - \$1,000,000 - Per Accident
 - Provide "Any Auto" Coverage
 - (e) Excess Liability Insurance
 - Limits Required:
 - \$2,000,000 - Combined Single Limit Occurrence
 - (f) Builders Risk and Property Insurance
 - 100% Complete Value Form
 - Coverage Format:
 - All Risk including theft.
- .2 Coverage shall include transit and off-site storage/secondary location limit amount that exceeds any shipment or off-site storage material value before payments to contractor for off-site stored materials are approved. Proof of coverage limits exceeding accumulated value of materials stored is required.
- .3 Named Insured shall be Owner, Contractor and all Subcontractors ATIMA.
- .4 Deductibles shall be stated in the Certificate of Insurance. Payment of deductible shall be the responsibility of the contractor.
- .5 If a renovation to existing building, the Owner will provide coverage while under construction by adding the contractor and all subcontractors, ATIMA to the permanent property policy.

E. Add the following Section:

11.6- CONTRACTOR INSURANCE

- 11.6.1 In furtherance of Article 11 of the General Conditions, each contractor shall have Contractor Insurance.
- 11.6.2 Certificate of Insurance
- 11.6.3 The Certificate of Insurance shall be provided by the Contractor to the Owner and Architect at the current address of said parties with a transmittal cover indicating the project name, location of project, type of work to be performed and the nature of the documents transmitted.
- 11.6.4 The Certificate of Insurance shall contain a provision that coverage afforded will not be canceled until at least sixty (60) days prior written notice has been give to the Owner and Architect.
- 11.6.5 The Owner shall be the Certificate Holder.
(The Certificate shall be prepared on "ACORD" Form 25-5 (7/90) or an equivalent form.)
- 11.6.6 The Certificate shall indicate that the Owner and Architect are ADDITIONAL INSUREDS under the Contractor's policy.
- 11.6.7 The Certificate of Insurance shall indicate the carriers financial rating. The rating must be no less than A or A-.

F. Add the following Section:

11.7 - CONTRACTOR LICENSING

11.7.1 All contractors doing business in West Virginia must be licensed to perform work in the state as required by The West Virginia Contractor Licensing Act. The ACT requires but is not limited to the following:

- (a) A contractor's license number shall be included on all bids submitted, in all contracting advertisements and on all fully executed and binding contracts.
- (b) All approved, subcontractors must be licensed and a copy of their current license number must be submitted with all quotations to the general contractor. Pursuant to The Act, general contractors are required only to accept quotations from subcontractor's license to perform work in West Virginia. Additionally, it is required that the subcontractors license number be submitted with the list of subcontractors within two hours after bids are received and a copy of all general and subcontractors licensing certificates must be submitted to the agency receiving bids for review prior to the award of construction contracts.

G. Add the following Section:

11.8 - CONTRACTOR REGISTRATION CERTIFICATE AND TAX RELEASES

11.8.1 Each Bidder must be registered with the West Virginia Department of Tax and Revenue prior to the time and date for Receipt of Bids in order for his Bid to be considered. Each Bidder's registration certificate number shall be written in the space provided on the Form of Proposal.

11.8.2 If any Bidder is not registered with the Tax and Revenue Department, application should be made to West Virginia Department of Tax and Revenue, Capitol Complex, Charleston, West Virginia 25305, and complete Form 801, so that a registration number may be assigned prior to the time and date for receipt of Bids.

ARTICLE 12 - UNCOVERING AND CORRECTING WORK

(No Modifications to this Article)

ARTICLE 13 - MISCELLANEOUS PROVISIONS

(No Modifications to this Article)

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

- A. Revise Paragraph 14.2.2 as follows:
- B. OMIT: ...“reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action,”...
- C. ADD:

...“reasons described in Section 14.2.1 exist, the Owner, after receiving recommendations from his legal counsel, along with the consent of the Bankruptcy Court or its appointed representative, and from the Architect, that sufficient cause exists to justify such action,”...

ARTICLE 15 – CLAIMS AND DISPUTES

(No Modifications to this Article)

END OF SUPPLEMENTARY CONDITIONS TO AIA DOCUMENT A201 - 2017

DOCUMENT 002214 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

PART 1 -

1.1 INSTRUCTIONS TO BIDDERS

- A. MLTA Instructions to bidders include:
1. Bids shall be submitted utilizing a three (3) envelope method.
 2. Bid shall be good for 90 days after bid opening.
 3. The Bidder understands that terms and conditions demanded by the Bidder other than those in MLTA's standard terms and conditions, will render the bid unresponsive.
 4. MLTA reserves the right to award a contract for the lowest responsive Bid that MLTA deems in its best interests. MLTA further reserves the right to award one, , more than one or no contracts as may be in its best interest.
 5. By signing and submitting a completed bid, the CONTRACTOR certifies that neither the CONTRACTOR who signs, nor any member of his/her immediate family or partner is or is about to become an officer, employee or agent of MLTA.
 6. Bidder must present 2 copies of the Bid Proposal.
 7. The submitted proposal shall consist of the following:
 - a. ENVELOPE #1: Mailing or Drop-Off Envelope to include:
 - 1) ENVELOPE # 2
 - 2) ENVELOPE #3.
 - b. ENVELOPE #2: to include 2 copies of each:
 - 1) Standard Project Assurances
 - 2) Buy America Certification
 - 3) Certification of Restriction on Lobbying
 - 4) Certificate of Procurement Integrity
 - 5) Affirmative Action
 - 6) Disadvantaged Business Enterprise (DBE)
 - 7) Disadvantaged Business Enterprise Certification
 - 8) DBE Good Faith Efforts.
 - 9) Commercial Pricing Form
 - 10) Vendor Survey
 - 11) Copy of WV Contractor's License
 - 12) Bid Security (Bid Bond)
 - c. ENVELOPE #3 to include 2 copies of each:
 - 1) Bid Form
 - 2) Unit Price Form
 - 3) Alternates Form
 8. Check list for each Envelope are included in section labeled MLTA FORMS

- B. Additional Instructions to Bidders for Project consist of the following:
 - 1. AIA Document A701, "Instructions to Bidders.", a copy of which is bound in this Project Manual.
 - 2. The following Supplementary Instructions to Bidders that modify and add to the requirements of the Instructions to Bidders.

1.2 SUPPLEMENTARY INSTRUCTIONS TO BIDDERS, GENERAL

- A. The following supplements modify AIA Document A701, "Instructions to Bidders." Where a portion of the Instructions to Bidders is modified or deleted by these Supplementary Instructions to Bidders, unaltered portions of the Instructions to Bidders shall remain in effect.

1.3 ARTICLE 2 - BIDDER'S REPRESENTATIONS

- A. Add Section 2.1.3.1:
 - 1. 2.1.3.1 - The Bidder has investigated all required fees, permits, and regulatory requirements of authorities having jurisdiction and has properly included in the submitted bid the cost of such fees, permits, and requirements not otherwise indicated as provided by Owner.
- B. Add Section 2.1.5:
 - 1. 2.1.5 - The Bidder is a properly licensed Contractor according to the laws and regulations of State of West Virginia and meets qualifications indicated in the Procurement and Contracting Documents.
- C. Add Section 2.1.6:
 - 1. 2.1.6 - The Bidder has incorporated into the Bid adequate sums for work performed by installers whose qualifications meet those indicated in the Procurement and Contracting Documents.

1.4 ARTICLE 3 - BIDDING DOCUMENTS

- A. 3.2 - Interpretation or Correction of Procurement and Contracting Documents:
 - 1. Add Section 3.2.2.1:
 - a. 3.2.2.1 - Submit Bidder's Requests for Interpretation using form bound in the Project Manual.

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

B. 3.4 - Addenda:

1. Delete Section 3.4.3 and replace with the following:
 - a. 3.4.3 - Addenda may be issued at any time prior to the receipt of bids.
2. Add Section 3.4.4.1:
 - a. 3.4.4.1 - Owner may elect to waive the requirement for acknowledging receipt of 3.4.4 Addenda as follows:
 - 1) 3.4.4.1.1 - Information received as part of the Bid indicates that the Bid, as submitted, reflects modifications to the Procurement and Contracting Documents included in an unacknowledged Addendum.
 - 2) 3.4.4.1.2 - Modifications to the Procurement and Contracting Documents in an unacknowledged Addendum do not, in the opinion of Owner, affect the Contract Sum or Contract Time.

1.5 ARTICLE 4 - BIDDING PROCEDURES

A. 4.1 - Preparation of Bids:

1. Add Section 4.1.1.1:
 - a. 4.1.1.1 - Printable electronic Bid Forms and related documents are available from Architect.
2. Add Section 4.1.9:
 - a. 4.1.9 - The Bid shall include unit prices when called for by the Procurement and Contracting Documents. Owner may elect to consider unit prices in the determination of award. Unit prices will be incorporated into the Contract.
3. Add Section 4.1.10:
 - a. 4.1.10 - Owner may elect to disqualify a bid due to failure to submit a bid in the form requested, failure to bid requested alternates or unit prices, failure to complete entries in all blanks in the Bid Form, or inclusion by the Bidder of any alternates, conditions, limitations or provisions not called for.
4. Add Section 4.1.11:

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- a. 4.1.11 - Bids shall include sales and use taxes. Contractors shall show separately with each monthly payment application the sales and use taxes paid by them and their subcontractors in the form indicated. Reimbursement of sales and use taxes, if any, shall be applied for by Owner for the sole benefit of Owner.
 - B. 4.3 - Submission of Bids:
 - 1. Add Section 4.3.1.2:
 - a. 4.3.1.2 - Include Bidder's Contractor License Number applicable in Project jurisdiction on the face of the sealed bid envelope.
 - C. 4.4 - Modification or Withdrawal of Bids:
 - 1. Add the following sections to 4.4.2:
 - a. 4.4.2.1 - Such modifications to or withdrawal of a bid may only be made by persons authorized to act on behalf of the Bidder. Authorized persons are those so identified in the Bidder's corporate bylaws, specifically empowered by the Bidder's charter or similar legally binding document acceptable to Owner, or by a power of attorney, signed and dated, describing the scope and limitations of the power of attorney. Make such documentation available to Owner at the time of seeking modifications or withdrawal of the Bid.
 - b. 4.4.2.2 - Owner will consider modifications to a bid written on the sealed bid envelope by authorized persons when such modifications comply with the following: the modification is indicated by a percent or stated amount to be added to or deducted from the Bid; the amount of the Bid itself is not made known by the modification; a signature of the authorized person, along with the time and date of the modification, accompanies the modification. Completion of an unsealed bid form, awaiting final figures from the Bidder, does not require power of attorney due to the evidenced authorization of the Bidder implied by the circumstance of the completion and delivery of the Bid.
- 1.6 ARTICLE 5 - CONSIDERATION OF BIDS
- A. 5.2 - Rejection of Bids:
 - 1. Add Section 5.2.1:

- a. 5.2.1 - Owner reserves the right to reject a bid based on Owner's and Architect's evaluation of qualification information submitted following opening of bids. Owner's evaluation of the Bidder's qualifications will include: status of licensure and record of compliance with licensing requirements, record of quality of completed work, record of Project completion and ability to complete, record of financial management including financial resources available to complete Project and record of timely payment of obligations, record of Project site management including compliance with requirements of authorities having jurisdiction, record of and number of current claims and disputes and the status of their resolution, and qualifications of the Bidder's proposed Project staff and proposed subcontractors.

1.7 ARTICLE 6 - POSTBID INFORMATION

A. 6.3 - Submittals:

- 1. Add Section 6.3.1.4:
 - a. 6.3.1.4 - Submit information requested in Sections 6.3.1.1, 6.3.1.2, and 6.3.1.3 no later than two business days following Architect's request.

1.8 ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND

A. 7.1 - Bond Requirements:

- 1. Add Section 7.1.1.1:
 - a. 7.1.1.1 - Both a Performance Bond and a Payment Bond will be required, each in an amount equal to 100 percent of the Contract Sum.

B. 7.2 - Time of Delivery and Form of Bonds:

- 1. Delete the first sentence of Section 7.2.1 and insert the following:
 - a. The Bidder shall deliver the required bonds to Owner no later than 10 days after the date of Notice of Intent to Award and no later than the date of execution of the Contract, whichever occurs first. Owner may deem the failure of the Bidder to deliver required bonds within the period of time allowed a default.
- 2. Delete Section 7.2.3 and insert the following:
 - a. 7.2.3 - Bonds shall be executed and be in force on the date of the execution of the Contract.

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FEDERAL CLAUSES

(where applicable)

1. No Government Obligation to Third Parties

- a. PURCHASER and CONTRACTOR acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to PURCHASER, CONTRACTOR, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.
- b. The CONTRACTOR agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the SUBCONTRACTOR who will be subject to its provisions.

2. Program Fraud and False or Fraudulent Statements or Related Acts.

- a. The CONTRACTOR acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the CONTRACTOR certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the CONTRACTOR further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the CONTRACTOR to the extent the Federal Government deems appropriate.
- b. The CONTRACTOR also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. Chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) or other applicable federal law on the CONTRACTOR, to the extent the Federal Government deems appropriate.
- c. The CONTRACTOR agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the SUBCONTRACTOR who will be subject to the provisions.

3. Access to Records

The CONTRACTOR agrees to provide PURCHASER, the FTA 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

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purposes of making audits, examinations, excerpts and transcriptions. 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. In accordance with 2 CFR 200.333, the CONTRACTOR agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.

4. Federal Changes

The CONTRACTOR shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Department of Transportation, Federal Transit Administration, Master Agreement between Purchaser and FTA, as they may be amended or promulgated from time to time during the term of this contract. The CONTRACTOR's failure to so comply shall constitute a material breach of this contract.

5. Civil Rights

The following requirements apply to the underlying contract:

a. Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the CONTRACTOR agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the CONTRACTOR agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

b. Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract:

(i) Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the CONTRACTOR agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The CONTRACTOR agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. 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. In addition, the CONTRACTOR agrees to comply with any implementing requirements FTA may issue.

(ii) Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623 and Federal transit law at 49 U.S.C. § 5332, the CONTRACTOR agrees to refrain from discrimination against present and prospective age. In addition, the CONTRACTOR agrees to comply with any implementing requirements FTA may issue.

(iii) Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the CONTRACTOR agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the CONTRACTOR agrees to comply with any implementing requirements FTA may issue.

c. The CONTRACTOR also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

6. Disadvantaged Business Enterprises

a. It is the policy of the Department of Transportation and PURCHASER that Disadvantaged Business Enterprises (DBEs) as defined in 49 C.F.R. part 26 shall have the maximum opportunity to participate in the performance of contracts financed in whole or part with federal funds under this contract. Consequently, the DBE requirement of 49 C.F.R. applies to this contract.

b. The CONTRACTOR or subcontractor shall not discriminate on the basis of race, color, natural origin, or sex in the performance of this contract. The CONTRACTOR shall carry out applicable requirements of 49 C.F.R. Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

c. The CONTRACTOR agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than ten (10) days from the receipt of each payment the prime contractor receives from PURCHASER. The prime contractor agrees further to return retainage payments to each subcontractor within ten (10) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the PURCHASER. This clause applies to both DBE and non-DBE subcontractors.

d. The CONTRACTOR or its subcontractors agrees to ensure that DBEs as defined in 49 C.F.R. have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or part with federal funds provided under this contract. In this regard, all contractors shall take all necessary and reasonable steps in accordance with 49 C.F.R. Part 26 to ensure that DBEs have the maximum opportunity to compete for and perform under this

contract. Contractors shall not discriminate on the basis of race, creed, color, age, sex or national origin in the award and performance of DOT-assisted contracts.

e. DBEs will be encouraged and afforded full opportunity to actively solicit information concerning

this project and to submit bids and or proposals.

7. Incorporation of FTA Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by U.S. DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by U.S. DOT, as set forth in FTA Circular 4220, 2 CFR 200.318, and subsequent revisions are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA-mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The CONTRACTOR shall not perform any act, fail to perform any act, or refuse to comply with any PURCHASER request, which would cause PURCHASER to be in violation of the FTA terms and conditions.

8. Energy Conservation

The CONTRACTOR agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act, 42 U.S.C. §§ 6321 *et seq.*

9. Termination

a. Termination for Convenience: PURCHASER may terminate this contract, in whole or in part, at any time by written notice to the CONTRACTOR. The CONTRACTOR shall be paid its costs, including contract closeout costs, and profit on work performed up to the time of termination. The CONTRACTOR shall promptly submit its termination claim to PURCHASER to be paid the CONTRACTOR. If the CONTRACTOR has any property in its possession belonging to PURCHASER, the CONTRACTOR will account for the same, and dispose of it in the manner PURCHASER directs.

b. Termination for Cause: If the CONTRACTOR does not deliver supplies in accordance with the contract delivery schedule, or, if the contract is for services, the CONTRACTOR fails to perform in the manner called for in the contract, or if the CONTRACTOR fails to comply with any other provisions of the contract, PURCHASER may terminate this contract for default. Termination shall be effected by serving a notice of termination on the CONTRACTOR setting forth the manner in which the CONTRACTOR is in default. The CONTRACTOR will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract. If it is later determined by PURCHASER that the CONTRACTOR had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or beyond the control of the CONTRACTOR, PURCHASER, after setting up a new delivery of performance schedule, may allow the CONTRACTOR to continue work, or treat the termination as a termination for convenience.

c. Opportunity to Cure: PURCHASER in its sole discretion may, in the case of a termination for breach or default, allow the CONTRACTOR ten (10) business days in which to cure the defect.

In such case, the notice of termination will state the time period in which cure is permitted and other appropriate conditions.

If the CONTRACTOR fails to remedy to PURCHASER's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within ten (10) days after receipt by CONTRACTOR of

written notice from PURCHASER setting forth the nature of said breach or default, PURCHASER shall have the right to terminate the Contract without any further obligation to the CONTRACTOR. Any such termination for default shall not in any way operate to preclude PURCHASER from also pursuing all available remedies against the CONTRACTOR and its sureties for said breach or default.

10. Seat Belt Use

The CONTRACTOR agrees to implement Executive Order No. 13043, "Increasing Seat Belt Use in the United States," April 16, 1997, 23 U.S.C. § 402 note, (62 Fed. Reg. 19217), by: 90 (1) Adopting and promoting on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company-rented vehicles, or personally operated vehicles.

11. Safe Operation of Motor Vehicles

The CONTRACTOR agrees to comply with: (1) Executive Order No. 13513, "Federal Leadership on Reducing Text Messaging While Driving," October 1, 2009, 23 U.S.C. § 402 note, (74 Fed. Reg. 51225); (2) U.S. DOT Order 3902.10, "Text Messaging While Driving," December 30, 2009; and (3) The following U.S. DOT Special Provision pertaining to Distracted Driving: (i) Safety. The CONTRACTOR agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle CONTRACTOR owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the Award, or when performing any work for or on behalf of the Award; (ii) Recipient Size. The CONTRACTOR agrees to conduct workplace safety initiatives in a manner commensurate with its size, such as establishing new rules and programs to prohibit text messaging while driving, re-evaluating the existing programs to prohibit text messaging while driving, and providing education, awareness, and other outreach to employees about the safety risks associated with texting while driving; and (iii) Extension of Provision. The CONTRACTOR agrees to encourage its subcontractors to comply with this Special Provision, and include this Special Provision in each third party subcontract at each tier supported with federal assistance.

12. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

[Public Law 115-232](#), section 889, prohibits entering into a contract (or extending or renewing a contract) to procure or obtain equipment, services, or systems 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. Covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

13. Governmentwide Debarment and Suspension

By signing and submitting its bid or proposal, the offeror certifies as follows:

The certification in this clause is a material representation of fact relied upon by PURCHASER. If it is later determined that the bidder or offeror knowingly rendered an erroneous certification, in addition to remedies available to PURCHASER, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or offeror agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer.

The bidder or offeror further agrees to include a provision requiring such compliance in its lower tier covered transactions.

14. Notification Related to Fraud, Waste, Abuse, or Other Legal Matters

If a current or prospective legal matter that may affect the Federal Government emerges, the CONTRACTOR must promptly notify PURCHASER so that it can notify the Federal Government. The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason. Matters that may affect the Federal Government include, but are not limited to, the Federal Government's interests in the Award, the accompanying Underlying Agreement, and any Amendments thereto, or the Federal Government's administration or enforcement of federal laws, regulations, and requirements.

The CONTRACTOR agrees to include a similar notification requirement in subcontracts exceeding \$25,000 financed in whole or in part with federal assistance provided by FTA and must require each subcontractor to include an equivalent provision in its federally assisted subcontracts exceeding \$25,000.

15. Lobbying Restrictions

The CONTRACTOR agrees to:

- a. Refrain from using Federal assistance funds to support lobbying,
- b. Comply and assure the compliance of each SUBCONTRACTOR at any tier, with U.S. DOT regulations, "New Restrictions on Lobbying," 49 C.F.R. Part 20, modified as necessary by 31 U.S.C. § 1352.

c. Comply with Federal statutory provisions to the extent applicable prohibiting the use of Federal assistance funds for activities designed to influence Congress or a State legislature on legislation or appropriations, except through proper, official channels.

16. Buy America

The CONTRACTOR agrees to comply with 49 U.S.C. §5323(j) and 49 C.F.R. Part 661 which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R.

§661.7, and includes microcomputer equipment, software, and small purchases (currently less than \$150,000) made with capital, operating, or planning funds. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 70 percent domestic content.

A bidder or offeror must submit to the FTA recipient the appropriate Buy America certification with all bids or offers on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.

17. Clean Air

a. 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 through 7671q. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

b. The CONTRACTOR also agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FTA.

18. Clean Water

a. The CONTRACTOR agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Water Act, as amended, 33 U.S.C. §§1251 through 1377. The

Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

b. The CONTRACTOR also agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FTA.

19. Breaches and Disputes

a. Disputes - Disputes arising in the performance of this Contract which are not resolved by agreement of the

parties shall be decided in writing by the authorized representative of PURCHASER. This decision shall be final and conclusive unless within ten (10) days from the date of receipt of its copy, the CONTRACTOR mails or otherwise furnishes a written appeal to PURCHASER. In connection with any such appeal, the CONTRACTOR shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of PURCHASER shall be binding upon the CONTRACTOR and the CONTRACTOR shall abide by the decision.

b. Performance During Dispute - Unless otherwise directed by PURCHASER, CONTRACTOR shall continue performance under this Contract while matters in dispute are being resolved.

c. Claims for Damages - Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefore shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

d. Remedies - Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between PURCHASER and the CONTRACTOR arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State of West Virginia or Ohio as applicable..

e. Rights and Remedies - The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by PURCHASER, Architect or CONTRACTOR shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

20. Cargo Preference - Use of United States- Flag Vessels

To the extent applicable, the contractor agrees to comply with 46 U.S.C. §55305 and 46 C.F.R. Part 381 which includes, but is not limited to:

a. to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract

to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;

b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of leading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.)

c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract

may involve the transport of equipment, material, or commodities by ocean vessel.

21. Fly America Requirements

The CONTRACTOR agrees to comply with 49 U.S.C. §40118 (the “Fly America” Act) in accordance with the General Services Administration’s regulations at 41 C.F.R. §§ 301-10, which provide that recipients and sub-recipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The CONTRACTOR shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

22. Davis-Bacon and Copeland Anti-Kickback Acts

The CONTRACTOR agrees to comply and assure compliance of each third party contractor and each subcontractor at any tier of the project with the following Federal laws and regulations providing protections for their employees:

a. **Minimum wages** - (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 C.F.R. part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also,

regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in

29 C.F.R. Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (1)(ii) of this section) and the Davis- Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) Except with respect to helpers as defined as 29 C.F.R. 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) With respect to helpers as defined in 29 C.F.R. 5.2(n)(4), such a classification prevails in the area in which the work is performed.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC

20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of

receipt and so advise the contracting officer or will notify the contracting officer within the 30- day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written

request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(v)(A) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour

Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the

recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

b. **Withholding** - PURCHASER 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 the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice,

trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, PURCHASER may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

c. Payrolls and basic records - (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act, daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 C.F.R. 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to PURCHASER for transmission to the Federal Transit

Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 C.F.R. part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 C.F.R. part 5 and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 C.F.R. Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 C.F.R. 5.12.

d. Apprentices and trainees - (i) Apprentices - Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is

employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work

actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full

amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the U.S. Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that

determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees - Except as provided in 29 C.F.R. 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not

less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall

be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no

longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity - The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 C.F.R. Part 30.

e. Compliance with Copeland Act requirements - The contractor shall comply with the requirements of 29 C.F.R. Part 3, which are incorporated by reference in this contract.

f. Subcontracts - The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 C.F.R. 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 C.F.R. 5.5.

g. Contract termination: debarment - A breach of the contract clauses in 29 C.F.R. 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 C.F.R. 5.12.

h. Compliance with Davis-Bacon and Related Act requirements - All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 C.F.R. parts 1, 3, and 5 are herein incorporated by reference

in this contract.

i. **Disputes concerning labor standards** - Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 C.F.R. Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

j. **Certification of eligibility** - (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

23. Contract Work Hours and Safety Standards Act

The CONTRACTOR agrees to comply with and assure compliance by subcontractors and other project participants for construction employees with the Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. §§ 3701 et seq., specifically the wage and hour

requirements of section 102 of that Act at 40 U.S.C. § 3702, and implementing U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Nonconstruction Contracts Subject to the Contract Work Hours and safety Standards Act)," 29 C.F.R. Part 5; and the safety requirements of section 107 of that Act at 40 U.S.C. § 3704, and implementing U.S. DOL regulations, "Safety and Health Regulations for Construction," 29 C.F.R. Part 1926.

The CONTRACTOR further agrees to comply with and assure compliance by other project participants for non-construction employees with the Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. §§ 3701 et seq., in particular with the wage and hour requirements of section 102 of that Act at 40 U.S.C. § 3702, and with implementing U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and safety Standards Act)," 29 C.F.R. Part 5.

24. Bonding Requirements

Bid Bond Requirements

Bid Bond will be five (5) percent of the bid price and must be issued by a fully qualified surety company acceptable to PURCHASER and listed as a company currently authorized under 31 C.F.R., Part 223 as possessing a Certificate of Authority as described thereunder.

In submitting this Bid, it is understood and agreed by bidder that the right is reserved by PURCHASER to reject any and all bids, or part of any bid, and it is agreed that the Bid may not be withdrawn for a period of [ninety (90)] days subsequent to the opening of bids, without the written consent of PURCHASER.

It is also understood and agreed that if the undersigned bidder should withdraw any part or all of his bid within [ninety (90)] days after the bid opening without the written consent of PURCHASER, shall refuse or be unable to enter into this Contract, as provided above, or refuse or be unable to furnish adequate and acceptable Performance Bonds and Labor and Material Payments Bonds, or refuse or be unable to furnish adequate and acceptable insurance, he shall forfeit his bid security to the extent of PURCHASER damages occasioned by such withdrawal, or refusal, or inability to enter into an agreement, or provide adequate security therefor.

It is further understood and agreed that to the extent the defaulting bidder's Bid Bond, Certified Check, Cashier's Check, Treasurer's Check, and/or Official Bank Check (excluding any income generated thereby which has been retained by PURCHASER as provided in [Item x "Bid Security" of the Instructions to Bidders]) shall prove inadequate to fully recompense PURCHASER for the damages occasioned by default, then the undersigned bidder agrees to indemnify PURCHASER and pay over to PURCHASER the difference between the bid security and PURCHASER's) total damages, so as to make PURCHASER whole. The undersigned understands that any material alteration of any of the above or any of the material contained on this form, other than that requested, will render the bid unresponsive.

Performance Bonds

. The penal amount of performance bonds shall be 100 percent of the original contract price, unless PURCHASER determines that a lesser amount would be adequate for the protection of PURCHASER.

2. PURCHASER may require additional performance bond protection when a contract price is increased. The increase in protection shall generally equal 100 percent of the increase in contract price. PURCHASER may secure additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

Payment Bonds

A payment bond of 100 percent of the original contract price unless PURCHASER determines that a lesser amount would be adequate for the protection of PURCHASER.

25. Veterans Preference

As provided in 49 U.S.C. § 5325(k), to the extent practicable, the contractor agrees and assures that it and its subcontractors will give a hiring preference to veterans, as defined in 5 U.S.C. § 2108, who have the skills and abilities required to perform construction work required under the contract.

This does not require the contractor to give a preference to any veteran over any equally

qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

26. Seismic Safety

The CONTRACTOR agrees that they will comply with 42 U.S.C. §7701 et seq. in accordance with Executive Order No. 12699 as well as with the standards for Seismic Safety required in Department of Transportation Seismic Safety Regulations 49 C.F.R. Part 41 and will certify to compliance to the extent required by the regulation. The CONTRACTOR also agrees to ensure that all work performed under this contract including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

27. Pre-Award and Post -Delivery Audit Requirements

The CONTRACTOR agrees to comply with 49 U.S.C. § 5323(m) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

- a. Buy America Requirements (>\$150,000): The CONTRACTOR shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Bidder/Offeror certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.
- b. Solicitation Specification Requirements: The CONTRACTOR shall submit evidence that it will be capable of meeting the bid specifications.

DOCUMENT 002513 - PREBID MEETINGS

PART 1 -

1.1 PREBID MEETING

- A. Architect will conduct a Prebid meeting as indicated below:
 - 1. Meeting Date: Tuesday, September 30, 2025
 - 2. Meeting Time: 10 AM, local time.
 - 3. Location: Project Site, MLTA 420 Dupont Road, Westover, WV
- B. Attendance:
 - 1. Prime Bidders: Attendance at Prebid meeting is recommended.
 - 2. Subcontractors: Attendance at Prebid meeting is recommended.
- C. Bidder Questions: Submit written questions to Architect by 12:00 noon on Friday, October 24, 2025. All questions should be addressed to:
Rebecca.key@thinkalphafirst.com
- D. Agenda: Prebid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:
 - 1. Procurement and Contracting Requirements:
 - a. Advertisement for Bids.
 - b. Instructions to Bidders.
 - c. Bidder Qualifications.
 - d. Bonding.
 - e. Insurance.
 - f. Bid Security.
 - g. Bid Form and Attachments.
 - h. Bid Submittal Requirements.
 - 2. Communication during Bidding Period:
 - a. Obtaining documents.
 - b. Bidder's Requests for Information.
 - c. Bidder's Substitution Request/Prior Approval Request.
 - d. Addenda.
 - 3. Contracting Requirements:
 - a. Agreement.
 - b. The General Conditions.
 - c. The Supplementary Conditions.
 - d. Other Owner requirements.

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4. Construction Documents:
 - a. Scopes of Work.
 - b. Temporary Facilities.
 - c. Use of Site.
 - d. Work Restrictions.
 - e. Substitutions following award.
 5. Schedule:
 - a. Project Schedule.
 - b. Contract Time.
 - c. Liquidated Damages.
 - d. Other Bidder Questions.
 6. Site/facility visit or walkthrough.
 7. Post-Meeting Addendum.
- E. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees and others known by the issuing office to have received a complete set of Procurement and Contracting Documents. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.
1. Sign-in Sheet: Minutes will include list of meeting attendees.

END OF DOCUMENT 002513

DOCUMENT 002600 - PROCUREMENT SUBSTITUTION PROCEDURES

PART 1 -

1.1 DEFINITIONS

- A. Procurement 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.
- B. Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Contract Documents, submitted following Contract award. See Section 012500 "Substitution Procedures" for conditions under which Substitution requests will be considered following Contract award.

1.2 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.

1.3 PROCUREMENT SUBSTITUTIONS

- A. Procurement Substitutions, General: By submitting a bid, the Bidder represents that its bid is based on materials and equipment described in the Procurement and Contracting Documents, including Addenda. Bidders are encouraged to request approval of qualifying substitute materials and equipment when the Specifications Sections list materials and equipment by product or manufacturer name.
- B. Procurement Substitution Requests will be received and considered by Owner when the following conditions are satisfied, as determined by Architect; otherwise requests will be returned without action:
 - 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents, including the level of quality of the Work represented by the requirements therein.
 - 3. The request is fully documented and properly submitted.

1.4 SUBMITTALS

A. Procurement Substitution Request: Submit to Architect. Procurement Substitution Request must be made in writing by prime contract Bidder only in compliance with the following requirements:

1. Requests for substitution of materials and equipment will be considered if received no later than 7 days prior to date of bid opening.
2. Submittal Format: Submit one copies of each written Procurement Substitution Request, using form bound in Project Manual
3. Submittal Format: Submit Procurement Substitution Request:
 - a. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specifications Sections and drawing numbers.
 - b. Provide complete documentation on both the product specified and the proposed substitute, including the following information as appropriate:
 - 1) Point-by-point comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
 - 2) Copies of current, independent third-party test data of salient product or system characteristics.
 - 3) Samples where applicable or when requested by Architect.
 - 4) Detailed comparison of significant qualities of the proposed substitute with those of the Work specified. 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.
 - 5) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - 6) Research reports, where applicable, evidencing compliance with building code in effect for Project, from ICC, NFPA, or State of WV.
 - 7) Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, which will become necessary to accommodate the proposed substitute.
 - c. Provide certification by manufacturer that the substitute proposed is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated.
 - d. Bidder, in submitting the Procurement Substitution Request, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the Procurement Substitution Request.
 - e.

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B. Architect's Action:

1. Architect may request additional information or documentation necessary for evaluation of the Procurement Substitution Request. Architect will notify all bidders of acceptance of the proposed substitute by means of an Addendum to the Procurement and Contracting Documents.

C. Architect's approval of a substitute during bidding does not relieve Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents.

END OF DOCUMENT 002600

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MLTA FORMS

Contract Liability Review Checklist

This checklist should be used to review authority contracts to insure they contain provisions that assign risk in the event of an injury or damage to third parties. All insurance, indemnification and hold harmless sections must be thoroughly examined to avoid the unnecessary assumption of risk by MLTA members. If in doubt, the contracts should be forwarded to MLTA or your law director for review.

1. ☐ For the duration of the contract, the contractor is required to procure and maintain insurance against claims for injuries to persons or damages to property which may arise. Insurance is recommended to be placed with insurers who have an AM Best rating of A- or better.
2. ☐ The insurance should have commercial general liability limits of \$1,000,000 per occurrence for bodily injury, personal injury and property damage. The minimum general aggregate shall be \$1,000,000.
3. ☐ The automobile liability limit shall be at least \$1,000,000 per accident for bodily injury and property damage where applicable.
4. ☐ West Virginia stop gap employer's liability with a \$1,000,000 limit shall be provided.
5. ☐ The contractor shall furnish the Authority with certificates of insurance naming the Authority, its officials, agents, employees and volunteers as an additional insured. The coverage shall be primary to the additional insured's and not contributing with any other insurance or similar protection available to the additional insured's whether available coverage is primary, contributing or excess.
6. ☐ The contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all requirements stated herein.
7. ☐ All coverages shall be written on an occurrence basis.
8. ☐ The contract shall contain an acceptable hold harmless agreement that to the fullest extent permitted by law, the contractor agrees to defend, indemnify and hold harmless the Authority, its officials, agents, employees and volunteers.
9. ☐ The coverage described above shall contain a 30 day written notice of cancellation, non-renewal and/or material changes addressed to the Authority.
10. ☐ The contractor shall submit a copy of the Workers' Compensation certificate prior to the work commencing. A current certificate shall be kept on file during the duration of the contract.

Hold Harmless Agreement for Transit Authorities

Contractor shall indemnify, hold harmless and defend the public entity, its officers, employees, agents and volunteers against any and all liability, loss, costs, damages, expenses, claims or actions, including attorney's fees which the public entity, its officers or employees may hereafter sustain, incur or be required to pay, arising wholly or in part due to any act or omission of contractor, its agents, servants or employees, in the execution, performance or failure to adequately perform contractor's obligations pursuant to this contract.

Additional Insured Language

Standard contract conditions should specify that the authority, its officials, employees and volunteers should be added by endorsement as "additional insureds" to all liability policies except workers' compensation or professional (errors & omissions) liability policies. In projects involving the use of subcontractors, the contractor should include all subcontractors under the contractor's policies. In the alternative, the contractor must furnish the authority with the policy endorsements or insurance certificates from each subcontractor which names the authority, its officials, employees and volunteers as "additional insureds".

Additional Insured Language for Transit Authority

"The following are Additional Insureds: Legal name of the Transit Authority, its elected and/or appointed officials, all employees, agents, volunteers, all boards, commissions and/or authorities and board members, including employees, agents and volunteers there of Coverage shall be primary to the additional Insureds and not contributing with any other insurance or similar protection available to the Additional Insureds whether other available coverage be primary, contributing, or excess."

IFB/RFP REQUIRED DOCUMENTS

These forms are prescribed by the Federal Transit Administration and are Optional to either public, private or Non-profit agencies or companies.

Please note:

Proposer's signatures are required in several places throughout the documents, and must be notarized on some forms as specified.

Check that your bid/proposal has the right number and type of signatures.

Failure to include these forms with your bids/proposal can result in your bid/proposal being deemed unresponsive. An unresponsive bid/proposal will not be reviewed.

REMEMBER TO CHECK YOUR ARITHMETIC! AND IDENTIFY THE TERMS FOR CASH OR PROMPT PAYMENT DISCOUNT!

Envelope #1 Instructions

1. This is the mailing or drop-off envelope.
2. This envelope will contain Envelopes #2 and #3.
3. The envelope (Envelope #1) shall be addressed as follows:
BID PROPOSAL: MLTA RE-ROOFING PROJECT
Mountain Line Transit Authority
420 DuPont Road
Westover, WV 26501
4. Clearly label the sender's (Bidding Contractor) name & address to outside of envelope.

Envelope #1 Check list

_____ ENVELOPE # 2

_____ ENVELOPE # 3

Envelope #2 Instructions :

Provide a sealed envelope clearly labeled **ENVELOPE #2** affixing **BIDDER'S NAME** and the check list to the outside.

Include 2 copies of each of the following inside the sealed envelope:

1. Standard Project Assurances
2. Buy America Certification
3. Certification of Restriction on Lobbying
4. Certificate of Procurement Integrity
5. Affirmative Action
6. Disadvantaged Business Enterprise (DBE)
7. Disadvantaged Business Enterprise Certification
8. DBE Good Faith Efforts
9. Commercial Pricing Form
10. Vendor Survey
11. Copy of WV Contractor's License
12. Bid Security (Bid Bond)

Envelope #2 Check list

-
_____	1.	Standard Project Assurances
_____	2.	Buy America Certification
_____	3.	Certification of Restriction on Lobbying
_____	4.	Certificate of Procurement Integrity
_____	5.	Affirmative Action
_____	6.	Disadvantaged Business Enterprise (DBE)
_____	7.	Disadvantaged Business Enterprise Certification
_____	8.	DBE Good Faith Efforts
_____	9.	Commercial Pricing Form
_____	10.	Vendor Survey
_____	11.	Copy of WV Contractor's License
_____	12.	Bid Security (Bid Bond)

Envelope #3 Instructions

Provide a sealed envelope clearly labeled **ENVELOPE #3** affixing **BIDDER'S NAME** and the check list to the outside.

Include 2 copies of each of the following:

1. Bid Form
2. Unit Price Form
3. Alternates Form

Envelope #3 Check list

-
_____	1.	Bid Form
_____	2.	Unit Price Form
_____	3.	Alternates Form

STANDARD PROJECT ASSURANCES

Page 1 of 3

Please fill out entire certificate and return with your proposal. Please note page 2 may need to be executed by the parent company, if any.

1. The bidder/proposer hereby agrees that MLTA has the right to reject any and all bid/proposals, to waive informality in any bid/proposal, to negotiate directly with only qualified respondents, to award one, more than one, or no contracts. Bidder/proposer further agrees it shall not dispute the correctness of the quantities used in computing the lowest-responsive-responsible bid/most-responsive-responsible proposal.

2. If the Proposer is not the parent company, insert below the name and main office address of the parent company. (A parent company is one that owns at least a majority, fifty-one percent of the voting rights and/or assets in that company.) By execution of this section, the parent company acknowledges the Proposer is authorized to submit this Proposal on parent company's behalf.

Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-Mail: _____

Name of Authorized Official _____

Title: _____

Signature: _____

4. Proposer hereby assures and certifies that it will comply with the Federal statutes, regulations, executive orders and requirements which relate to the applications made to and grants received from the Federal Transit Administration. Proposer acknowledges such statutes, regulations, Executive orders and administrative requirements include - but are not limited to - the following:

INELIGIBLE CONTRACTORS

The bidder/proposer certifies that it is not on the SAMS list of ineligible contractors.

STANDARD PROJECT ASSURANCES

Page 2 of 3

ENERGY EFFICIENCY

The bidder/proposer certifies that it complies with all applicable standards, orders, or requirements issued under Section 206 of the Clean Air Act [42 USC 1857 (4)], Section 508 of the Clean Water Act (33 USC 1368, Executive Order 11738), and Environmental Protection Agency regulations (40 CFR, Part 15). Any and all violations of these aforementioned regulations will be immediately reported to FTA and the U.S. EPA.

Proposer further acknowledges the provisions of Section 1001 of Title 18, U.S.C., apply to any assurance or submissions under this section.

4. List all subcontractors and the work they will perform here. Attach additional page(s) if needed.

Firm Name	Address	City, State, Zip	Phone	Contact
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

5. List all other firms who you asked or invited to quote or bid as a subcontractor for this project and but were not selected. Attach additional page(s) if needed.

Firm Name	Address	City, State, Zip	Phone	Contact
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

6. List names, titles, and telephone numbers of the persons who are authorized to negotiate on its behalf with MLTA in connection with this request for proposals:

STANDARD PROJECT ASSURANCES

Page 3 of 3

7. Execution and Notarization by Bidder:

Bidder Executes Here!

Signature: _____	
Title: _____	
Company: _____	
Address: _____	
City, State, Zip: _____	
Phone: _____	FAX: _____
e-Mail: _____	DATE: _____

Notary Executes Here:'

Taken, subscribed and sworn before me this _____ day of _____, 20____

Notary Public

Notary Public in and for the County of _____, State of _____,

BUY AMERICA CERTIFICATION

Page 1 of 2

As part of your bid/proposal the Federal, bidders must execute as indicated below to certify their compliance - or non-compliance - with the Buy America regulations issued by the Federal Transit Administration.

IMPORTANT NOTICE

Bidders are strongly urged to review the regulations at 49 CFR 661 before executing this certification and before submitting your bid. This applies if your bid exceeds \$100,000.

FTA's Buy America regulations are more stringent than those of the GSA and other federal agencies. Further, the Buy America Act of 1933 (41 USC 10), the United States- Canada Free Trade Agreement or the North America Free Trade Agreement have absolutely no Bearing on FTA's Buy America regulations.

A waiver of FTA's Buy America regulations may be sought by MLTA if grounds for the waiver properly exist . The time it takes for FTA to process waiver requests (a minimum of 90 days) will automatically prolong the time bids will be good and automatically extend the schedule for this project.

Please note separate certifications are required for steel/manufactured products and buses/rolling stock/associated equipment.

Use this chart to help identify which certification you must execute:

Product	Compliance	Execute this Certification
Steel + Any Other Manufactured Good	Yes	1 (a)
	NO	1(b)

All Certifications are on the next page. You need only one (1) signature on one(1) certification.

BUY AMERICA CERTIFICATION

Page 2 of 2

Certificate 1a

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C.53230)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Date _____

Signature _____

Company Name_____

Title_____

Certificate 1b

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 53230)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A),5323(j)(2)(B), or 53230)(2)(D),and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name_____

Title_____

CERTIFICATION OF RESTRICTIONS ON LOBBYING

I, _____ (name of authorized official) hereby certify on behalf of
_____ (Bidder/Contractor) that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreements, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is prerequisite for making or entering into this transaction imposed by Section 1352, Title

31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each failure.

Bidder Executes Here!

Signature:	_____
Date	_____

CERTIFICATE OF PROCUREMENT INTEGRITY

This certification concerns a matter within the jurisdiction of an agency or grant recipient of the United States and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under 18 USC 1001.

I, _____, am the officer or employee responsible for the preparation of this offer or bid and hereby certify that, to the best of my knowledge and belief, with the exception of any information described in this certificate, I have no information concerning a violation or possible violation of Subsection 27(a), (b), (c), or (e), of the Office of Federal Procurement Policy Act (41 USC 423, effective July 16, 1989) (hereinafter referred to as "the Act"), as implemented in the Federal Acquisition Regulation (FAR), occurring during the conduct of this procurement.

As required by Subsection 27(d)(12)(B) of the Act, I further certify that each officer, employee, agent, representative, and consultant of _____ (name of bidder or proposer) who has participated personally and substantially in the preparation or submission of this offer has certified that he or she is familiar with, and comply with, the requirements of Subsection 17(a) of the Act, as implemented in the FAR, and will report immediately to me any information concerning any violation or possible violation of the Act, as implemented in the FAR, pertaining to this procurement.

List violations or possible violations below. ENTER "NONE" IF NONE EXIST. Continue on plain paper if necessary, and label the plain paper "Certificate of Procurement Integrity (continuation Sheet)".

Bidder Executes Here!

Signature: _____

Title: _____

Company: _____

Date: _____

AFFIRMATIVE ACTION

In connection with the execution of this contract, the vendor and manufacturer shall not discriminate against any employee or application for employment because of race, religion, color, sex, or national origin. The vendor and manufacturer shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, or national origin. Such actions 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.

Bidder Executes Here!

Signature: _____

Title: _____

Company: _____

Date: _____

Disadvantaged Business Enterprise (DBE)

1 of 2

All DOT assisted contracts between FTA recipients (the procuring agency) and any contractor shall include the following language:

1. "Policy. It is the policy of the Department of Transportation that disadvantaged business enterprises as defined in 49 CFR Part 26 and the State Transit Authority shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 26 applies to this agreement."
2. DBE Obligation. The recipient or its contractor agrees to ensure that disadvantaged business enterprises as defined in 49 CFR Part 26 and the Authority's DBE Plan have to the maximum opportunity to participate in the performance of this contract and any related subcontract(s) financed in whole or in part with federal funds. In this regard the contractor shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 and the Authority's DBE Plan to ensure that disadvantaged business enterprises have the maximum opportunity to compete for and perform contracts.
3. The Authority, the contractor, or subcontractor shall not discriminate on the basis of race, color, religion, sex, or national origin in the award and performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DIT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate. All bidders will submit with the bid the DBE survey on the following page.

Disadvantaged Business Enterprise Survey

2 of 2

Bidder's DBE Information

Name: _____

Address: _____

Phone Number: _____ Fax: _____ Email: _____

Number of years firm has been in business: _____

Gross Annual Receipts: _____

Certified DBE firm with the Transit Authority? ☐ Yes ☐ No

Subcontractors DBE Information

Name: _____

Address: _____

Phone Number: _____ Fax: _____ Email: _____

Number of years firm has been in business: _____

Gross Annual Receipts: _____

Certified DBE firm with the Transit Authority? ☐ Yes ☐ No

Name: _____

Address: _____

Phone Number: _____ Fax: _____ Email: _____

Number of years firm has been in business: _____

Gross Annual Receipts: _____

Certified DBE firm with the Transit Authority? ☐ Yes ☐ No

ADD ADDITIONAL SHEETS AS NECESSARY.

DBE Good Faith Efforts

1 of 3

Guidance Concerning Good Faith efforts Excerpted from

Appendix A to 49 CFR Part 26 (Federal Register p. 5145, February 2, 1999)

- I. When a contract DBE goal is established on a USDOT-assisted contract, a bidder must, in order to be responsive, make good faith efforts to meet the goal. The bidder can meet this requirement in either of two ways as follows:
- A. The bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose.
 - B. Even if it does not meet the goal, the bidder can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.
- II. The quality, quantity, and intensity of the different kinds of efforts that the bidder has made to obtain DBE participation are key to a finding the bidder made good faith efforts. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere *pro forma* efforts are not good faith efforts to meet the DBE contract requirements.

The following is a list of types of actions that demonstrate a bidder's good faith efforts to obtain DBE participation.

This is not a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

- A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
- B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE

participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

D. Negotiating in good faith with interested DBEs.

- a. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
- b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a final price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not rely the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.

F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/ women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

IV. Determining whether a bidder has made good faith efforts can take into account the performance of other bidders in meeting the contract goal. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, the question must be asked whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, this will be viewed in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.

END OF GOOD FAITH EFFORT GUIDELINES

COMMERCIAL PRICING CERTIFICATE

FOR

(Item or goods being purchased by MLTA)

Based on 15.813 and 52.215.32 of the Federal Acquisition Regulation

(FAR) The Contractor certifies and agrees as follows:

1. The prices offered for sale to MLTA are no higher than any lower price charged to any other customer, including any governmental instrumentality, during the preceding 90 days, except as listed in number 4. Below:
2. MLTA shall have the right to examine, audit or reproduce all books, records, documents and other data of the Contractor related to the pricing of the items covered by this certificate. The Contractor shall make these books, records, documents and other data available for this purpose for three (3) years after final payment by MLTA.
3. If any price, including profit, negotiated fee or cost reimbursable, has increased because information in this certification was inaccurate, incomplete, or misleading, the price shall be reduced accordingly and any contract shall be modified to reflect the reduction.
4. All items for which prices offered are higher than any lower price charged to any other customer during the preceding 90 days are identified below along with the price differences and justification for the difference:

(List as necessary)

ITEM(S)	PRICE DIFFERENCES	JUSTIFICATION

Firm _____

Name & Title _____

Date _____

Authorized Signature _____

VENDOR SURVEY

The United States Department of Transportation (USDOT) rules at 49 CFR 26.11 requires transit agencies to obtain the following information from all current, past and potential contractors. A Potential contractor is defined as one seeking or has sought to do business with MLTA.

Firm Name _____
Firm Address _____

Phone _____ FAX: _____

Website URL _____

E-mail _____

How long has firm been in business?

What are your gross receipts for the most-recent calendar year? Check the box below that applies.

- ☐ < \$500,000
☐ \$500,000 - \$1.0 million
☐ \$1.0 million - \$2.0 million
☐ \$2.0 million - \$ 5.0 million
☐ > \$5.0 million

Are you a DBE now? ☐ Yes ☐ No

If you want the USDOT and MLTA to treat this information as proprietary, you must check this box.

☐ BOX G

If this box G is checked, the USDOT and MLTA will view this information as proprietary. It will therefore be protected under the Federal Freedom of Information Act, which pre-empts state and local laws, if any. A court can, however, order this information be released.

This form - and only this form - may also be submitted in a separately sealed envelope marked "**Proprietary**" on the outside.

END OF MLTA FORMS

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

DOCUMENT 004113 - BID FORM - STIPULATED SUM

1.1 BID INFORMATION-

- A. Bidder: _____(Insert Name of Firm).
- B. Prime Contract: (*Contractor to select by circling*)
 - 1. **RE-ROOFING ONLY**
 - 2. **REMOVAL OF SOLAR PANELS, STORAGE AND RE-INSTALLATION OF SOLAR ARRAY.**
 - 3. **TOTAL COMBINED EFFORT, RE-ROOFING AND REMOVAL AND REINSTALLATION OF SOLAR PANEL ARRAY.**
- C. **Bidders may bid #1 or #2 and if bidding #3 must also provide bids for #1 and #2.**
- D. Project Name: MOUNTAIN LINE TRANSIT AUTHORITY-RE-ROOFING PROJECT
- E. Project Location: 420 Dupont Road, Westover, WV
- F. Owner: Mountain Line Transit Authority (MLTA)
- G. Owner Project Number: NULL
- H. Architect: Alpha Associates, Inc.
- I. Architect Project Number: 2501003.00
- J. Note: Owner is a governmental agency and is tax exempt.

1.2 CERTIFICATIONS AND BASE BID

- A. **RE-ROOFING ONLY** Base Bid: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Alpha Associates, Inc. and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars (\$_____).
(Written in words)

2. The above amount may be modified by amounts indicated by the Bidder on the attached Document 004323 "Alternates Form."

- B. **REMOVAL OF SOLAR PANELS, STORAGE AND RE-INSTALLATION OF SOLAR ARRAY** Base Bid: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Alpha Associates, Inc. and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars (\$_____).
(Written in words)

- C. **TOTAL COMBINED EFFORT, RE-ROOFING AND REMOVAL AND STORAGE OF SOLAR ARRAY AND REINSTALLATION** Base Bid: Single Prime Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Alpha Associates, Inc. and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars (\$_____).
(Written in words)

2. The above amount may be modified by amounts indicated by the Bidder on the attached Document 004323 "Alternates Form."

1.3 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within [5] days after a written Notice of Award, if offered within [30] days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:
1. _____ Dollars (\$_____)
 . (Written in words)
- B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.
- C. Bid shall be good for 90 days after bid opening.
- D. The Bidder understands that terms and conditions demanded by the Bidder other than those in MLTA's standard terms and conditions, will render the bid unresponsive.
- E. MLTA reserves the right to award a contract for the lowest responsive Bid that MLTA deems in its best interests. MLTA further reserves the right to award one, , more than one or no contracts as may be in its best interest.
- F. By signing this bid, the undersigned certifies that neither the undersigned nor any member of his/her immediate family or partner is or is about to become an officer, employee or agent of MLTA.

1.4 TIME OF COMPLETION: Preliminary schedule

- A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents and once on site to complete all work within 150 days. A preliminary schedule is to be attached to this bid and submitted in Envelope #3.

1.5 ACKNOWLEDGMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.

1.6 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Proposal and are attached hereto.

1. Bid Form Supplement – Alternates Form
2. Bid Form Supplement – Unit Prices
3. Preliminary Schedule.

1.7 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in West Virginia and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full. Bidder shall provide a copy of the appropriate licenses with their bid. See Envelope #2 Checklist.

1.8 SUBMISSION OF BID

A. I (We) agree to complete all work in connection with the proposal in accordance with the technical specifications.

In accordance with your Instructions to Bidders and Special Conditions and having read the specifications and examined the drawings, we propose to provide all labor, materials, necessary tools, equipment, and all transportation services necessary to complete all of the work to complete the following bids.

In submitting this bid it is understood that the right is reserved by the MLTA to reject and any and all bids. It is also agreed that this bid may not be withdrawn from the opening thereof.

B. Respectfully submitted this ____ day of _____, 2025

C. Submitted By: _____
(Name of bidding firm or corporation).

D. Authorized Signature: _____
(Handwritten signature).

E. Signed By: _____
(Type or print name).

F. Title: _____
(Owner/Partner/President/Vice President).

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

- G. Witnessed By:_____.
(Handwritten signature).
- H. Attest:_____.
(Handwritten signature).
- I. By:_____.
(Type or print name).
- J. Title:_____.
(Corporate Secretary or Assistant Secretary).
- K. Street Address:_____.
- L. City, State, Zip:_____.
- M. Phone:_____.
- N. WV Contractor License No.:_____.
- O. Federal ID (EIN) No.:_____.
(Affix Corporate Seal Below).

END OF DOCUMENT 004113

DOCUMENT 004322 - UNIT PRICES FORM

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: MOUNTAIN LINE TRANSIT AUTHORITY – RE-ROOFING PROJECT
- C. Project Location: 420 DuPont Road, Westover, WV
- D. Owner: Mountain Line Transit Authority (MLTA)
- E. Architect: Alpha Associates, Inc.
- F. Architect Project Number: 25010003.00

1.2 BID FORM SUPPLEMENT

- A. This form is required to be attached to the Bid Form.
- B. The undersigned Bidder proposes the amounts below be added to or deducted from the Contract Sum on performance and measurement of the individual items of Work
- C. If the unit price does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

1.3 UNIT PRICES

- A. Unit-Price No. 1: Replacement of in kind solar panels due to existing damage or failure caused by back sheet delamination. Note Owner has limited number of “spare” panels available as replacements. Owner is aware that existing solar panel manufacturer is no longer in business. The owner reserves the right to reject solar panels that are not of sufficient quality nor a manufacture with at least 5 years of demonstrated experience.
 - 1. _____ dollars (\$_____) per unit.
- B. Unit-Price No. 2: Replacement of similar or equal mounting frame system with same tilt angle, due to unforeseen existing damage. Damage to be documented upon discovery. The ECOFOOT mounting system was purchased by UNIRAC. The existing ECOFOOT is no longer available, however similar systems are available.
 - 1. _____ dollars (\$_____) per unit.

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

1.4 SUBMISSION OF BID SUPPLEMENT

- A. Respectfully submitted this ____ day of _____, 2025
- B. Submitted By: _____(Insert name of bidding firm or corporation).
- C. Authorized Signature: _____(Handwritten signature).
- D. Signed By: _____(Type or print name).
- E. Title: _____(Owner/Partner/President/Vice President).

END OF DOCUMENT 004322

DOCUMENT 004323 - ALTERNATES FORM

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Prime Contract: _____.
- C. Project Name: MOUNTAIN LINE TRANSIT AUTHORITY
- D. Project Location: 420 Dupont Road Westover, WV
- E. Owner: Mountain Line Transit Authority (MLTA)
- F. Architect: Alpha Associates, Inc.
- G. Architect Project Number: 2501003.00

1.2 BID FORM SUPPLEMENT

- A. This form is required to be attached to the Bid Form.**

1.3 DESCRIPTION

- A. The undersigned Bidder proposes the amount below be added to or deducted from the Base Bid if particular alternates are accepted by Owner. Amounts listed for each alternate include costs of related coordination, modification, or adjustment.
 - 1. Cost-Plus-Fee Contract: Alternate price given below includes adjustment to Contractor's Fee.
- B. If the alternate does not affect the Contract Sum, the Bidder shall indicate "NO CHANGE."
- C. If the alternate does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."
- D. The Bidder shall be responsible for determining from the Contract Documents the effects of each alternate on the Contract Time and the Contract Sum.
- E. Owner reserves the right to accept or reject any alternate, in any order, and to award or amend the Contract accordingly within [60] days of the Notice of Award unless otherwise indicated in the Contract Documents.
- F. Acceptance or non-acceptance of any alternates by the Owner shall have no effect on the Contract Time unless the "Schedule of Alternates" Article below provides a formatted space for the adjustment of the Contract Time.

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

1.4 SCHEDULE OF ALTERNATES

A. Alternate No. 001 : Use of 2-Ply Thermoplastic Hybrid Roof System Section 07-5400 in lieu of Base Bid SBS System.

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.

2. _____Dollars (\$_____)

1.5 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this ____ day of _____, 2023

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

END OF DOCUMENT 004323

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

SUBSTITUTION REQUEST FORM

Substitutions and "or Approved Equal" item must be submitted by a **General Contractor**, who is "The Bidder" during the bid period, and **NOT** directly from a Manufacturer or Supplier. By so doing, it is understood that if the substitute product is "accepted as an equal" by the Engineer and Owner, a General Contractor does, in fact, intend to use the product on this Project.

DATE: ____/____/____ NAME AND _____
ADDRESS _____
OF BIDDER/ _____
CONTRACTOR _____

SUBMITTED FOR REVIEW TO: **Rebecca Key**
Alpha Associates, Inc.
209 Prairie Avenue
Morgantown, WV 26501

ARCHITECT/ENGINEER: Rebecca.key@thinkalphafirst.com

PLEASE CONSIDER FOR APPROVAL THE FOLLOWING PRODUCT OR SYSTEM AS AN "APPROVED EQUAL" SUBSTITUTION IN ACCORDANCE WITH THE PROVISIONS OF DIVISIONS 0 AND 1 OF THE PROJECT MANUAL.

NAME AND DESCRIPTION OF **SPECIFIED** PRODUCT OR SYSTEM:

SPECIFICATION DIVISION _____ SECTION _____ PAGE(S) _____

DRAWING NUMBER(S) _____ DETAIL OR SECTION NUMBER(S) _____

NAME AND DESCRIPTION OF **SUBMITTAL FOR SUBSTITUTION**

NAME, ADDRESS, AND TELEPHONE NUMBER OF **MANUFACTURER**:

PHONE: () _____

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

NAME, ADDRESS, AND TELEPHONE NUMBER OF **SUPPLIER**:

PHONE: () _____

REASON(S) FOR NOT GIVING PRIORITY TO SPECIFIED ITEM:

1. SUBSTITUTION AFFECTS OTHER MATERIAL/SYSTEMS: () YES, () NO
2. SUBSTITUTION REQUIRES DIMENSIONAL REVISION OR RE-DESIGN OF STRUCTURE,
MECHANICAL AND/OR ELECTRICAL WORK: () YES, () NO

NOTE: If YES for 1 and/or 2 above, attach complete data.

3. SAVINGS OR CREDIT TO OWNER FOR ACCEPTING SUBSTITUTE: \$ _____
WORDS: \$ _____ DOLLARS
4. ATTACHED DATA IS FURNISHED FOR EVALUATION OF SUBSTITUTION:
____ CATALOG ____ DRAWINGS ____ SAMPLES ____ TESTS
____ REPORTS _____ OTHER DATA OR INFORMATION
5. MANUFACTURER'S GUARANTEE THAT THE SUBSTITUTE VS. SPECIFIED PRODUCT
(ITEM) IS THE SAME () OR DIFFERENT (). **(Explain difference on attachment)**

*THE UNDERSIGNED HEREBY CERTIFIES THAT THIS SUBSTITUTION HAS BEEN CHECKED AND
COORDINATED WITH THE CONTRACT DOCUMENTS:*

FIRM NAME: _____ BY: _____

ADDRESS: _____ TITLE: _____

PHONE: () _____

____ ACCEPTED ____ ACCEPTED AS NOTED ____ NOT ACCEPTED

____ RECEIVED TOO LATE **DATE RECEIVED:** ____/____/____

DATE OF ACTION: ____/____/____ BY: _____ FOR **ALPHA**

END OF DOCUMENT.

REQUEST FOR INFORMATION RESPONSE

ATTENTION:

PROJECT No.:
PROJECT:



DATE: June 16, 2025

R.F.I. #: SUBJECT:

RECEIVED FROM:

CONTRACTOR:

CONTACT:

PHONE NUMBER:

E-MAIL:

DRAWING NO.	SPECIFICATION NO:	ADDENDUM:

QUESTION:

ANSWER:

ATTACHMENTS:

ANSWERS TO REQUESTS FOR INFORMATION DO NOT CONSTITUTE AUTHORIZATION TO MAKE ANY CHANGES IN CONTRACT TIME OR CONTRACT AMOUNT. REQUESTS FOR SUCH CHANGES, IF ANY, SHALL BE MADE SEPARATELY BY CONTRACTOR AND ARE SUBJECT TO APPROVAL OR REJECTION BY OWNER.

Signature _____

Date _____

SAMPLE FORMS OF AGREEMENT



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.

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.

☐ 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 a building information modeling exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with a building information modeling exhibit, 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 Building information modeling exhibit, dated as indicated below
(Insert the date of the building information modeling exhibit 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.)

☐ 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)

(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

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

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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

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

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and 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 or proposal 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. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the 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.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining

provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 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 retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and 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 the 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 suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, 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 suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the 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 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 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.

§ 2.3.2 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.

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

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the

site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

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

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

§ 2.4 Owner's Right to Stop the Work

If the 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.

§ 2.5 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 notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

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 its 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 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the 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 submit 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, subject to Section 15.1.7, 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. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative 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 approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 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

§ 3.5.1 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.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 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 14 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 that an equitable adjustment be made 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, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim 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 notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice 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 and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably 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, or fails to provide submittals in accordance with the approved 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 make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and 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 how 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 the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect 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 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.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the 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 be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the

time and in the form specified by the Architect.

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

§ 3.14.2 The 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 construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the 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 the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with 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 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 an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the 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 Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the 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.

§ 4.2 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.

§ 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 promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) 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

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 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 13.4.2 and 13.4.3, whether or not the 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, 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 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 order 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 Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 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 the subcontractors of a Separate Contractor.

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

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice 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 for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, 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 that the Contractor, by these Contract 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; 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 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 term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 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 any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the 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 or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has 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 notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 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 that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 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. The Contractor shall proceed promptly with changes in the Work, 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 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the 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 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .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, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 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.

§ 7.3.7 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.

§ 7.3.8 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 may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

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, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 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 (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended 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

§ 9.1.1 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.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent 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. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and 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 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, suppliers, or other persons or entities that 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 (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole 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 in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. 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. 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 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 suppliers 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 either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

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

§ 9.5.4 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 supplier 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 Contractor shall reflect such payment on its next Application 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 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 and suppliers

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 or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to 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 or provided by 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, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 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' 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 shutdown, 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; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and 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 the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the 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 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 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. 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 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, (3) a written statement that the Contractor knows of no 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, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and 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, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance 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 the lien, claim, security interest, or encumbrance, 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, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the 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;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

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

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, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 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 implement, 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 the owners and users of adjacent sites and utilities of the safeguards.

§ 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. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is 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, notice of the 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 and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. 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 notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's 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 the material or substance or who are to perform the task of removal or safe containment of the 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 by the amount of the Contractor's reasonable additional costs of shutdown, 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 hazardous 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 hazardous 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 reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances 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 reimburse 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 Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the

endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 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; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The

Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement 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 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

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, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before 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 any 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 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 2.5.

§ 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 of the Owner or Separate Contractors, whether completed or partially completed, 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, excluding that jurisdiction's choice of law rules. 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 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 the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 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.

§ 13.3.2 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 thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 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 tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 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 13.4.1, 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 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 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.

§ 13.4.4 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.

§ 13.4.5 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.

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

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties 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.

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, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, 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 reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, 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' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work 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' 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 or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .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 reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner 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' 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 under 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 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 Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the 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 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by 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 under this Section 15.1.3.1 shall 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.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 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.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section

15.1.3 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.

§ 15.1.6.2 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.

§ 15.1.7 Waiver of 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 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, 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. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a 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 the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the 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 receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, 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 15.1.7, 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 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 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. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. 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 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party 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 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party 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 those of the Owner and Contractor under this Agreement.

Sample

AIA® Document A701® – 2018

Instructions to Bidders

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

THE OWNER:
(Name, legal status, address, and other information)

THE ARCHITECT:
(Name, legal status, address, and other information)

TABLE OF ARTICLES

1	DEFINITIONS
2	BIDDER'S REPRESENTATIONS
3	BIDDING DOCUMENTS
4	BIDDING PROCEDURES
5	CONSIDERATION OF BIDS
6	POST-BID INFORMATION
7	PERFORMANCE BOND AND PAYMENT BOND
8	ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.
(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 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 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning _____ days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

- .1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.

(Insert the complete AIA Document number, including year, and Document title.)

- .2 AIA Document A101™-2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.

(Insert the complete AIA Document number, including year, and Document title.)

- .3 AIA Document A201™-2017, General Conditions of the Contract for Construction, unless otherwise stated below.

(Insert the complete AIA Document number, including year, and Document title.)

- .4 Building Information Modeling Exhibit, if completed:

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda:

Number	Date	Pages

.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.)

☐ The Sustainability Plan:

Title	Date	Pages

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:

(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

DIVISION 01

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Contractor's use of site and premises.
4. Coordination with occupants.
5. Work restrictions.
6. Specification and Drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: MOUNTAIN LINE TRANSIT AUTHORITY-RE-ROOFING PROJECT

1. Project Location: 420 Dupont Road, Westover, WV

B. Owner: City of Morgantown

1. Owner's Representative: Robert Pingley pingley@busride.org

C. Architect: Alpha Associates, Inc.

1. Architect's Representative: Rebecca Key, Rebecca.key@thinkalphafirst.com

D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. SRBR
 - a. MEP Consulting Engineers Representative: Chuck Ridgway cridgway@srbr.com

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Base Bid includes:
 - a. Removal and storage of existing solar panel array Aprox. 572 units.
 - b. Removal of existing roofing and insulation.
 - c. Re-roofing of roof deck, 37,752 sq. ft. with SBS modified bitumen.
 - d. Reinstallation of solar array in formation shown.
 - 2. There is an Alternate which includes:
 - a. All of the above except that re-roofing is with 2-Ply Thermoplastic Hybrid Roof System. See Section 07 5400.
- B. Type of Contract:
 - 1. Project will be constructed under a single prime contract.

1.4 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Use of Site: Contractor's use of Project site is limited only by Owner's right to occupancy and on going day to day operations. Site use to be outlined by owner at Mandatory Pre-Bid.
- B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

- A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1.6 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of TBD a.m. to TBD p.m., Monday through Friday, unless otherwise indicated.
- C. 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 & Owner** not less than **two** days in advance of proposed utility interruptions.
 - 2. Obtain **Architect's & Owner's** written permission before proceeding with utility interruptions.
- D. Smoking and Controlled Substance Restrictions: Use of tobacco products , **alcoholic beverages**, and other controlled substances **on Project site** is not permitted.
- E. Employee Identification: **Provide** identification tags for Contractor personnel working on Project site, in accordance with Owner Requirements. Require personnel to use identification tags at all times.
- F. Employee Screening: Comply with Owner's requirements for **drug and background** screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.7 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. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 001

Base Bid: Base Bid consists of all work as shown on drawing sheets with the use of Section 07 5216 - STYRENE BUTADIENE STYRENE MODIFIED BITUMINOUS MEMBRANE ROOFING

1. Alternate: Substitution of Section 07 5400 2-PLY THERMOPLASTIC HYBRID ROOF SYSTEM. In lieu of use of Section 07 5216 SBS Modified Bituminous Membrane. All other conditions remain.

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION 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 substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of 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 substitutions 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 as well as 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. Detailed comparison of Contractor's construction schedule using proposed substitutions 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.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. 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.
 - l. 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.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 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.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 7 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: Architect will consider requests for substitution if received within 30 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.
 - 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 offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

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- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - 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.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 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 after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

- c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, 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 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - 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 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 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 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 seven days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Sub schedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide sub schedules showing values coordinated with each phase of payment.
 - 4. Sub schedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide sub schedules 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. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of 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.
 6. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
 7. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
 8. Closeout Costs. 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.

9. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 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.
- 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.
- C. Payment Application Times: Submit Application for Payment to Architect by the 15th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. 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.
- 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. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 5. Products list (preliminary if not final).
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits, if required.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
- H. Retainage
 1. Include % of retainage as 10% of total.
 2. Reduce retainage amount in accordance with 9.3.4 Supplemental General Conditions to the Contract.(00 2213 2017-A201)
- I. 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 previously for Owner occupancy of designated portions of the Work.

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- J. 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. AIA Document G706 Contractor's Affidavit of Payment of Debts and Claims, or facsimile thereof.
 5. AIA Document G706A. Contractor's Affidavit of Release of Liens or facsimile thereof.
 6. AIA Document G707 Consent of Surety to Final Payment or facsimile thereof.
 7. Evidence that claims have been settled.
 8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

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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. RFIs.
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.3 DEFINITIONS

- A. RFI: Request for Information. 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, telephone number, and email address 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 5 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 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.

1.5 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. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with 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 with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form bound in Project Manual (006000 RFI FORM) or Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in 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 by Architect 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 Section 012600 "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 3 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at Progress Meetings. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- 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.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will **not** be provided by Architect for Contractor's use in preparing submittals.
1. General: At Contractor's written request, copies of Architect's CAD files will be provided to contractor for contractors use in connection with Project, subject to the following conditions:
 - a. Waiver must be signed and agreed to receipt of CAD files.
 - b. Fee of \$100.00 per sheet will be assessed for every sheet requested and shall be paid in advance.
 - c. Electronic format will be issued in Architect's current software format.

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 a minimum of 10 working days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.

- f. Lines of communications.
 - g. Procedures for processing field decisions and Change Orders.
 - h. Procedures for RFIs.
 - i. Procedures for testing and inspecting.
 - j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Submittal procedures.
 - m. Preparation of Record Documents.
 - n. Use of the premises and existing building.
 - o. Work restrictions.
 - p. Working hours.
 - q. Owner's occupancy requirements.
 - r. Responsibility for temporary facilities and controls.
 - s. Procedures for moisture and mold control.
 - t. Procedures for disruptions and shutdowns.
 - u. Construction waste management and recycling.
 - v. Parking availability.
 - w. Office, work, and storage areas.
 - x. Equipment deliveries and priorities.
 - y. First aid.
 - z. Security.
 - aa. Progress cleaning.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
- 1. 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. Advise Architect of scheduled meeting dates.
 - 2. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 3. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 4. 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. Progress Meetings: Conduct progress 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 progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 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 will record and distribute the meeting minutes to each party present and to parties requiring information.

- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- E. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
 - 1. 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 meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined 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.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs.
 - 15) Proposal Requests.

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- 16) Change Orders.
 - 17) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

Startup construction schedule.

1. Contractor's Construction Schedule.
2. Construction schedule updating reports.
3. Material location reports.
4. Site condition reports.

1.3 DEFINITIONS

Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

1. Predecessor Activity: An activity that precedes another activity in the network.
2. Successor Activity: An activity that follows another activity in the network.

Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

Format for Submittals: Submit required submittals in the following format:

Working electronic copy of schedule file, where indicated.

1. PDF file.

Startup construction schedule.

Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

Submit a working digital copy of schedule, and labeled to comply with requirements for submittals.

Construction Schedule Updating Reports: Submit with Applications for Payment.

- C. Material Location Reports: Submit at monthly intervals.

- D. Site Condition Reports: Submit at time of discovery of differing conditions.

1.5 COORDINATION

Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

Secure time commitments for performing critical elements of the Work from entities involved.

1. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion and final completion.

Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. STARTUP CONSTRUCTION SCHEDULE

Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for commencement of the Work.

- A. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.7 GANTT-CHART SCHEDULE REQUIREMENTS

Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 15 days of date established for the Notice of Award.

Base schedule on the startup construction schedule and additional information received since the start of Project.

Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.8 REPORTS

Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

Material stored prior to previous report and remaining in storage.

1. Material stored prior to previous report and since removed from storage and installed.

2. Material stored following previous report and remaining in storage.

Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

- B. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

Submit unusual event reports directly to Owner within one day(s) of an occurrence.
Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 - SUBMITTAL 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:

- 1. Submittal schedule requirements.

- B. Related Requirements:

- 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
 - 3. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.

1.3 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."

1.4 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
 - 1. Project name.
 - 2. Date.
 - 3. Name of Architect.

4. Name of Contractor.
 5. Name of firm or entity that prepared submittal.
 6. Names of subcontractor, manufacturer, and supplier.
 7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
 8. Category and type of submittal.
 9. Submittal purpose and description.
 10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 11. Drawing number and detail references, as appropriate.
 12. Indication of full or partial submittal.
 13. Location(s) where product is to be installed, as appropriate.
 14. Other necessary identification.
 15. Remarks.
 16. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Paper Submittals:
1. Permitted UPON REQUEST.
- E. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
- F. Pre-Construction Meeting shall determine acceptable form of transmission.
- 1.5 SUBMITTAL REQUIREMENTS
- A. 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 unsuitable 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 that show 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 Shop Drawings, and before or concurrent with Samples.
- B. 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.
- 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. Paper & PDF Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches , but no larger than 30 by 42 inches.
 - a. If Submitting paper provide:
 - 1) Two opaque (bond) copies of each submittal. Architect will return one copy(ies).
 - 2) MEP submittals: Three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.
- C. 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.

- D. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- E. Certificates:
1. Certificates and Certifications Submittals: Submit 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. Provide a notarized signature where indicated.
 2. 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.
 3. 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.
 4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 6. 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.
- F. Test and Research Reports:
1. 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.
 2. 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.
 3. 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.
 4. 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.

5. 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.
6. 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:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.6 CONTRACTOR'S REVIEW

- A. Action Submittals 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. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include 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.
 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.7 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.
 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action, as follows:
 - a. No exceptions taken
 - b. Make corrections noted
 - c. Amend and resubmit

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- d. Rejected-See remarks.
- 2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - a. No exceptions taken
 - b. Make corrections noted
 - c. Amend and resubmit
 - d. Rejected-See remarks.
- 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 are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will discard submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014200 - 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," "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 operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. 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.

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 unless otherwise indicated.
- 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 in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. AABC - Associated Air Balance Council; www.aabc.com.
 - 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 - 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 - 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 - 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 - 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
 - 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 - 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 - 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
 - 12. AGA - American Gas Association; www.aga.org.
 - 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 - 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 15. AI - Asphalt Institute; www.asphaltinstitute.org.
 - 16. AIA - American Institute of Architects (The); www.aia.org.

17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.;
www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering
Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning
Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers);
www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada;
www.awmac.com.
40. AWPAA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association;
www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture
Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton
Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>.
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.;
www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.

55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. Cisca - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csagroup.com.
65. CSA - CSA International; www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).
73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsintstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarooft.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).

96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants;
www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. ICBO - International Conference of Building Officials; (See ICC).
101. ICC - International Code Council; www.iccsafe.org.
102. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
103. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
104. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
105. IEC - International Electrotechnical Commission; www.iec.ch.
106. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The);
www.ieee.org.
107. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
108. IESNA - Illuminating Engineering Society of North America; (See IES).
109. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
110. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
111. IGSHPA - International Ground Source Heat Pump Association;
www.igshpa.okstate.edu.
112. ILI - Indiana Limestone Institute of America, Inc.; www.ili.ai.com.
113. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
114. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
115. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
116. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
117. ISO - International Organization for Standardization; www.iso.org.
118. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
119. ITU - International Telecommunication Union; www.itu.int/home.
120. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
121. LMA - Laminating Materials Association; (See CPA).
122. LPI - Lightning Protection Institute; www.lightning.org.
123. MBMA - Metal Building Manufacturers Association; www.mbma.com.
124. MCA - Metal Construction Association; www.metalconstruction.org.
125. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
126. MFMA - Metal Framing Manufacturers Association, Inc.;
www.metalframingmfg.org.
127. MHIA - Material Handling Industry of America; www.mhia.org.
128. MIA - Marble Institute of America; www.marble-institute.com.
129. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
130. MPI - Master Painters Institute; www.paintinfo.com.
131. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
132. NAAMM - National Association of Architectural Metal Manufacturers;
www.naamm.org.

133. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
134. NADCA - National Air Duct Cleaners Association; www.nadca.com.
135. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
136. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
137. NBI - New Buildings Institute; www.newbuildings.org.
138. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
139. NCMA - National Concrete Masonry Association; www.ncma.org.
140. NEBB - National Environmental Balancing Bureau; www.nebb.org.
141. NECA - National Electrical Contractors Association; www.necanet.org.
142. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
143. NEMA - National Electrical Manufacturers Association; www.nema.org.
144. NETA - InterNational Electrical Testing Association; www.netaworld.org.
145. NFHS - National Federation of State High School Associations; www.nfhs.org.
146. NFPA - National Fire Protection Association; www.nfpa.org.
147. NFPA - NFPA International; (See NFPA).
148. NFRC - National Fenestration Rating Council; www.nfrc.org.
149. NHLA - National Hardwood Lumber Association; www.nhla.com.
150. NLGA - National Lumber Grades Authority; www.nlga.org.
151. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
152. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
153. NRCA - National Roofing Contractors Association; www.nrca.net.
154. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
155. NSF - NSF International; www.nsf.org.
156. NSPE - National Society of Professional Engineers; www.nspe.org.
157. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
158. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
159. NWFA - National Wood Flooring Association; www.nwfa.org.
160. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
161. PDI - Plumbing & Drainage Institute; www.pdionline.org.
162. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
163. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
164. RFCI - Resilient Floor Covering Institute; www.rfci.com.
165. RIS - Redwood Inspection Service; www.redwoodinspection.com.
166. SAE - SAE International; www.sae.org.
167. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
168. SDI - Steel Deck Institute; www.sdi.org.
169. SDI - Steel Door Institute; www.steeldoor.org.
170. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
171. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
172. SIA - Security Industry Association; www.siaonline.org.
173. SJI - Steel Joist Institute; www.steeljoist.org.

174. SMA - Screen Manufacturers Association; www.smainfo.org.
 175. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
 176. SMPTE - Society of Motion Picture and Television Engineers; www.smpite.org.
 177. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
 178. SPIB - Southern Pine Inspection Bureau; www.spib.org.
 179. SPRI - Single Ply Roofing Industry; www.spri.org.
 180. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
 181. SSINA - Specialty Steel Industry of North America; www.ssina.com.
 182. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
 183. STI - Steel Tank Institute; www.steel-tank.com.
 184. SWI - Steel Window Institute; www.steel-windows.com.
 185. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
 186. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
 187. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
 188. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
 189. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
 190. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
 191. TMS - The Masonry Society; www.masonrysociety.org.
 192. TPI - Truss Plate Institute; www.tpinst.org.
 193. TPI - Turfgrass Producers International; www.turfgrasssod.org.
 194. TRI - Tile Roofing Institute; www.tilerroofing.org.
 195. UL - Underwriters Laboratories Inc.; www.ul.com.
 196. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
 197. USAV - USA Volleyball; www.usavolleyball.org.
 198. USGBC - U.S. Green Building Council; www.usgbc.org.
 199. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
 200. WA - Wallcoverings Association; www.wallcoverings.org.
 201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
 202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
 203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
 204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
 205. WI - Woodwork Institute; www.wicnet.org.
 206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
 207. WWPA - Western Wood Products Association; www.wwpa.org.
- 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. This information is believed to be accurate as of the date of the Contract Documents.
1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
 2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 3. ICC - International Code Council; www.iccsafe.org.

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4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

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SECTION 015000 - 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.

1.3 USE CHARGES

- A. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- B. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- C. Electric Power Service Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- D. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- E. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

- D. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
 2. 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.
 3. Indicate methods to be used to avoid trapping water in finished work.

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 United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete galvanized-steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

- A. Field Offices: Owner will not be able to provide interior space within unused garage bay for field offices for duration of Project . Contractor should plan on supplying a field office trailer, to be parked where owner indicates.
- B. 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.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities 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.

3.2 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 011000 "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.

3.3 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, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

- E. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

3.4 SUPPORT FACILITIES INSTALLATION

- A. Comply with the following:

- 1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible in accordance with ASTM E136. 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. Storage and Staging: Use designated areas of Project site for storage and staging needs.

- E. 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.

- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

- 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

- H. Temporary Use of Permanent Stairs: Use of existing stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 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. Site Enclosure Fence: Before demolition operations begin furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project storage site or portion determined sufficient to accommodate construction operations
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- D. 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.
- E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- F. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- G. Temporary Enclosures: Provide temporary enclosures for protection of existing facilities, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
- H. 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. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with 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.

3.6 MOISTURE AND MOLD CONTROL

- A. Exposed Construction Period: 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.

3.7 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. 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.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

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.

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.

1. **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.
2. **Comparable Product:** Product that is demonstrated and approved by Architect 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.

Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

- B. **Subject to Compliance with Requirements:** Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

1.3 PRODUCT WARRANTIES

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.

Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

1. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

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.

Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.1 SUMMARY

Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

Construction layout.

1. Field engineering and surveying.
2. Installation of the Work.
3. Coordination of Owner-installed products.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.

1.2 DEFINITIONS

Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

- A. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

PART 2 - PRODUCTS

2.1 MATERIALS

General: Comply with requirements specified in other Sections.

For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

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.

Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

Description of the Work.

2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

Existing Utility Information: Furnish information to 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.

- A. 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.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. 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 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

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.

3.4 INSTALLATION

General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- A. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- B. 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.
- C. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- D. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.
- E. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- F. 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.
- G. Repair or remove and replace damaged, defective, or nonconforming Work.

Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.5 PROGRESS CLEANING

General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

1. 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.
2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

Use containers intended for holding waste materials of type to be stored.

Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

Site: Maintain Project site free of waste materials and debris.

- B. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

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.

- C. 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 conditions as found in Section 015000 Temporary Facilities and Controls.
- D. 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.
- E. 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.
- F. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 STARTING AND ADJUSTING

Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."

- 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.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

- A. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.

1.2 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

1.4 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 Substantial Completion: Complete the following a minimum of 3 days prior to requesting inspection for determining date of 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.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 3 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
 2. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 4. Complete final cleaning requirements.
 5. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 3 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 Certificate of Substantial Completion 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.

1.5 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 in accordance with Section 012900 "Payment Procedures."
 2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 3 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.

1.6 LIST OF INCOMPLETE ITEMS

- 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.
- B.
1. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
 2. 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.
- 3. Submit list of incomplete items in the following format:
 - a. PDF Electronic File: Architect, through Construction Manager, will return annotated file.

1.7 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. 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.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.

MOUNTAIN LINE TRANSIT AUTHORITY
RE-ROOFING PROJECT
WESTOVER, WV

- b. 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.
 - c. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - d. Remove labels that are not permanent.
 - e. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit on digital media acceptable to Architect by email to Architect. Enable reviewer comments on draft submittals.
 - 2. Submit three paper copies. Architect will return two copies.
- C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's 's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's 's comments and prior to commencing demonstration and training.
- D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.3 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - 2. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.4 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Architect.

8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.5 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.6 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.

6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.7 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds, as described below.
- C. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.

6. Demonstration and training video recording, if available.

- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.
- H. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1.8 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

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- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set(s) of marked-up record prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit two paper-copy set(s) of marked-up record prints.
 - 2) Submit PDF electronic files of scanned Record Prints and 1 set(s) of file prints on an external digital format.
 - 3) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit annotated PDF electronic files and paper copies of Project's Specifications, including addenda and Contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories and paper copies of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.3 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Revisions to routing of piping and conduits.
 - d. Revisions to electrical circuitry.
 - e. Actual equipment locations.
 - f. Locations of concealed internal utilities.
 - g. Changes made by Change Order or Construction Change Directive.
 - h. Changes made following Architect's written orders.
 - i. Details not on the original Contract Drawings.
 - j. Field records for variable and concealed conditions.
 - k. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled.

2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect .
 - e. Name of Contractor.

1.4 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.
- B. Format: Submit record specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.5 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
- C. Format: Submit Record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.
 - 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.6 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's 's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.3 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

- C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
 - a. Diagnosis instructions.

- b. Repair instructions.
- c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
- d. Instructions for identifying parts and components.
- e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least seven days' advance notice.
- C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- D. Cleanup: Collect used and leftover educational materials and remove from Project site give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017900

DIVISION 06

SECTION 06 1053 - MISCELLANEOUS ROUGH CARPENTRY

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. Rooftop equipment bases and support curbs.
 - 2. Wood blocking, cants, and nailers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber and the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Hem-fir or hem-fir (north), Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

2.3 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

- D. Wood Screws: ASME B18.6.1.
- E. Screws for Fastening to Metal Framing: ASTM C 954, length as recommended by screw manufacturer for material being fastened.
- F. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
- G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

2.4 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- C. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
- E. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function

of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

- F. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- G. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
 - 3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
- H. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 PROTECTION

- A. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 1053

DIVISION 07

**SECTION 07 0150.19
PREPARATION FOR RE-ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Replacement of existing roofing system in preparation for entire new roofing system.
- B. Removal of existing flashing and counterflashings.
- C. Temporary roofing protection.

1.02 RELATED REQUIREMENTS

- A. Section 07 5200 - Modified Bituminous Membrane Roofing.
- B. Section 07 5400 - 2Ply Thermoplastic Roof System as alternate: Roof system.

1.03 REFERENCE STANDARDS

- A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2024.
- B. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2024.
- C. ASTM D312/D312M - Standard Specification for Asphalt Used in Roofing; 2016a (Reapproved 2023).
- D. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).
- E. ASTM D4601/D4601M - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing; 2004 (Reapproved 2020).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with affected mechanical and electrical work associated with roof penetrations.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Attendees:
 - a. Architect.
 - b. Contractor.
 - c. Owner.
 - d. Installer.
 - e. Roofing system manufacturer's field representative.
 - 2. Meeting Agenda: Provide agenda to participants prior to meeting in preparation for discussions on the following:
 - a. Removal and installation schedule.
 - b. Necessary preparatory work.
 - c. Protection before, during, and after roofing system installation.
 - d. Removal of existing roofing system.
 - e. Installation of new roofing system.
- C. Schedule work to coincide with commencement of installation of new roofing system.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit for each type of material.
- C. Shop Drawings: Indicate size, configuration, and installation details.

1.06 QUALITY ASSURANCE

- A. Materials Removal Company Qualifications: Company specializing in performing work of type specified with at least three years of documented experience.
 - 1. Comply with EPA notification regulations prior to start of roofing removal work.

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2. Comply with removal and disposal regulations of local authorities having jurisdiction (AHJ).
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.08 FIELD CONDITIONS

- A. Existing Roofing System: Modified bituminous roofing.
- B. Do not remove existing roofing membrane when weather conditions threaten the integrity of building contents or intended continued occupancy.
- C. Maintain continuous temporary protection prior to and during installation of new roofing system.
- D. Provide notice at least three days before starting activities that will affect normal building operations.
- E. Verify that occupants have been evacuated from building areas when work on structurally impaired roof decking is scheduled to begin.
- F. Owner will occupy building areas directly below re-roofing area.
 1. Provide Owner with at least 48 hours written notice of roofing activities that may affect their operations and to allow them to prepare for upcoming activities as necessary.
 2. Do not disrupt Owner's operations or activities.
 3. Maintain access of Owner's personnel to corridors, existing walkways, and adjacent buildings.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. See the following sections for additional information on components relating to this work:
 1. Replacement and removal of existing roofing system in preparation for entire new roofing system, see Section 07 5216 SBS Modified Bituminous, 07 5400 2 PLY Thermoplastic Hybrid Roof System.

2.02 MATERIALS

- A. Patching Materials: Provide necessary materials in accordance with requirements of existing roofing system.
- B. Temporary Roofing Protection Materials:
 1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.

2.03 ACCESSORIES

- A. Fasteners: Type and size as required and compatible with existing and new roofing system to resist local wind uplift.
- B. Roof Vent Pipe Extension: Solid-wall PVC fitting consisting of pipe and splice sleeve inserts, configured for insertion and sealing to existing plumbing vent piping, sized to fit inside diameter of plumbing vent piping, enabling extension of piping to field-determined height to meet local building code requirements for plumbing vent pipe height above existing roof level.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.

3.02 PREPARATION

- A. Sweep roof surface clean of loose matter.
- B. Remove loose refuse and dispose of properly off-site.

3.03 MATERIAL REMOVAL

- A. Remove only existing roofing materials that can be replaced with new materials the same day.
- B. Remove metal counter flashings.

3.04 INSTALLATION

- A. Coordinate scope of this work with requirements for installation of new roofing system, see Section 07 5100 for additional requirements.

3.05 PROTECTION

- A. Provide temporary protective sheeting over uncovered deck surfaces.
- B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
- C. Provide for surface drainage from sheeting to existing drainage facilities.
- D. Do not permit traffic over unprotected or repaired deck surface.

3.06 SCHEDULES

- A. Entire Roofing Area: Remove existing roofing gravel, perimeter flashings, base flashings, counter flashings, vent stack flashings, roofing membrane, insulation, vapor retarder, and insulation down to existing metal deck..
- B. Remove roof mounted mechanical equipment, electrical equipment, and solar panels prior to roof membrane removal..
 - 1. Contractor to use best judgement on actual removal of mechanical equipment. Preference is to retain operating equipment on existing curbs during removal and re-roofing.
 - 2. Curbs for equipment to be raised and/or set at min. 8" above finished roof level, taking new slopes and insulation into account.

END OF SECTION

**SECTION 07 2100
THERMAL ROOF INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation with integral vapor retarder over existing metal roof deck.

1.02 REFERENCE STANDARDS

- A. ASTM C165 - Standard Test Method for Measuring Compressive Properties of Thermal Insulations; 2023.
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.
- C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2025.
- D. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2016 (Reapproved 2023).
- E. ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging; 2025.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
- G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Shop Drawings: Submit drawings that indicate setting plan for insulation.
- D. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- G. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of contractor accreditation and installer certification on project site during and after installation. Present on-site documentation upon request.

1.04 QUALITY ASSURANCE

- A. Air Barrier Association of America (ABAA) Evaluated Materials Program (EAP); www.airbarrier.org/#sle: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation over Roof Deck: Polyisocyanurate board.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, comply with ASTM C1289.

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1. Classifications:
 - a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
 - 1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.
 - 2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi (138 kPa), minimum.
 - 3) Thermal Resistance, R-value (RSI-value): At 1-1/2 inch (38.1 mm) thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at 75 degrees F (24 degrees C).
 2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 4. Water Vapor Permeance: 1.2 perm (68 ng/(Pa s sqm)), maximum, at 1 inch (25 mm) thickness, and when tested in accordance with ASTM E96/E96M, desiccant method.
 5. Board Size: 48 inch by 96 inch (1220 mm by 2440 mm).
 6. Board Thickness: 1.5 inch (37.5 mm).
 7. Tapered Board: Slope as indicated; minimum thickness ; fabricate of fewest layers possible.
 8. Board Edges: Square.
 9. Products: Basis of Design: Siplast: Paratherm. Other Available Manufacturers but not limited to:
 - a. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
 - b. GAF; EnergyGuard HD PLUS Polyiso Insulation: www.gaf.com/#sle.
 - c. GAF; EnergyGuard NH Barrier Polyiso Roof Insulation: www.gaf.com/#sle.
- B. Rigid Cellular Polyisocyanurate (ISO) Tapered Thermal Insulation Board with Facers Both Sides: Complying with ASTM C1289.
1. Classifications:
 - a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
 - 1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.
 - 2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi (138 kPa), minimum.
 - 3) Thermal Resistance, R-value (RSI-value): At 1-1/2 inch (38.1 mm) thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at 75 degrees F (24 degrees C).
 2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 4. Board Size: 48 inch by 96 inch (1220 mm by 2440 mm).
 5. Board Edges: Square.
 6. Products: Basis of Design: Siplast: Paratherm. Other available Manufacturers but limited to:
 - a. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
 - b. GAF; EnergyGuard HD PLUS Polyiso Insulation: www.gaf.com/#sle.

2.03 ACCESSORIES

- A. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
1. Length as required for thickness of insulation material and penetration of deck substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

- A. Board Installation Over Roof Deck, General:
 - 1. See applicable roofing specification section for specific board installation requirements.
 - 2. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
 - 3. Do not apply more insulation than can be covered with roofing on the same day.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

3.04 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 5201

ROOF COVER BOARD OVER INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cover boards.

1.02 REFERENCE STANDARDS

- A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2024.
- B. FM (AG) - FM Approval Guide; Current Edition.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's catalog data COVER BOARD.
- C. Samples: Submit 1 (one) samples _6_ by _6_ inches in size

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact unless otherwise indicated.
- B. Store materials in weather protected environment, clear of ground and moisture; ballast materials may be stored outdoors.
- C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cover Boards: Glass- Mat Gypsum Core Only
 - 1. Note: Wood Fiber is NOT ALLOWED.

2.02 COVER BOARDS

- A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
 - 1. Thickness: 1/2 inch (12.7 mm), fire-resistant.
 - 2. Products:
 - a. Georgia-Pacific; DensDeck: www.densdeck.com/#sle.
 - b. Georgia-Pacific; DensDeck Prime Roof Boards with EONIC Technology: www.densdeck.com/#sle.
 - c. USG: Securock Brand Ultralight Coated Glass-Mat Roof Board.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.

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- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 INSTALLATION - COVER BOARDS

- A. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- B. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

END OF SECTION

SECTION 07 52 16 – STYRENE BUTADIENE STYRENE MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The project plans, details and general Contract requirements apply to this Section.

1.2 SUMMARY

A. Items Included:

1. Roof insulation.
2. Insulation Cover panel.
3. SBS modified bituminous membrane roofing.
4. Walktread.

B. Related Sections:

1. [Section 061053 "Miscellaneous Rough Carpentry"] for wood nailers, curbs, and blocking, and for wood-based, structural-use roof deck panels.
2. 070150.19 Preparation for Re-roofing.
3. Section 07 71 00 "Roof Specialties" for premanufactured metal copings, roof edge fascia, gravel stops, reglets, roof edge flashings, and counter flashings.
4. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.3 REFERENCES

References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout this specification section.

1. ASTM: American Society for Testing and Materials
2. FM: Factory Mutual Engineering and Research
3. NRCA: National Roofing Contractors Association
4. OSHA: Occupational Safety and Health Administration
5. SMACNA: Sheet Metal and Air Conditioning Contractors National Association
6. UL: Underwriters Laboratories

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Perform work in accordance with all federal, state and local codes.
- B. Design Requirements:
 - 1. Uniform Wind Uplift Load Capacity
 - a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
 - b. Roof Section "A"
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2) Importance Category: IV.
 - 3) Importance Factor of: 1.0
 - 4) Wind Speed: 116 mph
 - 5) Exposure Category: C
 - 6) Design Roof Height: 21 feet.
 - 7) Minimum Building Width: 220 feet.
 - 8) Roof Pitch: 1/4 :12.
 - 9) Roof Area Design Uplift Pressure:
 - a) Zone 1 - Field of roof 36.0 psf
 - b) Zone 2 - Eaves, ridges, hips and rakes 45.6 psf
 - c) Zone 3 - Corners 60.0 psf
 - c. Roof Section "B"
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2) Importance Category: IV.
 - 3) Importance Factor of: 1.0
 - 4) Wind Speed: 116 mph
 - 5) Exposure Category: C
 - 6) Design Roof Height: 15 feet.
 - 7) Minimum Building Width: 100 feet.
 - 8) Roof Pitch: 1/4 :12.
 - 9) Roof Area Design Uplift Pressure:
 - a) Zone 1 - Field of roof 33.6 psf
 - b) Zone 2 - Eaves, ridges, hips and rakes 42.5 psf
 - c) Zone 3 - Corners 55.9 psf
 - 10)
 - 2. Live Load: 30 psf, or not to exceed original building design, whichever is greater.
 - 3. Dead Load: 20 psf, or not to exceed original building design, whichever is greater.
 - a. Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.

1.5 PREINSTALLATION MEETINGS

- A. Pre-installation Roofing Conference at Jobsite: Hold a meeting with the Owner, Construction Manager, Architect, Roofing Contractor, Roofing Manufacturer's

Representative, and other applicable trades to discuss the means and methods related to roofing installation. The Roofing Contractor shall examine the substrate that will receive the specified roofing materials and confirm its suitability for attachment of the specified roofing system.

1.6 SUBMITTAL OF ALTERNATE SYSTEMS

- A. Consideration of Alternate Systems: Submit primary roof systems to be considered as equals to the specified roof system no less than 10 days prior to bid date. Primary roof systems which have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. Submittals shall include the following:
1. Two 3 inch x 5 inch samples of the primary roofing and flashing sheets.
 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 3. Evidence that the manufacturer of the proposed roofing system utilizes a quality management system that is ISO 9001 certified. Documentation of ISO 9001 certification of foreign subsidiaries without domestic certification will not be accepted.
 4. Evidence and description of manufacturer's quality control/quality assurance program for the primary roofing products supplied. The quality assurance program description shall include all methods of testing for physical and mechanical property values. Provide confirmation of manufacturer's certificate of analysis for reporting the tested values of the actual material being supplied for the project prior to issuance of the specified guarantee.
 5. Descriptive list of the materials proposed for use.
 6. Evidence of Underwriters' Laboratories Class B acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings.
 7. Evidence that the roof configuration (including fastening of insulation) has been tested by an accredited independent testing agency to meet the design wind load pressure indicated in Part 1.07 C2.
 8. Letter from the proposed primary roofing manufacturer confirming that a phased roof application, with only the modified bitumen base ply in place for a period of up to 10 weeks, is acceptable and approved for this project.
 9. List of 3 of the proposed primary roofing manufacturer's projects, located in the United States, of equal size and degree of difficulty which have been performing successfully for a period of at least 10 years.
 10. Letter from the proposed primary roofing manufacturer confirming that the filler content in the elastomeric blend of the proposed roof membrane and flashing components does not exceed 35% in weight.
 11. Complete list of material physical and mechanical properties for each sheet including: weights and thicknesses; low temperature flexibility; peak load; ultimate

elongation; dimensional stability; compound stability; high temperature stability; granule embedment and resistance to thermal shock for foil faced products.

12. Evidence that the roof system shall pass 500 cycles of ASTM D5849 Resistance to Cyclic Joint Displacement (fatigue) at 14°F (-10°C). Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D5849 after heat conditioning performed in accordance with ASTM D5147.
 13. Sample copy of the proposed guarantee.
- B. Technical Product Data: Submit the manufacturer's technical product data sheets for each type of product.
 - C. Shop Drawings: Include plans, sections, and shop drawings/details for all applicable conditions.
 - D. Product Samples: Submit product samples of the specified base, finish, flashing reinforcing, and flashing membrane plies.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. Installer: Submit written confirmation that they have a minimum of 2 years of experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products.
2. Manufacturer: Submit written confirmation that the manufacturer of the primary roofing products has been successfully producing the specified types of primary products for not less than 10 years with a consistent composition for a minimum of 5 years.

B. System Qualification:

1. Intent to Warrant Letter: Submit a signed letter on the roof membrane manufacturer's letterhead, confirming that specified roofing system complies with the guarantee requirements indicated in Part 1.11 and the criteria indicated in Part 2.2 Roof Membrane Sheet Materials.
2. Cyclic Fatigue: Submit confirmation that the proposed roof system will pass 500 cycles of ASTM D5849 Resistance to Cyclic Joint Displacement (fatigue) at 14°F (-10°C), and 200 cycles after heat conditioning (performed in accordance with ASTM D5147), showing no signs of membrane cracking or interply delamination.
3. Sample Guarantee: Submit a sample copy of the manufacturer's proposed Guarantee.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Submit the manufacturer's care and maintenance guide.
- B. Executed Guarantee: Provide the Owner with an executed version of the specified guarantee.

1.9 QUALITY ASSURANCE

- A. Fire Rating: Submit evidence of exterior fire-test exposure by an approved third-party testing agency in accordance with ASTM E108 or UL 790 guidelines.
 - 1. Class [A]
- B. Hail Rating: Submit evidence by FM Global that the roof configuration has been tested to meet the following specified hail resistance design.
 - 1. Class 1-SH (severe hail) exposure.
- C. Wind Uplift Rating: Submit evidence by an approved third-party testing agency that the roof configuration has been tested to meet the following specified wind uplift design.
 - 1. Class 1, I-90 windstorm construction.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Storage: Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing manufacturer.
 - 1. Protect stored liquid material from direct sunlight, heat, open fire, ignition sources, oxidizing agents, strong acids, and strong alkalis.
 - 2. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protection: Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Comply with the insulation manufacturer's written instructions for handling, storing, and protecting materials during installation.
- D. Handling: Handle and place roofing materials and equipment in a manner to avoid permanent deflection of deck.

1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing to be installed in accordance with manufacturer's written instructions and warranty requirements.
- B. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.
- C. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
- D. Site Condition: Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.
- E. Torch Safety: Crew members handling torches shall be trained by an Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractors Association (NRCA), and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity, and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.

1.12 GUARANTEE

- A. Manufacturer's Guarantee: Provides that the Manufacturer will repair leaks through the covered roofing materials due to material or workmanship defects, subject to certain exclusions, during the specified time period. Refer to guarantee for complete coverage and restrictions.
 - 1. The Guarantee shall provide coverage for the roofing membrane, base flashings, roof insulation, fasteners, insulation adhesive, and cover panel. The Guarantee shall be non-prorated and contain no deductibles or limitations on coverage amount.
 - 2. Guarantee Period: 25 years from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing contractor's warranty signed by the Installer, including all components of the roofing and insulation system for the following warranty period:
 - 1. Warranty Period: **[25]** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: A roof system by the following manufacturer is approved for application.
 - 1. Siplast, Inc.

- B. Other manufacturer's will be considered that meet specifications herein. Available manufacturers are, but not limited to:
- a. Garland
 - b. Johns Manville
 - c. GAF

2.2 ROOFING MEMBRANE SHEET MATERIALS

- A. Base Ply: An ASTM D6163, Type I, Grade S homogenous membrane with a glass-fiber reinforcing mat impregnated/saturated and coated each side with SBS modified bitumen blend and dusted with a fine silica parting agent on both sides. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen. The base ply shall possess waterproofing capability, such that a phased roof application can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system and possess the following physical/mechanical properties.

1. Thickness (avg): 91 mils (2.3 mm) (ASTM D5147)
2. Thickness (min): 87 mils (2.2 mm) (ASTM D5147)
3. Weight (min per 100 ft² of coverage): 62 lb (3.0 kg/m²)
4. Peak filler content in elastomeric blend - 35% by weight
5. Low temperature flexibility @ -15°F (-26°C): PASS (ASTM D5147)
6. Peak Load (avg) @ 73°F (23°C): 30 lbf/inch (5.3 kN/m) (ASTM D5147)
7. Peak Load (avg) @ 0°F (-18°C): 70 lbf/inch (12.3 kN/m) (ASTM D5147)
8. Ultimate Elongation (avg.) @ 73°F (23°C): 50% (ASTM D5147)
9. Compound Stability (max): 0.1% (ASTM D5147)
10. High Temperature Stability (min): 250°F (121°C) (ASTM D5147)

> Paradiene 20 by Siplast, Inc.

- B. Finish Ply: An ASTM D6163, Type I, Grade G homogenous membrane with a glass-fiber reinforcing mat impregnated/saturated and coated each side with SBS modified bitumen blend and dusted with a fine silica parting agent on bottom surface and a coarse mineral-granule top surfacing. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen.

1. Thickness (avg): 130 mils (3.3 mm) (ASTM D5147)
2. Thickness at selvage (coating thickness) (avg): 98 mils (2.5 mm) (ASTM D5147)
3. Thickness at selvage (coating thickness) (min): 94 mils (2.4 mm) (ASTM D5147)
4. Weight (min per 100 ft² of coverage): 90 lb (4.4 kg/m²)
5. Peak filler content in elastomeric blend: 35% by weight
6. Low temperature flexibility @ -15° F (-26° C): PASS (ASTM D5147)
7. Peak Load (avg) @ 73°F (23°C): 30 lbf/inch (5.3 kN/m) (ASTM D5147)
8. Peak Load (avg) @ 0°F (-18°C): 75 lbf/inch (13.2 kN/m) (ASTM D5147)
9. Ultimate Elongation (avg.) @ 73°F (23°C): 55% (ASTM D5147)

10. Compound Stability (max): 0.1% (ASTM D5147)
11. High Temperature Stability (min): 250°F (121° C) (ASTM D5147)
12. Granule Embedment (max loss): 2.0 grams per sample (ASTM D5147)
13. Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
14. Reinforcement: fiberglass mat or other meeting the performance and Compound stability criteria
15. Surfacing: ceramic granules

> Paradiene 30 FR by Siplast, Inc.

2.3 BASE FLASHING SHEET MATERIALS

- A. Flashing Reinforcing Ply and Cant Backer: An ASTM D6163, Type I, Grade S homogenous membrane with a glass-fiber reinforcing mat impregnated/saturated and coated each side with SBS modified bitumen blend with a factory applied polymer modified asphalt self-adhesive on the back surface of the sheet to provide full adhesion to the total surface area of the substrate. The back side of the base ply shall be surfaced with a removable film.
 1. Paradiene 20 SA by Siplast, Inc.
 2. Granule-Surfaced Flashing Sheet: ASTM D6162, Type II Grade G homogenous membrane with a fiberglass scrim/polyester reinforcing mat composite impregnated/saturated and coated each side with the SBS modified bitumen blend and coated one side with a torch grade SBS bitumen blend adhesive layer with a grooved pattern to provide optimum burn off of the plastic film and to maximize application rates. The membrane shall have a coarse mineral-granule top surfacing. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen.
- B. 1. Parafor 30 TG by Siplast, Inc. Liquid Flashing System: The specified liquid flashing system shall consist of a catalyzed PMMA-based membrane fully reinforced with a non-woven polyester fleece that is installed over a prepared substrate.
 1. Parapro 123 Flashing by Siplast, Inc.

2.4 PRIMERS

- A. Low VOC Asphalt Primer: Primer shall meet ASTM D41 criteria and South Coast Air Quality District and Ozone Transport Commission requirements.
 1. PA-917 Primer by Siplast, Inc.
- B. Primer for Self-Adhesive Membranes: Primer for self-adhesive membranes shall be a single component, water-based resinous primer formulated to condition masonry,

wood, plywood, concrete, asphaltic, and gypsum surfaces to facilitate adhesion of self-adhesive membranes.

TA-119 Primer by Siplast, Inc

2.5 AUXILIARY ROOFING MATERIALS

- A. Cold-Applied Asphalt Adhesive: An asphalt, solvent blend conforming to ASTM D4479, Type II requirements.
 - 1. PA-311 E Adhesive by Siplast, Inc.
- B. Asphalt Roofing Cement: An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D4586 Type II requirements.
 - 1. PA-1021 Plastic Cement by Siplast, Inc.
- C. Sealant: A moisture-curing, self-leveling elastomeric sealant designed for roofing applications.
 - 1. PS-209 Elastomeric Sealant
- D. Sealant: A moisture-curing, non-slumping elastomeric sealant designed for roofing applications.
 - 1. PS-715 NS Elastomeric Sealant
- E. Ceramic Granules: No. 11 grade specification ceramic granules of color scheme matching the granule surfacing of the finish ply.

2.6 ROOF INSULATION

- A. General: Insulation shall be approved in writing by the insulation manufacturer for intended use and for use with the specified roof assembly. Maintain a maximum panel size of 4 feet by 4 feet where polyisocyanurate / fiberboard insulation is specified to be installed in insulation adhesive or hot asphalt. Install only as much insulation as can be made watertight during the same work day.
- B. Polyisocyanurate Board Insulation : A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers, and meeting the criteria established by ASTM C1289, Type II, Class 1, Grade 2. Panels shall be of a thickness to match the intended slopes as indicated in the drawings and be no less than 0.5" .. Acceptable types are as follows:
 - 1. Paratherm by Siplast, Inc.
- C. Tapered Polyisocyanurate Board Insulation: A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers, and

meeting the criteria established by ASTM C1289, Type II, Class 1, Grade 2. The tapered system shall incorporate fill panels of a nominal thickness and provide for a roof slope of 1/4 inch. See tapered insulation drawings. Acceptable types are as follows:

1. Tapered Paratherm system by Siplast, Inc.

2.7 INSULATION COVER PANEL

A. Gypsum Sheathing Panel: A panel composed of a gypsum based, non-structural water resistant core material integrally bonded with fiberglass mats on both sides. Provide panels having a nominal thickness of 1/2 inch. Acceptable types are as follows:

1. DensDeck Prime Gypsum Roof Board, by Georgia Pacific Corporation
2. Wood Fiber Board is NOT acceptable.

2.8 INSULATION ACCESSORIES

A. Insulation Fasteners: The insulation fasteners shall provide attachment required to meet the specified uplift performance and to restrain the insulation panels against the potential for ridging. Insulation Fasteners - Metal Decks: Insulation mechanical fasteners shall be a fluorocarbon coated screw type roofing fastener having a minimum 0.245 inch thread diameter. Plates used in conjunction with the fastener shall be a metal type having a minimum 3 inch diameter, as supplied by the fastener manufacturer.. The fastener shall conform meet or exceed Factory Mutual Standard 4470 and when subjected to 30 Kesternich cycles, show less than 15% red rust. Acceptable insulation fastener types for metal decks are listed below.

1. Parafast HD Fastener by Siplast, Inc.

B. Insulation Adhesive: single or dual component low-rise polyurethane foam adhesive designed specifically for the adhesion of roof insulation to substrate, as well as subsequent layers of insulation. Acceptable manufacturers are as follows:

1. Parafast Insulation Adhesive by Siplast, Inc.

C. Insulation Cant Strips: A cant strip composed of expanded volcanic minerals combined with waterproofing binders, meeting ASTM C728 criteria. The top surface shall be pre-treated with an asphalt based coating. The face of the cant shall have a nominal 4 inch dimension.

D. Tapered Edge Strips: A tapered panel composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The panels shall have a dimension sufficient to provide for a smooth transition and provide proper support for the membrane layer or subsequent layer of insulation when there are transitions of 1/4 inch or greater.

2.9 WALKWAYS

- A. Walktread: A granule-surfaced polymer modified bitumen sheet material reinforced with a prefabricated, puncture resistant polyester core, having a thickness of 0.217 in (5.5 mm) and a width of 30 inches (76.2 cm).

1. Paratread by Siplast, Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Substrate Qualification: The installing contractor shall examine all substrates where the specified roofing and flashing system will be applied and confirm their suitability to receive the specified roofing materials.

3.2 PREPARATION

- A. Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.
- B. Remove all of the following existing conditions:
1. Surface gravel
 2. Roof membrane
 3. Insulation
 4. Base flashings
 5. Edge metal
 6. Flanged metal flashings
 7. Cants
 8. Drain assemblies
 9. Vapor retarder
 10. Metal trim, counter flashing
- C. Asphaltic Primer: Prime metal and concrete and masonry surfaces with a uniform coating of the specified asphalt primer according to the manufacturer's published application rate. Cutting or alteration of the primer is not permitted.

3.3 INSTALLATION OF ROOFING, GENERAL GUIDELINES

- A. Adhesive Application: Apply membrane cold adhesive by roller, squeegee or spray unit in a smooth, even, continuous layer without breaks or voids. Utilize an application rate for each ply as published by the roof membrane manufacturer. Double the adhesive application rate at the end laps of granule surfaced sheets. Where solvent-based adhesive is applied, refer to the manufacturer's inter-ply flashing detail at the locations

that are to receive the specified catalyzed acrylic resin primer/flashing system. Cutting or alteration of the adhesive is not permitted.

- B. General Appearance: Ensure that the finished roofing application has an aesthetically pleasing overall appearance and is acceptable to the Owner.

3.4 INSTALLATION OF INSULATION AND COVERBOARD

- A. Install insulation panels with end joints offset with edges in moderate contact in accordance with the insulation manufacturer's requirements. Where insulation is installed in two or more layers, stagger joints between layers. Maintain a maximum panel size of 4 feet by 4 feet for polyisocyanurate insulation applied in insulation adhesive. Install only as much insulation as can be made watertight within the same work day.
- B. Crickets: Construct crickets of tapered insulation panels in a layout as indicated on the roof plan.
- C. Tapered Edge at Transitions: Field-cut, shape and install tapered edge strip at transitions of 1/4 inch or greater between substrate components to provide a smooth transition and proper support for the subsequent insulation layer or membrane/flashing system components.
- D. Insulation - multiple layer: Mechanically attach the base layers simultaneously to the substrate, using the specified fasteners, at a rate of 1 fastener for every 2.7 square feet of panel area (12 per 4' x 8' panel). Increase the fastening frequency by 50% at the perimeter of the roof and mechanically attach the corners at the rate of 1 fastener per 1 square foot of panel area (32 fasteners per 4-foot by 8-foot panel). Set the top layer of DensDeck Cover Board in an application of the specified insulation adhesive in 3/4- to 1-inch wide beads spaced 12 inches on center in the field of the roof, 6 inches on center at the perimeter of the roof, and 4 inches on center in the corners of the roof. Panels may be affected by post-growth of the insulation adhesive. Continuous walking in of the panels is recommended particularly in perimeter/corner areas with reduced bead spacing. Follow the requirements and guidelines of the insulation adhesive manufacturer/supplier. Stagger the panel joints between insulation layers.

3.5 APPLICATION OF BITUMINOUS ROOFING MEMBRANE

- A. Apply all layers of roofing with side laps running **parallel** to the direction of the slope. Exert sufficient pressure on the roll during application to ensure prevention of air pockets, wrinkles, creases or fishmouths. Refer to the manufacturer's guidelines for maximum sheet lengths and special fastening of the head laps where the roof deck slope exceeds 1/2 inch per foot.

- B. Fully bond the base ply to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the cold adhesive applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.
- C. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the cold adhesive applicator. Stagger end laps of the finish ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.

3.6 APPLICATION OF FLASHING AND STRIPPING

- A. Modified Bitumen Flashing System: Apply the specified base flashing materials in accordance with the manufacturer's standard details. Notify the design team immediately of any flashing heights below 8 inches. For torch applied base flashings, apply a 12-inch self-adhesive cant backing sheet extending 6 inches onto the field of the roof area and a minimum of 6 inches up the vertical surface utilizing minimum 3 inch laps. Set the non-combustible cant into place dry prior to installation of the roof membrane base ply and subsequent flashing system. Flash walls and curbs using the reinforcing sheet and flashing membrane. Exert pressure using a neoprene roller on the flashing sheet during application to ensure complete contact with the vertical/horizontal surfaces, preventing air pockets. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See the manufacturer's schematic for visual interpretation).
- B. Liquid Flashing System: Install the specified liquid-applied flashing system in accordance with the membrane system manufacturer's printed installer's guidelines and other applicable written recommendations as provided by the manufacturer.

3.7 APPLICATION OF SEALANT

- A. Apply a smooth continuous bead of the specified sealant at the exposed finish ply edge transition to metal flashings incorporated into the roof system.

3.8 APPLICATION OF WALKTREAD

- A. Cut the specified walktread into maximum 5 foot lengths and allow to relax until flat. Adhere the sheet using the specified plastic cement. Apply the specified cement in a 3/8 inch thickness to the back of the product in 5 inch by 5 inch spots in accordance with the

pattern as supplied by the walktread manufacturer. Walk-in each sheet after application to ensure proper adhesion. Use a minimum spacing of 2 inches between sheets to allow for proper drainage.

3.9 FIELD QUALITY CONTROL

- A. Notify the manufacturer of job completion in order to schedule a final inspection date. Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the manufacturer's representative. Complete, sign, and send the punch list form to the manufacturer's headquarters.
- B. Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.
- C. Complete all post installation procedures and meet the manufacturer's requirements for issuance of the specified guarantee.

END OF SECTION 07 52 16

SECTION 07 5400

2-PLY THERMOPLASTIC HYBRID ROOF SYSTEM AS ALTERNATE ROOFING MEMBRANE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. 2-Ply Thermoplastic Hybrid Roof System
- B. Accessories.
- C. Edge Treatment and Roof Penetration Flashings.

1.2 RELATED SECTIONS

- A. 07 0150.19 Preparation for Re-Roofing.
- B. 07 2100 Polyisocyanurate Board Insulation for Roof Deck
- C. 07 5201 Roof Cover Boards
- D. 07 7100 Roof Specialties

1.3 REFERENCES

- A. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D 312 - Standard Specification for Asphalt used in Roofing.
- C. ASTM D 451 - Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
- D. ASTM D 1079 Standard Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
- E. ASTM D 1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
- F. ASTM D 1863 Standard Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
- G. ASTM D 2178 Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
- H. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- I. ASTM D 4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
- J. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
- K. ASTM D 6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber

Reinforcements.

- L. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- M. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- N. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.
- O. ASTM E 108 - Standard Test Methods for Fire Test of Roof Coverings
- P. Factory Mutual Research (FM): Roof Assembly Classifications.
- Q. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- R. ANSI-SPRI ES-1 Wind Design Standard for Edge Systems used with Low Slope Roofing Systems.
- S. ASCE 7, Minimum Design Loads for Buildings and Other Structures
- T. UL - Fire Resistance Directory.
- U. FM Approvals - Roof Coverings and/or RoofNav assembly database.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Perform work in accordance with all federal, state and local codes.
- B. Design Requirements:
 - 1. Uniform Wind Uplift Load Capacity
 - a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
 - b. Roof Section "A"
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2) Importance Category: IV.
 - 3) Importance Factor of: 1.0
 - 4) Wind Speed: 116 mph
 - 5) Exposure Category: C
 - 6) Design Roof Height: 21 feet.
 - 7) Minimum Building Width: 220 feet.
 - 8) Roof Pitch: 1/4 :12.
 - 9) Roof Area Design Uplift Pressure:
 - a) Zone 1 - Field of roof 36.0 psf
 - b) Zone 2 - Eaves, ridges, hips and rakes 45.6 psf
 - c) Zone 3 - Corners 60.0 psf
 - c. Roof Section "B"
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2) Importance Category: IV.
 - 3) Importance Factor of: 1.0
 - 4) Wind Speed: 116 mph
 - 5) Exposure Category: C
 - 6) Design Roof Height: 15 feet.

- 7) Minimum Building Width: 100 feet.
- 8) Roof Pitch: 1/4 :12.
- 9) Roof Area Design Uplift Pressure:
 - a) Zone 1 - Field of roof 33.6 psf
 - b) Zone 2 - Eaves, ridges, hips and rakes 42.5 psf
 - c) Zone 3 - Corners 55.9 psf
- 10)
- 2. Live Load: 30 psf, or not to exceed original building design, whichever is greater.
- 3. Dead Load: 20 psf, or not to exceed original building design, whichever is greater.
 - a. Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.
- C. Energy Star: Roof System shall comply with the initial and aged reflectivity required by the U.S. Federal Government's Energy Star program.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 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 instructions.
- C. Shop Drawings: Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor barrier, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.
- D. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins.
- E. Manufacturer's Certificate: Certify that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- F. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- G. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Testing must be performed at 77 deg. F. Tests at 0 deg. F will not be considered.
- H. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147.
- I. Manufacturer's Fire Compliance Certificate: Certify that the roof system furnished is approved by Factory Mutual (FM), Underwriters Laboratories (UL), Warnock Hersey (WH) or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.

- J. Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.

1.6 CLOSE OUT SUBMITTALS

- A. General: Comply with Requirements of Division 01 Section Closeout Submittals.
- B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C. Roofing Maintenance Instructions: Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience.
- C. Installer Qualifications: Company specializing in modified bituminous roofing installation with not less than 5 years experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Supervisor/Foremen must be fluent in the English language and maintain proper supervision of workmen.
- E. Maintain a copy of the Contract Documents in the possession of the Supervisor/Foreman and on the roof at all times.
- F. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- G. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
 - 1. Upon request of the Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
 - 2. Manufacturer shall have direct authority and control over all fabrication of steel components as well as the raw materials used in their fabrication.
 - 3. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001 approval.
 - 4. Engage the Manufacturer's Field Representative to conduct required periodic inspections of work in progress as described herein and shall furnish written documentation of all such inspections.
 - 5. Manufacturer shall provide the project Owner with a written statement that they will provide site inspections three days per week that confirms that the project is being constructed as specified, by an experienced, full-time employee of the company.

1.8 PRE-CONSTRUCTION & PROGRESS MEETINGS

- A. Conduct preconstruction and progress meeting as outlined in section 01 31 00.
- B. Conduct Pre-construction meeting at project site:
 - 1. Meet with Owner, roofing installer and major subcontractors, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including set up and mobilization areas for stored material and work area.
 - 3. Review safety procedures and site-specific requirements relating to the work and areas to be accessed.
 - 4. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 5. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
 - 7. Review governing regulations and requirements for insurance and certificates if applicable.
 - 8. Review temporary protection requirements for roofing system during and after installation.
 - 9. Review roof observation and repair procedures after roofing installation.
 - 10. Review notification procedures for weather or non-working days.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods less than 4' in length on end on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50 degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Owner.
- F. Adhesive storage shall be between the range of above 50 degree F (10 degree C) and below 80 degree F (27 degree C). Area of storage shall be constructed for flammable storage.
- G. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 COORDINATION

- A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

1.11 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.

1.12 MANUFACTURER'S FIELD REPRESENTATION

- A. Manufacturer's Field Representative: An authorized, full-time employee of the roof system manufacturer shall be assigned to the project to conduct field observations during the installation phase.
- B. Regularly scheduled site observations shall be required by the manufacturer's field representative a minimum of three (3) days per week during the roofing installation period; exceptions being made for inclement weather, holidays, etc.
- C. Observation reports shall include the following:
 - 1. Written report/documentation of the installation progress at the time of the site visit to be delivered to owner within 5 business days of the site visit.
 - 2. This report shall include documentation of any issues/question and resolution.
 - 3. This report shall include record of directives given to the roofing contractor.
 - 4. Digital photographic documentation of the roofing progress; including documentation of specific issues and areas of concern.
 - 5. Each report shall contain project name, owner's project number, and date/time/duration of site visit.
- D. In addition to the progress observations, the manufacturer's representative must:
 - 1. Attend the roofing trade start-up meeting.
 - 2. Inspect and approve the roof substrate/deck prior to the start of roofing work.
- E. All observation reports shall be kept current and shall be delivered electronically to the owner and contractor within five (5) calendar days after the observation. Progress payments for roofing work may be withheld if observation report submissions are not current.
- F. After completion of all roofing work, and prior to acceptance of the roofing installation, the manufacturer's representative shall conduct an observation to document all roofing work to be corrected as a condition of acceptance.
 - 1. Each item requiring corrective work shall be identified (including specific location) and required corrective action shall be noted.
 - 2. The final observation report must be produced in writing with photographic back-up. Marking corrective items on the roof alone shall not be acceptable.
- G. Any failure by the Owner's Representative, the Project Manager, or the roofing manufacturer's Technical Field Representative to observe, detect, pinpoint, or object to any defect or noncompliance with the requirements of the Roofing Manufacturer's requirements, the Contract Documents, the Project Specifications, the approved Shop Drawings and Engineering Data, and/or the Roofing Manufacturer's standard details – of work in progress or completed work – shall not relieve the Contractor of, or reduce, or in any way limit, his

responsibility of full performance of the work required of him under the requirements of the Roofing Manufacturer, the Contract Documents, the Project Specifications, the approved Shop Drawings and Engineering Data, and/or the Roofing Manufacturer's standard details.

1.13 WARRANTY

- A. Upon completion of the work, provide the Manufacturer's written and signed NDL Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.
 - 1. Warranty Period: 30 years from date of acceptance.
- B. Installer is to guarantee all work against defects in materials and workmanship for a period indicated following final acceptance of the Work.
 - 1. Warranty Period: 3 years from date of acceptance.
- C. The material manufacturer will provide an annual inspection for the duration of the warranty at the request of the owner at no additional charge.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The Garland Company, Inc.
 - 1. 3800 E. 91st St., Cleveland, OH 44105.
 - 2. Manufacturer's Representative:
 - a. Grant Kandabarow; GKandabarow@garlandco.com; 412-352-2912
- B. Modified bituminous roofing shall include but not be limited to:
 - 1. Base Ply Sheet Modified Membrane: Type III membrane complying with ASTM 6163, Grade S. Physical requirements below.
 - 2. Cap Ply Sheet Modified Membrane: Thermoplastic membrane complying with ASTM 6754. Physical requirements below.
 - 3. Stripping Ply Sheet Modified Membrane: Type III membrane complying with ASTM 6163, Grade S. Physical requirements below.
 - 4. Base Flashing Assembly: Two ply modified, heat fused with the finished ply meeting Type III membrane complying with ASTM 6163, Grade G minimum requirements and base ply meeting Type II membrane complying with ASTM 6163, Grade S minimum.
- C. Basis of Design Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- D. Requests for substitutions will be considered in accordance with provisions of Section 01 2500 Substitution Procedures.
- E. The Products specified are intended and the Standard of Quality for the products required for this project. If other products are proposed the bidder must disclose in the bid the manufacturer and the products that they intend to use on the Project. If no manufacturer and

products are listed, the bid may be accepted only with the use of products specified.

1. Bidder will not be allowed to change materials after the bid opening date.
2. If alternate products are included in the bid, the products must be equal to or exceed the products specified. Supporting technical data shall be submitted to the Owner for approval prior to acceptance.
3. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
 - a. Personally investigated the proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - b. Will provide the same guarantee for substitution as for the product and method specified.
 - c. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 - d. Will waive all claims for additional cost related to substitution, which consequently become apparent.
 - e. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
 - f. Will reimburse the Owner for all redesign cost by the owner for accommodation of the substitution.
4. Owner reserves the right to be the final authority on the acceptance or rejection of any or all bids, proposed alternate roofing systems or materials that has met all specified requirement criteria.
5. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification and consideration for that particular contractors request for manufacturer substitution.

2.2 ROOFING SHEET MATERIALS

- A. Base (Ply) Sheets: One ply bonded to the prepared substrate with Interply Adhesive:
 1. StressBase 80 Plus: ASTM D 6163, Grade S, Type III, 80 mil SBS-modified asphalt sheet; suitable for application method specified, and as follows:
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
 - 2) 50mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50mm/min@ -17.78 +/- 2 deg. C MD 4 % XD 4 %
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- B. Fleece-backed Thermoplastic Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive (2):
 1. KEE-Stone FB 60: ASTM D 6754, 60 mil thermoplastic, ketone ethylene ester (KEE) roofing membrane with polyester scrim; suitable for application method specified, and as follows:
 - a. Breaking Strength, ASTM D 751, Proc. B, strip
 - 1) 375 lbf. (1,668 N)
 - b. Tear Strength ASTM D 751
 - 1) 120 lbf. min. (534 N)

- c. Elongation at Break (%), ASTM D 751, Proc. B, Strip
 - 1) 40.0%

2.3 FLASHING SHEET MATERIALS

- A. Self-Adhered Fire-Retardant Ply: Membrane ply self-adhered to combustible substrates prior to installation of base flashing ply. Designed specifically for use with torch applied membrane systems. Adhesive backing with a peel-off release film.
 - 1. SA Base IV: 110 mil SBS (Styrene-Butadiene-Styrene) self-adhering, rubber modified roofing base sheet reinforced with a fiberglass scrim, suitable for application method specified, and as follows:
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 80 lbf/in XD 57 lbf/in
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 14 kN/m XD 10 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 57 lbf XD 51 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 254 N XD 227 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 9% XD 8%
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 9% XD 8%
 - d. Low Temperature Flexibility, ASTM D5147, Passes -0 deg. F (-18 deg. C)
- B. Flashing Base Ply: One ply bonded to the prepared substrate with Flashing Ply Adhesive:
 - 1. HPR Torch Base: ASTM D 6163, Grade S, Type III, 120 mil SBS-modified asphalt sheet; suitable for application method specified, and as follows:
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 210 lbf/in XD 210 lbf/in
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 36.75 kN/m XD 36.75 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 300 lbf XD 300 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 1,334 N XD 1,334 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6% XD 6%
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 6% XD 6%
 - d. Low Temperature Flexibility, ASTM D5147, Passes -30 deg. F (-34.4 deg. C)
- C. Flashing Cap Ply: One ply bonded to the prepared substrated with Flashing Ply Adhesive:
 - 1. KEE-Stone NF Flashing: Non fleece-backed Thermoplastic Cap Sheet: ASTM D 6754, 60 mil thermoplastic, ketone ethylene ester (KEE) roofing membrane with polyester scrim; suitable for application method specified, and as follows:
 - a. Breaking Strength, ASTM D 751, Proc. B, Strip:
 - 1) 375 lbf, (1,668 N)
 - b. Tear Strength, ASTM D 751:
 - 1) 120 lbf min., (534 N)
 - c. Elongation at Break (%), ASTM D 751, Proc. B, Strip:
 - 1) 40%

2.4 MEMBRANE ADHESIVES

- A. Hot Applied Bitumen Interply Adhesive:
 - 1. Generic Type III Asphalt: Hot Bitumen, ASTM D 312, Type III steep asphalt having

the following characteristics:

- a. Softening Point 185 deg. F - 205 deg. F
- b. Flash Point 500 deg. F
- c. Penetration @ 77 deg. F 15-35 units
- d. Ductility @ 77 deg. F 2.5 cm

B. Cap Flashing Ply Adhesive:

1. KEE-Lock WB Flashing Adhesive: Cold-applied water-based, acrylic, bonding adhesive for vertical flashings.
 - a. VOC 0 g/L

2.5 BITUMINOUS ROOFING MATERIALS:

A. Asphalt Roof Cement:

1. Flashing Bond: Asphalt roofing mastic V.O.C. compliant, ASTM D 4586, Type II trowel grade flashing adhesive.
 - a. Non-Volatile Content ASTM D 4479 70 min.
 - b. Density ASTM D 1475 8.3 lbs./gal. (1kg/l)
 - c. Flash Point ASTM D 93 103 deg. F (39 deg. C)

B. Intumescent Fire-Retardant Primer:

1. Pro-Stop FR: water-based, non-corrosive intumescent primer used on flammable substrates, serving as a non-prescriptive thermal barrier with
 - a. Density @ 77 deg. F ASTM D1475 11 lbs./gal.
 - b. VOC 18 g/L
 - c. Class III Vapor Retardancy.

C. Asphalt Primer:

1. Garla-Prime:
 - a. Viscosity by Zahn Cup #2 (ASTM D 4212): 18-21 Sec
 - b. Flash Point (ASTM D 93): 100 deg F (37.7 deg C).
 - c. Non-Volatile (ASTM D 2369): 47.6%
 - d. Wet Film Thickness @ ½-1 gal.: 8 – 16 mils

D. Mastic Sealant:

1. Garla-Flex: Polyisobutylene, plain or modified bitumen; non-hardening, non-migrating, non-skinning, and non-drying.
 - a. Non-Volatile Content ASTM D 4479 75% min.
 - b. Density ASTM D 1475 8.25 lbs./gal. (1kg/l)
 - c. Flash Point ASTM D 93 102 deg. F (39 deg. C)
 - d. Viscosity @ 77 deg. F. 400,000 to 600,000 cP
 - e. Elongation, 14-day cure @ 77 deg. F. 800% min
 - f. Free of Asbestos
 - g. VOC 250 g/L

2.6 RELATED MATERIALS

- A. General: Auxiliary materials provided or recommended by roofing system manufacturer for intended use and compatible with roofing
- B. Urethane Sealant Hybrid - Tuff-Stuff MS: One part, non-sag sealant as approved and furnished by the membrane manufacturer for moving joints.

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1. Tensile Strength, ASTM D 412: 250 psi
 2. Elongation, ASTM D 412: 450%
 3. Hardness, Shore A ASTM C 920: 35
 4. Adhesion-in-Peel, ASTM C 92: 30 pli
- C. Pitch Pocket Sealer:
1. Seal Tite: Two part, 100% solids, self-leveling, polyurethane sealant for filling pitch pans as recommended and furnished by the membrane manufacturer.
 - a. Durometer, ASTM D 2240: 40-50 Shore
 - b. Elongation, ASTM D 412: 250%
 - c. Tensile Strength, ASTM D 412: 200 @ 100 mil
- D. Self-Adhering, Vapor Impermeable, High-Temperature Sheet:
1. R-Mer Seal: 45-mil thick minimum, consisting of slip-resisting top surface cross-laminated to high temperature SBS-modified asphalt adhesive, with split release backing film.
 - a. Maximum Temperature Rating: 250 deg F (121.11 deg C) ASTM D 1970.
 - b. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
 - c. Seams shall be lapped in accordance with manufacturer's recommendations.
- E. Nails and Fasteners: Non-ferrous metal or galvanized steel, except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel, Fasteners shall be self-clinching type of penetrating type as recommended by the deck manufacturer. Fasten nails and fasteners flush-driven through flat metal discs not less than 1 inch (25 mm) diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than 1 inch (25 mm) diameter are used.
- F. Flashing Boot - Rubbertite Flashing Boot: Neoprene pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- G. Plumbing stacks and drain flashings should be 4lb (1.8kg) sheet lead formed and rolled.
- 2.7 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS
- A. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07 62 00 - Sheet Metal Flashing and Trim.
1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.
- 2.8 PERFORMANCE REQUIREMENTS
- A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing

manufacturer based on testing and field experience.

- C. Solar Reflectance Index: Not less than 70 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that deck surfaces and project conditions are ready to receive work of this Section.
- B. Verify that deck is supported and secured to structural members.
- C. Verify that deck is clean and smooth, free of depressions, projections or ripples, and is properly sloped.
- D. Verify that adjacent roof substrate components do not vary more than [1/4] inch in height.
- E. Verify that deck surfaces are dry.
- F. Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that cant strips, wood nailing strips, and reglets are set in place.

3.2 PREPARATION

- A. General: Clean surfaces thoroughly prior to installation.
 - 1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - 2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
 - 3. Roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
 - 4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
 - 5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
 - 6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener. Base or ply sheets attached with cap nails require a minimum pullout capacity of 40 lb. per nail.
 - 7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.

3.3 INSTALLATION - GENERAL

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
- C. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of the modified bituminous roofing system.

- D. Coordinate installation of roofing system so insulation and other components of the roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt, with joints and edges sealed.
 - 2. Complete terminations and base flashings, and provide temporary seals to prevent water from entering completed sections of roofing system.
 - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- F. Apply roofing materials as specified by manufacturer's instructions:
 - 1. Keep roofing materials dry before and during application.
 - 2. Do not permit phased construction.
 - 3. Complete application of roofing plies, modified sheet and flashing in a continuous operation.
 - 4. Begin and apply only as much roofing in one day as can be completed that same day.
- G. Cut-Offs (Waterstops): At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation.
- H. Asphalt Bitumen Heating: Heat and apply bitumen in accordance with the Equiviscous Temperature (EVT) Method as recommended by National Roofing Contractors Association (NRCA). Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT (plus 5°F at point of application) more than one (1) hour prior to time of application. Determine flash point, finished blowing temperature, EVT, and fire-safe handling temperature of bitumen either from information by manufacturer or by suitable test. Do not exceed recommended temperature limits during bitumen heating. Do not heat to a temperature higher than twenty five degrees (25°F) below flash point. Discard bitumen that has been held at temperature exceeding Finishing Blowing Temperature (FBT) for more than three (3) hours. Keep kettle lid closed except when adding bitumen.
- I. Asphalt Bitumen Mopping Rate:
 - 1. Interply Mopping: Apply bitumen at the rate of approximately twenty five (25) lb.(11.3kg) of bitumen per roof square.
 - 2. Membrane Mopping: Apply bitumen at the rate of approximately thirty (30) lb (13.6kg). of bitumen per roof square.
- J. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.
- K. Cold Temperature Considerations:
 - 1. Take extra care during cold weather installation and when ambient temperatures are affected by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.

2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.
- L. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water
- M. Fibrous Cant Strips: Provide non-combustible perlite or glass fiber cant strips at all wall/curb detail treatments where angle changes are greater than 45 degrees. Cant may be set in approved cold adhesives, hot asphalt or mechanically attached with approved plates and fasteners.
- N. Wood Blocking, Nailers and Cant Strips:
 1. Provide nailers at all roof perimeters and penetrations for fastening membrane flashings and sheet metal components.
 2. Wood nailers should match the height of any insulation, providing a smooth and even transition between flashing and insulation areas.
 3. Nailer lengths should be spaced with a minimum 1/8 inch gap for expansion and contraction between each length or change of direction.
 4. Nailers and flashings should be fastened in accordance with Factory Mutual "Loss Prevention Data Sheet 1- 49, Perimeter Flashing" and be designed to be capable of resisting a minimum force of 200 lbs/lineal foot in any direction.
- O. Metal Work: Provide metal flashings, counter flashings, parapet coping caps and thru-wall flashings as specified in Section 07 7100. Install in accordance with the SMACNA "Architectural Sheet Metal Manual" or the NRCA Roofing Waterproofing manual.
- P. Termination Bar: Provide a metal termination bar or approved top edge securement at the terminus of all flashing sheets at walls and curbs. Fasten the bar a minimum of 8 inches (203 mm) o/c to achieve constant compression. Provide suitable, sealant at the top edge if required.

3.4 SELF-ADHERED FIRE-RETARDANT SHEET INSTALLATION

- A. Install self-adhered ply sheet according to roofing manufacturer's written instructions. All surfaces must be smooth, dry, and free of projections, bulges and other materials that would affect adhesion. Sheet shall be installed over all wood blocking and combustible materials.
 1. Prime the area to be roofed at a rate of 0.5 gallons with Intumescent primer at a rate of 1 gallon per 200 sq ft and allow to dry tack-free (approximately 60 – 90 minutes).
 2. Cut sheet to desired dimensions and place in the desired position.
 3. Fold the membrane lengthwise back on itself and remove the split-back release film.
 4. Gradually push the membrane into place by applying even pressure along the entire length of the membrane, beginning at the center and working outward toward the edges to avoid air pockets and/or wrinkles.
 5. Repeat on the other side of the membrane.
- B. Firmly apply pressure to the entire installed roll with a weighted roller to ensure proper adhesion.

3.5 SBS MODIFIED BITUMINOUS BASE PLY MEMBRANE INSTALLATION

1. Install base plies according to roofing manufacturer's written instructions, starting at

low point of roofing system. Extend roofing membrane sheets over and terminate beyond eaves, installing as follows:

2. Unroll roofing sheets and allow them to relax for minimum time period required by manufacturer.
 3. Lay out the roll in the course to be followed and unroll 6 feet (1.8 m).
 4. Solidly bond the modified membrane to the prepared substrate with specified asphalt at the rate of twenty five (25) to thirty (30) lbs. per 100 square feet.
 5. The modified membrane roll must push a puddle of asphalt in front of it with asphalt slightly visible at all side laps. Exercise care during application to eliminate air entrapment under the membrane.
 6. After the major portion of the roll is bonded, re-roll the first 6 feet (1.8 m) and bond it in a similar fashion.
 7. Repeat this operation with subsequent rolls with side laps of 4 inches (101 mm) and end laps of 8 inches (203 mm).
 8. Stagger end laps 24-inches minimum.
 9. Extend base ply 2 inches (50 mm) beyond top edges of eaves at wall and projection bases.
 10. Install base flashing ply to all perimeter and projections details.
- B. Laps: Accurately align roofing sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids. Repair voids in laps and lapped seams not completely sealed.
- C. Install roofing sheets so side and end laps shed water.

3.6 THERMOPLASTIC CAP SHEET MEMBRANE INSTALLATION

- A. General Installation Guidelines: Install thermoplastic cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Install interplay adhesive applied at the rate required by the manufacturer. Shingle sheets uniformly over the prepared substrate to achieve the number of plies specified. Shingle in proper direction to shed water on each large area of roofing. Extend roofing membrane sheets over and terminate beyond eaves, installing as follows:
1. All field seams exceeding 10 feet in length shall be welded with an approved automatic welder.
 2. All field seams must be clean and dry prior to initiating any field welding. Remove foreign materials from the seams (dirt, oils, etc.) with acetone or authorized alternative. Use CLEAN WHITE COTTON cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
 3. Contaminated areas within a membrane seam will inhibit proper welding and will require a membrane patch or strip.
 4. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld. The lap or seam area of the membrane may be intermittently tack welded to hold the membrane in place.
 5. The back interior edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass.
 6. Follow local code requirements for electric supply, grounding and surge protection. The use of a dedicated, portable generator is highly recommended to ensure a consistent electrical supply, without fluctuations that can interfere with weld

consistency.

7. Properly welded seams shall utilize a 1.5 inch wide nozzle, to create a homogeneous weld, a minimum of 1.5 inches in width.

B. Hot-mopped Membrane Application:

1. Before installing thermoplastic cap membrane, sweep or blow away any dust, dirt or debris off the base sheet.
2. Unroll the membrane prior to installation and allow to fully relax.
3. Apply a liberal amount of approved hot asphalt onto the existing base sheet at a rate of 25 lbs. per square (11.34 kg/m²) for the cap sheet. Note: Ensure that asphalt is not applied to any side laps or areas where the membrane is to be welded. Work outwards to eliminate voids.
4. To install the cap sheet, start at the low point of the roof with an appropriate roll width to offset side laps from the underlying base sheet a minimum of 18" (457 mm). Work with manageable lengths for proper handling. Position the cap sheet with salvage edge at the low side of roof. Install in shingle fashion, with no laps against the flow of water. Note: Once the membrane has had a chance to bond, utilize a seam probe to check all laps and joints for full adhesion. Check for small voids at laps. If the membrane can be lifted at any area, it is not properly adhered. Any areas not properly bonded require welding or, if necessary, the application of a utility patch to seal any unbonded areas.
5. Broom in the cap sheet membrane immediately after install to ensure even, continuous contact between the fleece backing and the asphalt. After brooming, immediately use a minimum 75 lb. weighted roller to roll the membrane to ensure proper contact and adhesion with the adhesive and push out any air pockets.
6. Once the cap sheet membrane is adhered, use hot air welding equipment and a 2" silicone roller to heat-weld side lap seams to seal the membranes together.
7. All end laps shall be butted up to one another. Once end laps are adjoined, heat weld 6-inch utility roll over joint to seal.
8. Foot traffic must be restricted on applied membrane. Stained or contaminated membrane will not be accepted.
9. All hot air welded seams should be no less than 1.5" indicating a proper welded seam.
10. To ensure proper equipment settings throughout the project, a preliminary test weld is required prior to installation and at the re-start of welding throughout the day.

3.7 BASE FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions. Minimum base-flashing height of 8 inches (200 mm) is required. Install modified bituminous roofing sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
1. Seal all curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
 2. Prepare all walls, penetrations, expansion joints [and where shown on the drawings] to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.
 3. Heat fuse entire base ply membrane until burn off paper is gone. Fully adhere membrane to the underlying substrate.

4. After the laps have been tested and complete positive bond has been achieved, the applicator shall heat the seam edge and trowel along the seam edge. Troweling shall continue until a sloped, beveled edge has been produced.
 5. Position non-fleece thermoplastic flashing membrane where the membrane is ready to be installed.
 6. Apply flashing adhesive to the exposed side of the already installed base flashing ply and to the backside of the non-fleece thermoplastic flashing membrane at a total combined rate of 1.0-1.5 gallons per 100 square feet.
 7. Install non-fleece thermoplastic flashing membrane ply extending min. 9" onto the field of the roof. Once applied to both surfaces, allow a minimum 30 minutes for the adhesive to become tacky. Using the finger-push method, check that the adhesive develops strings, signifying that is tacky enough, set the non-fleece thermoplastic flashing membrane in place on the wall. Immediately roll the surface using a 2 in. wide weighted roller to ensure proper mating of the two surfaces.
 8. Broom in the non-fleece thermoplastic flashing membrane immediately after install to ensure even, continuous contact between the cap and base flashing membranes.
 9. On all vertical seams, overlap the membrane a minimum of 3" and heat weld.
 10. Complete all inside and outside corner flashing details by fully heat-welding properly formed non-reinforced KEE utility roll. Once utility roll has had a chance to bond, utilize a seam probe to check all laps and joints for full adhesion. Check for small voids at laps; if the membrane can be lifted at any area, it is not properly adhered. Any areas not properly bonded require welding or, if necessary, the application of a patch to seal any un-bonded areas that exist.
- B. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions.
- C. Flashing Base Ply: Seal all curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
1. Prepare all walls, penetrations, expansion joints, and other surfaces to be flashed with intumescent primer at the rate of 200 square feet per gallon. Allow primer to dry tack free.
 2. Adhere modified flashing base to the underlying base flashing ply with specified flashing ply adhesive. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
 3. Solidly adhere the entire sheet of flashing membrane to the substrate. Tops of all flashings that are not run up and over curb shall be secured through termination bar 6 inches (152 mm) and sealed at top
 4. Coordinate counter flashing, cap flashings, expansion joints, and similar work with modified bitumen roofing work.
 5. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work. When using mineralized cap sheet all stripping plies type IV felt / Versiply 40 shall be installed prior to cap sheet installation.
- D. Flashing Cap Ply:
1. Adhere to the underlying base flashing ply with specified flashing ply adhesive unless otherwise specified.
 2. Coordinate counter flashing, cap flashings, expansion joints and similar work with

- modified bitumen roofing work as specified.
- 3. Coordinate roof accessories, miscellaneous sheet metal accessory items with the roofing system work.
- 4. All stripping shall be installed prior to flashing cap sheet installation.
- 5. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter flashing.

3.8 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Fabricated Flashings: Fabricated flashings and trim are provided as specified in Section 07 7100 Roof Specialties.
 - 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the Copper Development Association "Copper in Architecture - Handbook" as applicable.
- B. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are provided as specified in Section
 - 1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the National Roofing Contractor's Association "Roofing and Waterproofing Manual" as applicable.
- C. Scupper Through Wall:
 - 1. Inspect the nailer to assure proper attachment and configuration.
 - 2. Run base ply over nailer, into scupper hole and up flashing as in typical wall flashing detail. Assure coverage of all wood nailers.
 - 3. Install a scupper box in a 1/4 inch (6 mm) bed of mastic. Assure all box seams are soldered and have a minimum 4 inch (101 mm) flange. Make sure all corners are closed and soldered. Prime scupper and allow to dry.
 - 4. Fasten flange of scupper box every 3 inches (76 mm) o.c. staggered.
 - 5. Strip in flange of scupper box with base flashing ply covering entire area with 6 inch (152 mm) overlap on to the field of the roof and wall flashing.
 - 6. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
 - 7. Install a second ply of thermoplastic flashing cap ply heat welded over the thermoplastic cap ply, 9 inches (228 mm) on to the field of the roof.
 - 8. Heat weld a cover strip over all seams.
- D. Coping Cap: See drawings
 - 1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches (609 mm). Prime vertical wall and allow to dry.
 - 2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
 - 3. Install base flashing ply covering entire wall and wrapped over top of wall and down face with 6 inches (152 mm) on to the base field ply and set in bitumen. Nail base flashing ply at 8 inches (203 mm) o.c. on the back side of the parapet wall.
 - 4. Then install fleece back thermoplastic cap field ply run over the base flashing ply in bitumen.
 - 5. Install a second ply of thermoplastic flashing cap ply heat welded over the thermoplastic cap field ply, 9 inches (228 mm) on to the field of the roof.

6. Heat weld a cover strip over all seams.
 7. Install continuous cleat and fasten at 6 inches (152 mm) o.c. to outside wall.
 8. Install new metal coping cap hooked to continuous cleat.
 9. Fasten inside cap 24 inches (609 mm) o.c. with approved fasteners and neoprene washers through slotted holes, which allow for expansion and contraction.
- E. Surface Mounted Counterflashing/Coping Cap:
1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Prime vertical wall and allow to dry.
 2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering wall set in bitumen with 6 inches (152 mm) on to the base field ply and set in bitumen.
 4. Then install non fleece back thermoplastic cap field ply run over the base flashing ply in water based adhesive
 5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
 6. Secure termination bar through flashing and into wall.
 7. Secure counterflashing above flashing termination. Fasten 8 inches (203 mm) o.c. and caulk top of counterflashing.
 8. Attach tapered board to top of wall (minimum slope 1/4 -12). Do not use organic fiberboard or perlite.
 9. Cover tapered board and all exposed wood with base flashing ply. Fasten inside and out at 8 inches (203 mm) o.c.
 10. Install continuous cleat and fasten at 6 inches (152 mm) o.c. to outside wall.
 11. Install new metal coping cap hooked to continuous cleat.
 12. Fasten inside of cap 24 inch (609 mm) o.c. with approved fasteners and neoprene washers.
- F. Equipment Support:
1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
 2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering the curb set in bitumen with 6 inches (152 mm) on to the base field ply and set in bitumen.
 4. Then install fleece thermoplastic cap field ply run over the base flashing ply in bitumen.
 5. Install the non fleece back thermoplastic flashing ply in water based adhesive over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
 6. Install pre-manufactured cover. Fasten sides at 24 inches (609 mm) o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.
 7. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- G. Curb Detail/Air Handling Station:
1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
 2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering the curb set in bitumen with 6 inches (152 mm) on

- to the base field ply and set in bitumen.
 4. Then install fleece back thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
 5. Install the non-fleece back thermoplastic flashing ply in water based adhesive over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
 6. Install pre-manufactured counterflashing with fasteners and neoprene washers or per manufacturer's recommendations.
 7. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- H. Exhaust Fan:
1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
 2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering wall set in bitumen with 6 inches (152 mm) on to the base field ply and set in bitumen.
 4. Then install fleece-back thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
 5. Install the non-fleece back thermoplastic flashing ply in water based adhesive, 9 inches (228 mm) on to the field of the roof. Heat weld seams onto field of the roof.
 6. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.
- I. Roof Drain:
1. Plug drain to prevent debris from entering plumbing.
 2. Taper insulation to drain minimum of 24 inches (609 mm) from center of drain.
 3. Run roof system base plies over drain. Cut out plies inside drain bowl.
 4. Set lead/copper flashing (30 inch square minimum) in 1/4 inch bed of mastic. Run lead/copper into drain a minimum of 2 inches (50 mm). Prime lead/copper and allow to dry.
 5. Install base flashing ply (40 inch square minimum) in bitumen.
 6. Install fleece back thermoplastic cap ply (48 inch square minimum) in bitumen.
 7. Install clamping ring and assure that all plies are under the clamping ring.
 8. Remove drain plug and install strainer.
- J. Plumbing Stack:
1. Minimum stack height is 12 inches (609 mm).
 2. Run roof base ply over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
 3. Install fleece back thermoplastic cap ply in bitumen.
 4. Install pre-molded flashing boot by heat welding to cap sheet.
 5. Install worm gear clamp and caulk top of flashing boot.
- K. Heat Stack:
1. Minimum stack height is 12 inches (609 mm).
 2. Run roof base ply over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
 3. Prime flange of new sleeve. Install properly sized sleeves set in 1/4 inch (6 mm) bed of roof cement.
 4. Install base flashing ply in bitumen.
 5. Install fleece back thermoplastic cap ply with water based adhesive.

6. Caulk the intersection of the membrane with elastomeric sealant.
 7. Install new collar over cape. Weld collar or install stainless steel draw band.
- L. Pitch Pocket Umbrella:
1. Run all base plies up to the penetration.
 2. Place the pitch pocket over the penetration and prime all flanges.
 3. Strip in flange of pitch pocket with one ply of base flashing ply. Extend 6 inches (152 mm) onto field of roof.
 4. Then install fleece back thermoplastic cap field ply run over the base flashing ply in bitumen.
 5. Install the non fleece back thermoplastic flashing with water based adhesive, 9 inches (228 mm) on to the field of the roof.
 6. Fill pitch pocket half full with non-shrink grout. Let this cure and top off with pourable sealant.
 7. Caulk joint between roof system and pitch pocket with elastomeric sealant.
 8. Place a watershedding type bonnet over the top of the pitch pocket and clamp the top with a drawband collar. Caulk the upper edge of the band with an elastomeric sealant.

3.9 FIELD QUALITY CONTROL

- A. Perform manufacturer's field inspection and as required a minimum of three (3) days per week.
- B. Correct defects or irregularities discovered during field inspection.
- C. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system. A copy of the specification should also be on site at all times.

3.10 PROTECTION AND CLEANING

- A. Repair or replace defaced or disfigured finishes caused by Work of this section.
- B. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- C. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.
- D. Protect exposed surfaces of finished walls with tarps to prevent damage.
- E. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch (16 mm) thick.
- F. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.
- G. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- H. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces. In areas where finished surfaces are soiled by asphalt or any other sources of

soiling caused by work of this Section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.

3.11 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the Roofing Contractor.
- D. If core cuts verify the presence of damp or wet materials, the Roofing Contractor shall be required to replace the damaged areas at his own expense.
- E. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- F. Notify the Owner upon completion of corrections.
- G. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- H. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

END OF SECTION

SECTION 077100 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Copings.
 - 2. Reglets and Counter Flashings
- B. Preinstallation Conference: Conduct conference at Project site

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of roof specialty and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For tests performed by a qualified testing agency.
- B. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements

1.6 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.

- b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
- 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. SPRI Wind Design Standard: Manufacture and install copings tested according to SPRI ES-1 and capable of resisting the following wind speed:
 - 1. Wind Speed: 110 mph
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.

2.2 COPINGS

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet (3.6 m) , concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
 - 1. Formed Aluminum Sheet Coping Caps: Aluminum sheet, 0.063 inch thick thickness as required to meet performance requirements
 - a. Surface: Embossed finish.
 - b. Finish: Two-coat fluoropolymer (Kynar
 - c. Color As selected by Architect from manufacturer's full range (Intended to match existing metal siding) .
 - 2. Corners: Factory mitered and mechanically clinched and sealed watertight.
 - 3. Coping-Cap Attachment Method: Snap-on or face leg hooked to continuous cleat with back leg fastener exposed, fabricated from coping-cap material.
 - a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
 - b. Face-Leg Cleats: Concealed, continuous galvanized-steel sheet stainless steel.

2.3 REGLETS AND COUNTER FLASHINGS

- A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
 - 1. Formed Aluminum: 0.024 inch (0.61 mm) 0.050 inch (1.27 mm) thick.
 - 2. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
- B. Counter flashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets or through-wall-flashing receiver and compress against base flashings with joints lapped, from the following exposed metal:
 - 1. Formed Aluminum: 0.024 inch (0.61 mm) thick.
- C. Accessories:
 - 1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
 - 2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.
- D. Aluminum Finish: Two-coat fluoropolymer finish.
 - 1. Color: As selected by Architect from manufacturer's full range

2.4 MATERIALS

- A. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

2.5 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 - 1. Thermal Stability: ASTM D1970/D1970M; stable after testing at 240 deg F (116 deg C).
 - 2. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F (29 deg C).

2.6 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 - 1. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.

- B. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

2.7 FINISHES

A. Coil-Coated Aluminum Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat.

PART 3 - EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.
 1. Apply continuously under copings roof-edge specialties and reglets and counter flashings.
 2. Coordinate application of self-adhering sheet underlayment under roof specialties with requirements for continuity with adjacent air barrier materials.

3.2 INSTALLATION, GENERAL

- A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 4. Torch cutting of roof specialties is not permitted.
 5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum and stainless steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
1. Space movement joints at a maximum of **12 feet (3.6 m)** with no joints within **18 inches (450 mm)** of corners or intersections unless otherwise indicated on Drawings.
 2. When ambient temperature at time of installation is between **40 and 70 deg F (4 and 21 deg C)**, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
- D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance
- E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below **40 deg F (4 deg C)**.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of **1-1/2 inches (38 mm)**; however, reduce pre-tinning where pre-tinned surface would show in completed Work. Tin edges of uncoated copper sheets using solder for copper. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.3 INSTALLATION OF COPING

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
 1. Interlock face-leg drip edge into continuous cleat anchored to substrate at **24-inch (610-mm)** centers. Anchor back leg of coping with screw fasteners and elastomeric washers at **24-inch (610-mm)** centers

3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION 077100

REFERENCE MATERIAL



System Overview and Owner's Manual
140.14 kW Utility-Interactive Photovoltaic System



System Owner:

Monongalia County Urban Mass Transit Authority (Mountain Line)

420 Dupont Rd.

Westover, WV 26501

304-291-7433

Commissioned:

June 13, 2012



Welcome to the Solar Generation!

We would like to thank the owners and employees of Mountain Line for your assistance in helping to bring the largest rooftop mounted solar photovoltaic installation in the state of West Virginia to the city of Westover - Morgantown.

What a proud accomplishment to be one of the first commercial businesses in the Morgantown area to install a system of this magnitude (over 140,000 watts)!

On behalf of everyone at Mountain-View Solar, we are very proud to have been a part of this landmark project, and to be able to provide our support to ensure that this system performs reliably for decades to come. We thank you for your vision, leadership, and business.

The MTVSolar Team.

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1. Introduction.

This document is designed to provide a basic understanding of the 140.4 kW photovoltaic solar energy system installed at the Monongalia County Urban Mass Transit Authority (MCUMTA) and commissioned on June 12, 2012. Primary focus is given to:

- A detailed (technical) description of the system
- A description of the Satcon monitoring system and internet portal
- A discussion of expected system performance
- Background information that will provide the reader with fundamentals to better understand the subtleties of photovoltaic technology.

Warranty information will be covered in a separate document.

This is a “living document” and open to revision, we appreciate your feedback.



2. Safety Instructions.

The photovoltaic system installation at MCUMTA has been designed and installed according to electrical standards governed by the 2011 National Electrical Code (NEC). All components used are listed by UL or equivalent agencies and comply with all required standards for photovoltaic systems, particularly:

UL 1741 *Static Inverters and Charge Controllers used in Photovoltaic Power Systems*

IEEE 1547 *Standard for Interconnecting Distributed Resources with Electric Power Systems*

In the case of an emergency, please call 911 first and then contact MTVSolar.

Mountain View Solar, LLC

257 JR Hawvermale Way
Berkeley Springs, WV 25411

(304) 258-4733

or

877-96-SOLAR

AC Safety Disconnect Switches:

Switching off either the AC service disconnect switch on the inverter, the utility accessible disconnect switch (on the outside of the building), will de-energize all AC system current-carrying conductors between the (open) switch and the inverter. The inverter cannot run and will shut down immediately if there is a loss of utility power.

DC Disconnect Switches:

When the array is producing power, switching off the DC service disconnect switch at the inverter or at the PV String combiners on the roof **will not de-energize the DC conductors feeding the inverter and/or the string-combiners from the array**. The only way to de-energize the DC source circuit conductors from the array is to cover the panels, or open these conductors at the array. **Never attempt to disconnect the PV source-circuit conductors in the field of the array or a dangerous arc may result.**

Ground Faults:

Use extreme caution any time an electrical fault is indicated by the system! The inverter will shut down if a ground fault is detected, and ground fault warning lights will be displayed. **This will not necessarily eliminate the fault.** Refrain from touching metal system components if a ground fault is indicated. In the event of a ground fault warning,

Please

CALL US IMMEDIATELY!

Always contact us if you have any concerns regarding the system. Do not open any electrical enclosures within the system; there are no user serviceable components inside. Doing so may void the manufacturer's warranty.

3. System Description.

3.1 Equipment Specifications:

Array:

(572) SolarWorld SW245, 245W poly-crystalline PV modules*

(44) Series-strings with (13) modules per string

(8) Solar Bos 15A fused string combiner boxes with 100A load break disconnect, each combining (4) or (5) series-strings in parallel (65 modules per combiner box)

(1) SolarBos 100A fused string combiner box with 100A load break disconnect, combining (4) series-strings in parallel (52 modules per combiner box)

Total array STC (Standard Test Condition) rating is 140.14 kilowatts (572 panels x 245W).

Racking:

The panels will be mounted to an Ecofoot ballast-mounted racking system. Ballast load: 3-7 psf. Each panel is supported by four Ecofoots each weighted down by one concrete ballast block. This provides a nonpenetrating solution, which could reduce the possibility of leaks and allows for easier, future roof maintenance.



Inverters & Associated Electrical Infrastructure:

(1) Satcon PowerGate Plus PVS-135 inverter with integral AC & DC disconnects.

(Manufactured by Satcon Technology Corporation, Boston, Massachusetts)

(1) E-Mon Green D-Mon revenue grade for recording electricity production (kWh)

(1) Utility-accessible fused AC disconnect switch

Monitoring System:

- (1) Satcon PV View Plus, Internal to the inverter
- (1) Netgear Wireless Range Extender (WN3000RP)

- Note: The term “module” and “panel” are used interchangeably to describe the same thing, i.e. a framed assembly of PV cells that creates a modular base generating unit, which when combined with other similar units creates a photovoltaic array.

3.2 Technical Description:

The utility-interactive solar photovoltaic (PV) system installed at MCUMTA has been designed to offset partial electrical demand for the building and produces balanced, 480V, 3-phase power. The heart of the system, the PV array, is composed of (572) SolarWorld 245W poly-crystalline PV modules, which generate a total peak-rated power output of 140.14 kW. DC power produced by the array is supplied to (1) Satcon PowerGate Plus PVS-135 inverter, located adjacent to the main distribution panel. The modules are arrayed in (44) series-strings comprised of (13) modules per string. (5) Series-strings are combined in parallel in each of (8) fused string combiner boxes, and (4) series-strings are combined in parallel in (1) fused string combiner box. The combiner boxes are grouped together at various locations throughout the entire array. The panels are physically supported by an Ecofoot mounting system that uses a system of High Molecular Weight Polyethylene that elevate the panels roughly 3 inches (on the low side) above the roof surface. The average combined distributed dead-load for the modules and mounting system is 3-7 psf.

3.2.1 Strings

As mentioned above, the modules are arrayed in series-strings of (13) modules each. There are a total of (44) module-strings in the array that feed power to (9) combiner boxes. (8) of the combiner boxes have (5) strings feeding into them, while (1) of the combiner boxes has (4) strings feeding into it. The location of each of these combiner boxes are shown below (*Figure 1*).

The arrays were designed to work around vents and drains, roof fans and the radio tower that would have caused shading. There is also room for walking to permit easier access throughout the rooftop and easier access to the roof fans and combiner boxes. See *Figure 1*. *

- Note: As-built combiner box locations may vary. Please refer to the As-built plans for accurate locations of the combiner boxes.

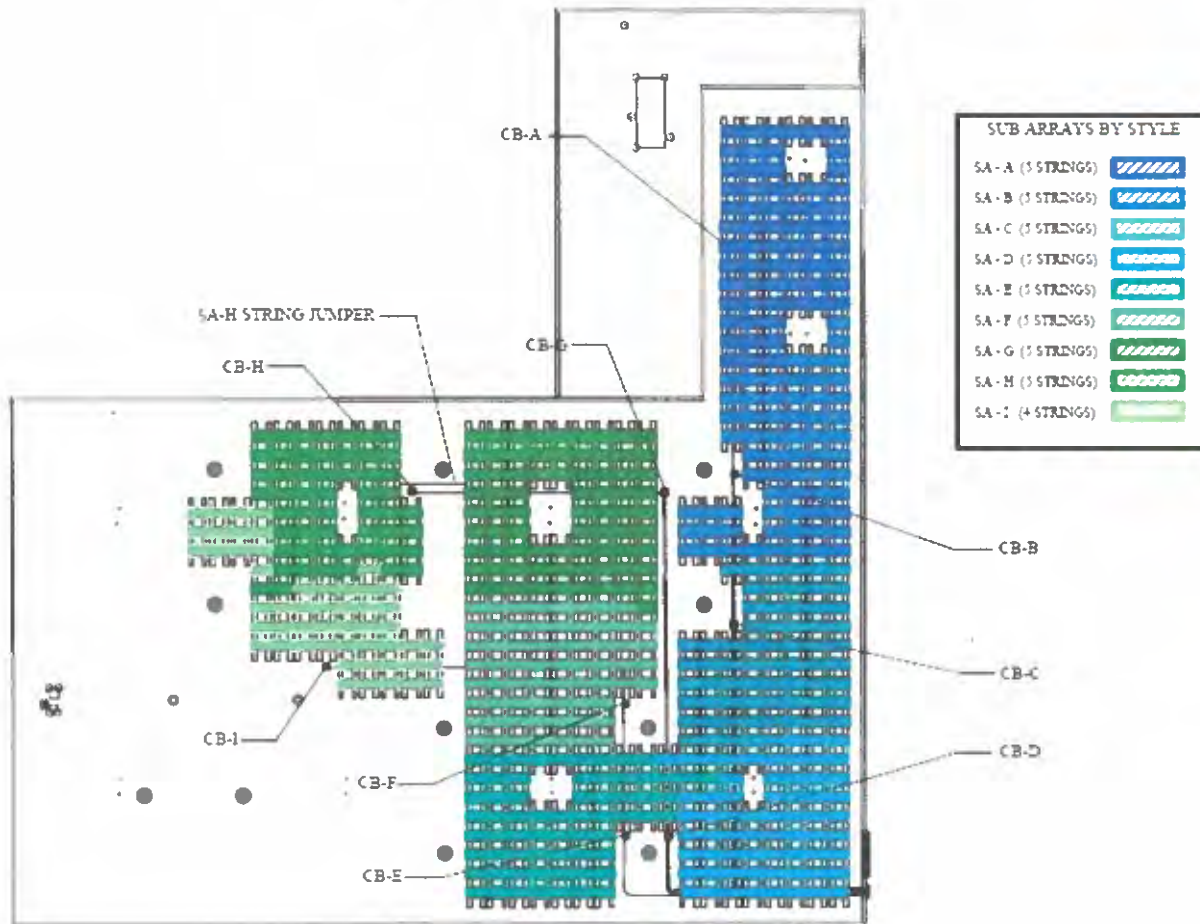


Figure 1: Combiner box locations with their respective series-strings

The power from each string is fed to the combiner boxes by “home run” conductors that create a “PV source-circuit.” Where these conductors run through free air, the conductors are insulated with UV-rated insulation (typically, type USE-2). However, where the conductors are run in conduit (or other enclosed raceway) a different insulation type is used that is easier to “pull” (such as THWN-2). The transition from one wire type to another takes place at a junction box or combiner box where the home run conductors enter the raceway.

All conductors used are wet-rated. Connections between modules and home run conductors use latching “MC-4” style connectors.

All exposed metal parts of the array are electrically bonded together via an Equipment Grounding Conductor (EGC) and are bonded to the building’s grounding electrode system through the ground bus in the Main Distribution panel (MDP), which is located near the inverter. All the negative conductors of this system are also kept at ground potential via a single DC bond to ground that is accomplished through the inverters ground fault protection circuit.

3.2.2 Combiner Boxes

The (9) 6-circuit combiner-boxes previously described are each equipped with 15A “string fuses” which protect the module strings and home run conductors from overcurrents in the event of a fault within the string. Power generated by the strings is combined within the combiner boxes and then fed out to the inverter via aluminum “PV output-circuit” feeder cables. The output conductors are run in elevated conduits and are routed back into the building where they join the inverter.

3.2.3 Inverter

At the inverter, the parallel output circuits terminate on positive and negative bus bars on the DC input side of the inverter. See *Figure 2*.

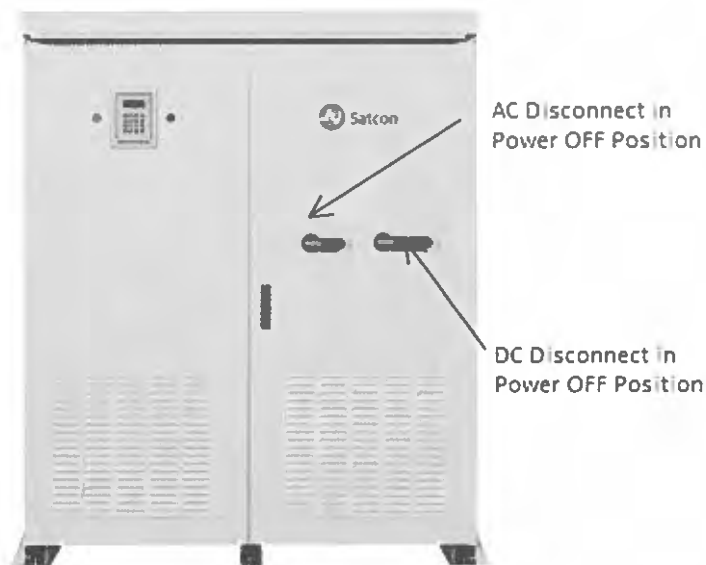


Figure 2: Satcon PowerGate Plus PVS-135 inverter with disconnects in “Open” positions.

The inverter is mounted to the floor of the garage and installed effectively close to the southwest corner of the building.

The combiner boxes feed the DC bus of the inverter through the integrated DC disconnect switches (red handle on the front of each combiner box; see *Figure 3*). These switches are lockable and separable from the inverter for servicing.



Figure 3: DC Sub-Array disconnect switch in the Open (OFF) position on a SolarBos combiner box.

The DC power from the solar array, combined from the DC combiner boxes, goes through the upper right gland-plate on the inverter and into the DC bus of the inverter. The inverter also has a DC Disconnect on the front of the inverter (right switch located on the front of the inverter; see *Figure 2*).

The inverter serves the function of conditioning the power from the PV array so that it can be used by electrical loads within the entire building. The inverter converts DC power generated by the PV array to 3-Phase, 480/277 VAC power which exactly matches the power waveform being delivered to the building by the utility company. In the event excess power is generated by the system, it is simply “pushed-out” through the building’s main electrical meter, where it will be consumed by other utility customers. This results in a (temporary) credit on the meter.

AC power feeds-out on the AC bus of the inverter and passes through an AC disconnect-switch (left switch located on the front of the inverter). The power leaving the AC disconnect switch is routed through (the upper right gland plate of the inverter) 2” RMC conduit. This conduit is then routed to the other components that make up the AC infrastructure of the Utility-Interactive Photovoltaic System.

3.2.4 AC Infrastructure

AC equipment located “uphill” of the AC inverter bus:

Before the inverter combines into the 3-phase MDP, output conductors pass through a 3-phase (CT clamp) revenue (or kWh production) meter located directly behind the MDP. The meter serves to register the total AC energy produced by the system in kilowatt-hours (kWh). This meter should be used for reporting system production and SREC accrual.

Power conductors leaving the meter are fed out through conduit and to the Utility Accessible AC Disconnect Switch (UADS). Before inverter-supplied AC output power can be fed onto the grid, the electric utility requires a “Utility Accessible AC Disconnect Switch” located in sight of the building’s utility electric consumption meter (see *Figure 4*).



Figure 4: Utility accessible disconnect (locked in “Closed” position) installed outside next to Electric Utility Meter.

A key to unlock the UADS is in the possession of David Bruffy or Wayne Pifer.

From here, power is fed back into the building and into the MDP via one back-fed solar breaker. The new “solar back-fed breaker” (located in the lower slot of the 480/277 MDP) serves to combine the AC output from the system inverter to the existing utility AC electrical infrastructure.

The inverter back-feeds one 480 VAC, 3-Pole 30A circuit breaker that is positioned in the MDP so that inverter output power is balanced evenly on all three electrical phases of the building’s 3-phase service.

The inverter outputs power on 3-phase (277V) conductors plus a neutral wire. The phase conductors of the inverter land on the terminals of one triple-pole breaker.

Regarding system “restart” and power interruptions:

Once the system has been turned on by MTVSolar, the system will automatically restart after a power interruption and following a (code required) 5-minute waiting period.

Whenever grid-power is present and there is enough light for the PV arrays to start the inverters, the inverters will automatically start-up and all disconnects are closed. As soon as this happens, solar generated power will enter the main distribution panel via the solar breaker and then be routed through the bus of the MDP to help satisfy loads requiring power within the building. Anytime the system is operational, it will reduce the amount of energy supplied by the utility. On days when internal demand for the building is extremely low, say

when the building is closed for a holiday or HVAC loads are low (spring and fall), the system may produce more power than is being consumed within the building. In this event, excess power will be pushed out onto the grid through the building's net-meter and register a credit on the meter as it passes through. The net-meter has been installed in the place of the electric utility meter.

3.2.5 System Monitor

This solar-energy system is equipped with performance monitoring capability. Monitoring is performed using Satcon PV View Plus data-logging. The data-logger collects real-time performance information from the inverter and sends this information, via the internet, to the Satcon monitoring software.

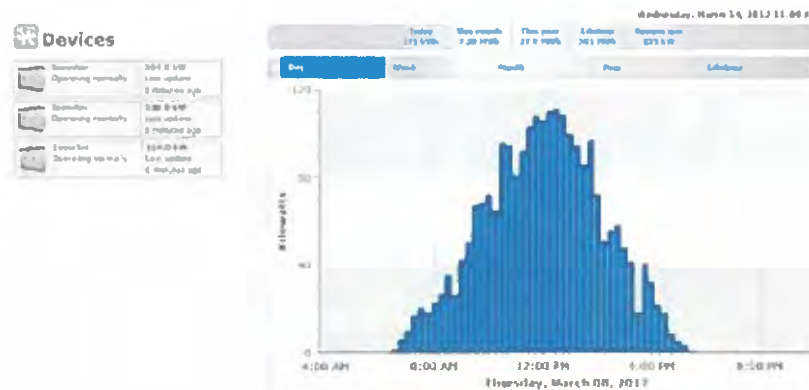


Figure 5: Example PV View Plus Web Site showing production curves for a solar PV array

System Architecture:

The Satcon PowerGate Plus PVS-135 inverter is equipped with a data transfer (PV View Plus) motherboard that communicates via TCP/IP data protocol with the MCUMTA Internet. The PV View is located inside the upper right compartment of the Satcon inverter and is connected to the building's internet by a Cat-5 cable, which runs from the data-logger to a Netgear wireless range extender which communicates wirelessly with the MCUMTA main internet mainframe.

Do not relocate the Netgear extender, as this will prevent Internet communication from the Satcon PVS-135. As an added benefit, the Netgear extender boosts the wireless signal of the building's wireless network:

Wireless SSID: WO ML

To use the Internet for the Netgear extender simply selects the access point:

Wireless SSID: WO ML_EXT

Once connected to the Internet and registered with the Satcon PV View servers, the system will send out data to the portal where it now can be viewed using any Internet browsing tool and from anywhere that Internet service is available. Along with the data logging, Satcon is organizing the Lobby View for the inverter to display a website solely for the public viewing of the power output of the PV system.

Viewing System information and Production Data:

To view information for the MCUMTA system, simply navigate your web browser to the following address:

<http://www.alsoenergy.com/stage/satcon/>

Currently, this link will bring you to the following page:

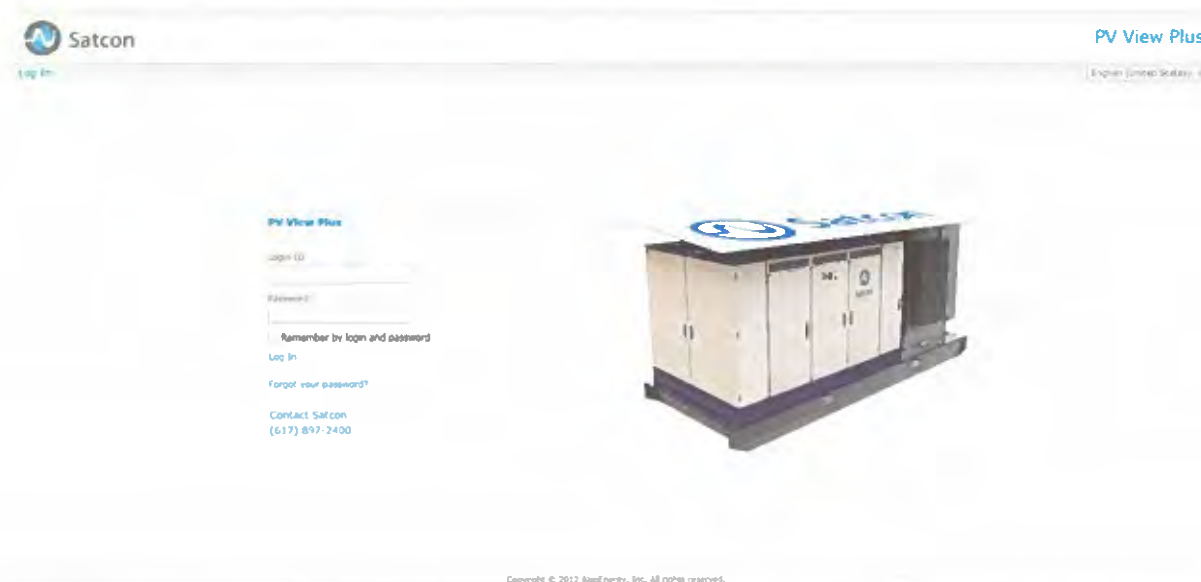


Figure 6: Login page to the PV View Plus monitoring website

Username Login ID and Password will be provided once the PV View Plus is configured for the MCUMTA PVS 135kW inverter. Please write the Login ID and password below for future reference:

Login ID: _____

Password: _____

To view system performance curves and outputs simply click the corresponding tabs that relate to the data that you wish to view.

3.3 System Performance.

Based upon the rated size of this system, its orientation, and some other design parameters, we were able to estimate an expected annual energy yield for the 140.14 kW system installed at the MCUMTA. One tool that is commonly used to estimate system performance is the “PVWatts” online calculator which was developed and is maintained by the US Department of Energy and the National Renewable Energy Laboratory. PVWatts calculates system performance using the following 4 parameters:

System Size = 140.14 kW

Module Tilt Angle = 12.0 degrees

Module Azimuth Angle = 210 degrees

Combined System Derate Factor = 0.858

The fourth parameter, the derate factor, is a combined adjustment factor that combines a number of system losses. For example, inverter and wiring losses due to shading are accounted for. We feel a 0.858 combined factor should be appropriate for this installation.

The next image shows a screen-capture of the estimated production for this system generated by the PVWatts version-2 calculator (see *Figure 7*).



**AC ENERGY
&
COST SAVINGS**



(Type comments here to appear on printout; maximum 1 row of 90 characters.)

Station Identification		Results			
Cell ID:	0257374	Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)	Energy Value (\$)
State:	West Virginia	1	2.00	7405	571.37
Latitude:	39.6 ° N	2	2.81	9541	736.18
Longitude:	79.8 ° W	3	4.27	15792	1218.51
PV System Specifications		4	4.91	17181	1325.69
DC Rating:	140.1 kW	5	5.48	19060	1470.67
DC to AC Derate Factor:	0.858	6	6.11	19995	1542.81
AC Rating:	120.2 kW	7	5.87	19590	1511.56
Array Type:	Fixed Tilt	8	5.34	17774	1371.44
Array Tilt:	12.0 °	9	4.60	15054	1161.57
Array Azimuth:	210.0 °	10	3.53	12439	959.79
Energy Specifications		11	2.35	8098	624.84
Cost of Electricity:	7.7 ¢/kWh	12	1.87	6661	513.96
		Year	4.10	168589	13008.33

Figure 7: The image above is the first year PVWatts (version 2) analysis for MCUMTA

The actual energy output can be compared to the estimated energy output once the installation is complete and connected to the monitoring software. PVWatts displays photovoltaic production by month, and this array is estimated to produce 168,589 kWh of electricity in the first year of operation (365 days from initial day of commissioning).

The inverter displays outputs for array production of electricity; however the meter that takes these readings is not to the grade required by some Renewable Energy Credit organizations. These organizations require a verifiable means of electricity generation. Generally this requirement is simply the addition of a “revenue grade” meter like the E-mon D-mon. (See *Figure 8.*)



Figure 6: E-Mon D-Mon green revenue grade meter installed at MCUMTA

The E-Mon D-Mon has an easy to read display that simply scrolls through data screens. To view total (cumulative) system output wait until the meter shows output readings followed by kWh (Kilo-watt-hours). The numerical value shown in the same screen as this unit of measurement is the total, lifetime generation of electricity from the Satcon inverter.

Revenue:

Perhaps a better way to look at the energy-offset by the system is in terms of revenue per year. Revenue for this system is made up of two components:

- 1) **Avoided Cost of Electricity**
- 2) **Income from sale of Solar Renewable Energy Credits (SRECs)**

The first component is easy to calculate and is simply the kilowatt-hours produced per year multiplied by the current utility rate. If the system produces its estimated energy output, the system will save MCUMTA:

$$168,589 \text{ kWh/year} \times .077 \text{ \$/kWh} = \$12,981.35/\text{year}$$

The second component of the revenue equation is a little more difficult to estimate currently. The SREC market is changing constantly, and has been hampered in WV by the fact that the state's Renewable Portfolio Standard has yet to be defined as far as the required solar "carve-out" for utility companies providing electricity in the state. We recommend that you contact your state legislators and ask them to immediately adopt an RPS that will meet or exceed the portfolio standards currently in effect in Maryland and Ohio.

For more information on this, contact Colin Williams (304 258-4733).

4. Theory – How PV Systems work

4.1. Solar Energy, semiconductors, and the photovoltaic effect

Although it is 93 million miles away, the sun provides the most abundant source of energy available to our planet. Every hour of every day, the sun delivers to planet earth enough energy to meet mankind's electrical needs for an entire year! This is essentially free energy just waiting to be utilized. Solar energy systems are technologies that convert solar energy from the sun (in the form of electro-magnetic radiation) to thermal or electrical energy that we can use to do useful work.

Solar electric systems “generate” electricity through a phenomenon known as the photovoltaic effect, abbreviated PV. This effect produces an “electrical potential” or *voltage* in certain materials when they are exposed to light, and it was first discovered by the French physicist Edmond Becquerel in 1839 while working with Selenium. From the mid-1900s to today, most of the research and development of photovoltaic materials has been done using elemental (crystalline and amorphous) Silicon (atomic number 14 on the periodic table), due to its superior semi-conducting properties and wide-spread availability from refined silica.

PV cells, or solar cells, take advantage of the photovoltaic effect to convert solar energy to electrical energy. PV cells are the building-blocks of all PV systems; they are the base unit that converts sunlight to electricity.¹

Commonly known as *solar cells*, PV cells are energy-conversion devices made from semiconductor materials. PV cells come in many sizes and shapes, from smaller than a postage stamp to several inches across. They are commonly connected together in series circuits to form PV *modules* that may be up to several feet long and a few feet wide.

Modules, in turn, can be connected in series-parallel circuits to form PV *arrays* of different sizes and power outputs. PV modules comprise the bulk of a PV system. In addition, these systems also include electrical connections, mounting hardware, power-conditioning equipment, and in some cases energy storages devices such as batteries to store electrical energy for use when the sun is not shining.¹

4.2. Cell Physics

To change the solid-state physical properties of semiconducting materials and alter them to produce efficient PV materials, these (originally) homogeneous semiconductor materials are processed to have other elements added to their structures under (highly) controlled conditions. Atoms of (typically) crystalline material are displaced from the parent matrix

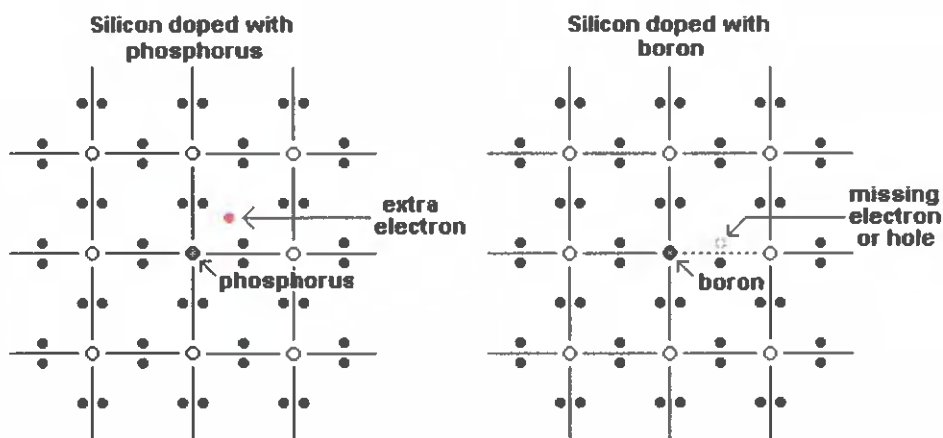
¹ Photovoltaic Cells, Energy Basics; Renewable Energy. United States Department of Energy (USDOE).
http://www.eere.energy.gov/basics/renewable_energy/pv_cells.html

(crystal-lattice) and replaced by other “impurity” elements with slightly different charge (valence electron) states. This controlled process of adding impurities is known as “doping.”

PN Junction Semiconductors

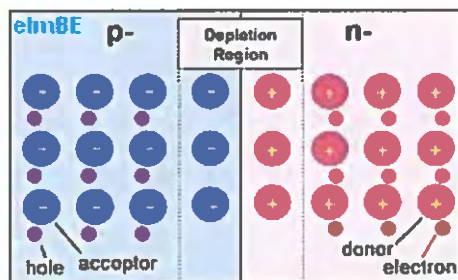
To produce a traditional silicon PV solar cell, a thin crystalline-silicon “wafer” is doped with two different “dopants” (e.g. arsenic, boron, gallium, aluminum, or phosphorus), the most common pair being Boron and Phosphorus.

One half of the crystal is left *electron deficient* - i.e. the atoms it contains are short of electrons. This is called the **p-type** layer. The other half of the crystal is given an excess of electrons - this is called the **n-type** layer.



Since one half of the crystal has a lot of electrons, and the other half does not, an *electric field* is created across the junction between the two halves. Electrons in the crystal can only travel in one direction - from the electron rich half to the electron poor half.

Where the two halves of the crystal meet is called a **PN junction**, and this doped crystal is a **semiconductor**.



Pictured above is a representation of **PN junction** semiconductor. The half labeled **p-** has a shortage of electrons so contains *acceptor* atoms each with a *hole* which could be 'filled' by an electron. The half labeled **n-** has excess electrons and so contains *donor* atoms which have an extra electron.

The Depletion Region

Around the PN junction, a **depletion region** is formed, so called because it is depleted of charge carriers (the electrons and holes). Here electrons have moved from the n-type (negative) side to the p-type (positive) side of the crystal recombining with holes. Likewise holes have moved from the p-type side to the n-type side.

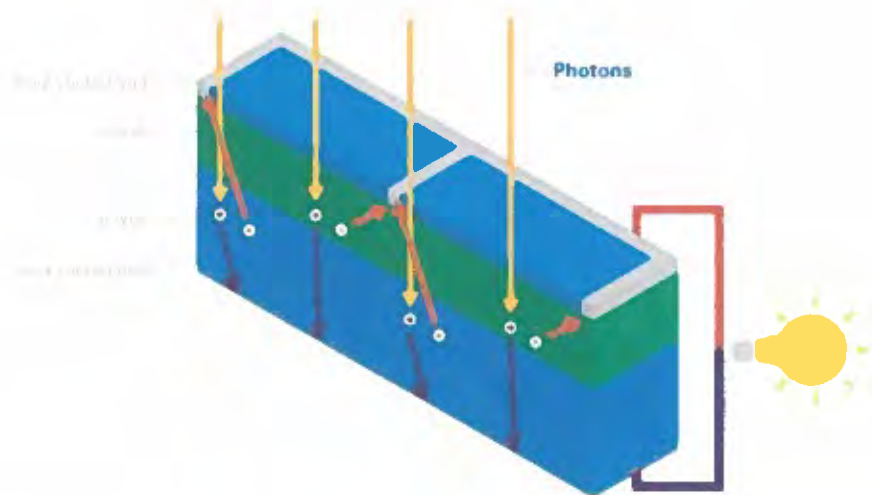
As the silicon atoms themselves do not move, any holes which remain uncovered by electrons in the n-type side are left positively charged, and any electrons without holes to cover in the p-type side remain negatively charged. This leaves positive material close to the junction in the n-type side, and negative material close to the junction in the p-type side with a *potential* between the two sides of around **0.6-0.7 volts** in a silicon PN junction.

With this equilibrium position reached there are two **equal and opposite** electric currents flowing - holes in one direction and electrons in the other direction - across the depletion region.

Energy from Sunlight

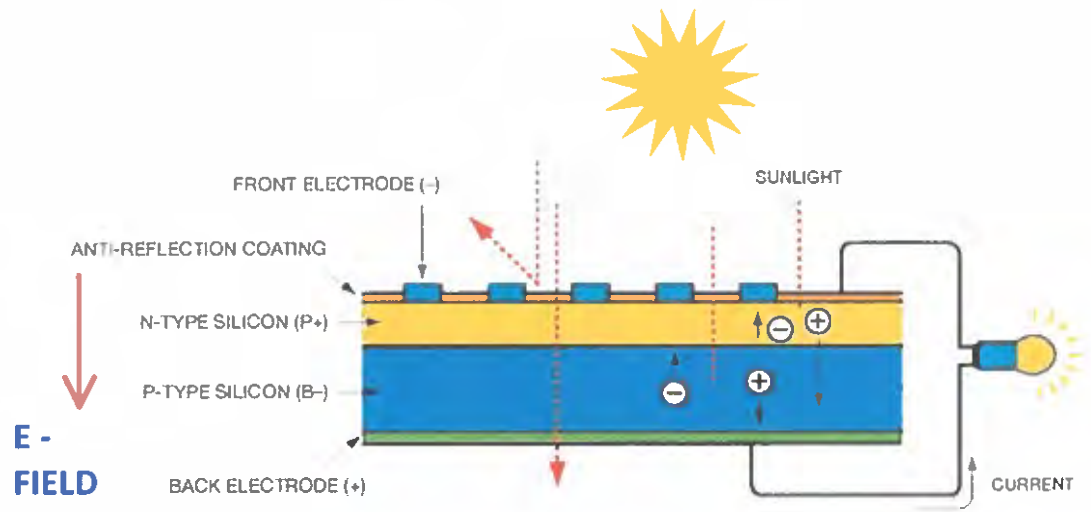
The light from the sun is made up of packets of **energy** called **Photons**. Each photon carries an amount of energy corresponding to its wavelength of light.

When a visible light **photon** strikes a solar cell it can do one of three things: pass straight through, be reflected, or be absorbed. If the photon is **absorbed**, its energy is absorbed by an electron in an atom of the solar cell enabling it to escape from its normal position (*photon excitation*), cross the junction and fill a hole. Since electrons are physically moving across the PN junction, the positive charge carrying **holes** are effectively moving in the opposite direction around the load circuit (which might include a load such as a fan, a pump, a light bulb, etc.). This completes the circuit providing more holes for the electrons to combine with and providing usable electricity.



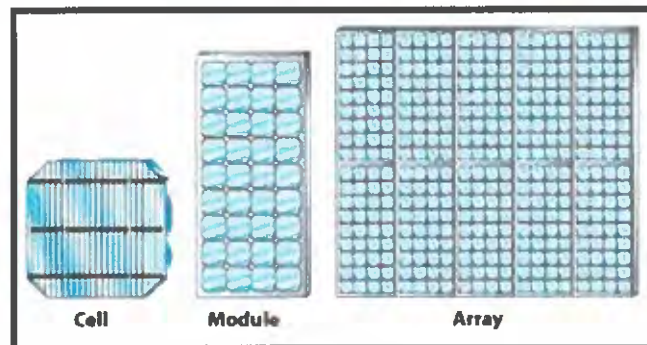
Energy from the sun can be extracted in this way using a standard solar cell at an efficiency

of around 5-18%. This process can be repeated over and over again day-in and day-out for decades.



4.3. Photovoltaic Energy Systems

A photovoltaic (PV), or solar electric system, is made up of several photovoltaic solar cells. An individual PV cell is usually small, typically producing about 1 or 2 watts of power. To boost the power output of PV cells, they are connected together to form larger units called modules. Modules, in turn, can be connected to form even larger units called arrays, which can be interconnected to produce more power, and so on. In this way, PV systems can be built to meet almost any electric power need, small or large.²



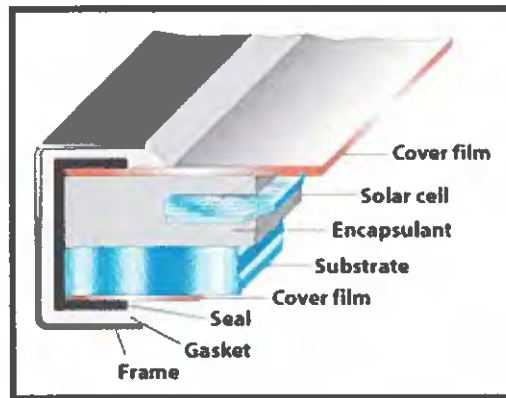
By themselves, modules or arrays do not represent an entire PV system. Systems also include structures that point them toward the sun and components that take the direct-current electricity produced by modules and "condition" that electricity, usually by converting it to alternate-current electricity. PV systems may also include batteries. These items are referred to as the *balance of system* (BOS) components.³

² Photovoltaic Systems. Energy Basics; Renewable Energy. USDOE.
http://www.eere.energy.gov/basics/renewable_energy/pv_systems.html

Combining modules with BOS components creates an entire PV system. This system is usually everything needed to meet a particular energy demand, such as powering a water pump, the appliances and lights in a home, or—if the PV system is large enough—all the electrical requirements of a community.³

4.4. Flat Plate Photovoltaics

The most common photovoltaic (PV) array design uses flat-plate PV modules or panels. These panels can be fixed in place or allowed to track the movement of the sun. They respond to sunlight that is direct or diffuse. Even in clear skies, the diffuse component of sunlight accounts for between 10% and 20% of the total solar radiation on a horizontal surface. On partly sunny days, up to 50% of that radiation is diffuse, and on cloudy days, 100% of the radiation is diffuse.



One typical flat-plate module design uses a substrate of metal, glass, or plastic to provide structural support in the back; an encapsulate material to protect the cells; and a transparent cover of plastic or glass.⁴

The simplest PV arrays consist of flat-plate PV panels fixed in position. Some of the advantages of fixed arrays are that they are lower cost, easy to install, relatively maintenance free, and are relatively lightweight. These features make them suitable for many locations, including most residential roofs. But because the panels are fixed in place, their orientation to the sun is usually at an angle that is less than optimal. Therefore, fixed arrays collect less energy per unit area of array than tracking arrays. However, this drawback must be balanced against the substantially higher cost of the tracking system.⁴

³ Flat Plate Photovoltaic Systems. Energy Basics; Renewable Energy. USDOE.
http://www.eere.energy.gov/basics/renewable_energy/flat_plate_pv_systems.html

5. Links to other resources

www.mtv-solar.com

Homepage to Mountain-View Solar's website.

<http://www.alsoenergy.com/satcon/>

Monitoring portal for the performance monitor for the system

www.solarworld-usa.com

Homepage of the manufacturer of the PV modules used on the project. Lots of good info here, including warranty info

<http://www.satcon.com/>

Homepage of the inverter manufacturer used on the project. Good technical info here, including warranty info and inverter installation manuals.

<http://www.ecolibriumsolar.com/>

Homepage of the racking-system manufacturer used on the project.

www.srectrade.com

Best place to start on the web for information regarding the regional SREC market. You can register and sell SRECs here.

www.dsireusa.org

United States database for renewable energy incentives. Includes Federal, State and Local incentives. Very up-to-date.

www.solarabcs.org

Useful clearinghouse for cutting-edge information on all things solar.

www.energy.gov

Information about energy. Has lots of really good links to energy and energy resources. Very informative website about anything energy related.

www.energystar.gov

A great website providing a wealth of information about energy efficiency, energy efficient products, and services.

Notes:



Sunmodule⁺™

SW 245 poly / Version 2.0 and 2.5 Frame

World-class quality

Fully-automated production lines and seamless monitoring of the process and material ensure the quality that the company sets as its benchmark for its sites worldwide.

SolarWorld Plus-Sorting

Plus-Sorting guarantees highest system efficiency. SolarWorld only delivers modules that have greater than or equal to the nameplate rated power.

25 years linear performance guarantee and extension of product warranty to 10 years

SolarWorld guarantees a maximum performance degradation of 0.7% p.a. in the course of 25 years, a significant added value compared to the two-phase warranties common in the industry. In addition, SolarWorld is offering a product warranty, which has been extended to 10 years.*

*in accordance with the applicable SolarWorld Limited Warranty at purchase.
www.solarworld.com/warranty



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Periodic Inspection



ISO 9001
ISO 14001
Certified



Sunmodule⁺™

SW 245 poly / Version 2.0 and 2.5 Frame

SW-02-5009US 01-2012 US

PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

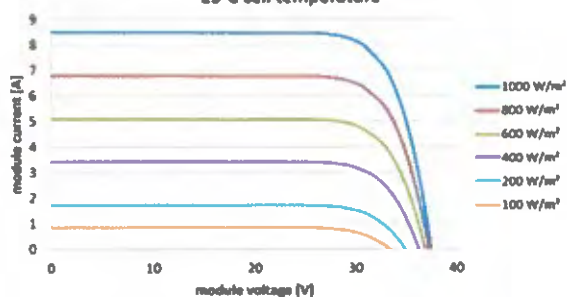
		SW 245
Maximum power	P_{max}	245 Wp
Open circuit voltage	V_{oc}	37.5 V
Maximum power point voltage	V_{mpp}	30.8 V
Short circuit current	I_{sc}	8.49 A
Maximum power point current	I_{mpp}	7.96 A

*STC: 1000W/m², 25°C, AM 1.5

THERMAL CHARACTERISTICS

NOCT	46 °C
TC I_{sc}	0.081 %/K
TC V_{oc}	-0.37 %/K
TC P_{mpp}	-0.45 %/K
Operating temperature	-40°C to 85°C

IV-curves for SolarWorld Sunmodule Plus SW 245 poly at 25°C cell temperature



PERFORMANCE AT 800 W/m², NOCT, AM 1.5

		SW 245
Maximum power	P_{max}	176.4 Wp
Open circuit voltage	V_{oc}	33.7 V
Maximum power point voltage	V_{mpp}	27.7 V
Short circuit current	I_{sc}	6.84 A
Maximum power point current	I_{mpp}	6.37 A

Minor reduction in efficiency under partial load conditions at 25°C: at 200W/m², 95% (+/-3%) of the STC efficiency (1000 W/m²) is achieved.

COMPONENT MATERIALS

Cells per module	60
Cell type	Poly crystalline
Cell dimensions	6.14 in x 6.14 in (156 mm x 156 mm)
Front	tempered glass (EN 12150)
Frame	Clear anodized aluminum
Weight	46.7 lbs (21.2 kg)

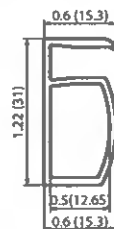
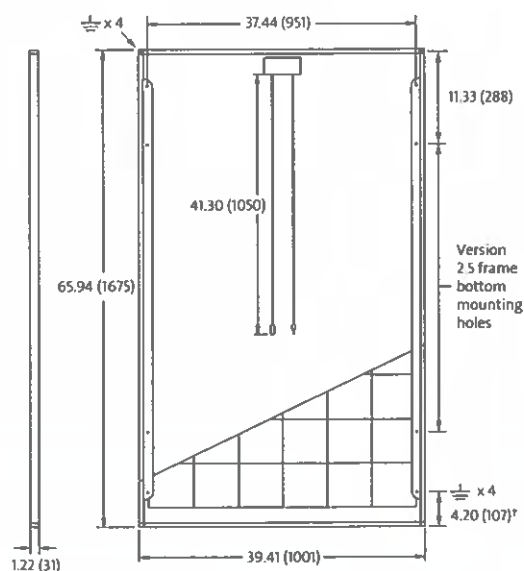
SYSTEM INTEGRATION PARAMETERS

Maximum system voltage SC II	1000 V
Max. system voltage USA NEC	600 V
Maximum reverse current	16 A
Number of bypass diodes	3
UL Maximum Test Load**	45 psf (2.1 kN/m ²)
IEC Maximum Snow Test Load**	113 psf (5.4 kN/m ²)

**Please apply the appropriate factors of safety according to the test standard and local building code requirements when designing a PV system.

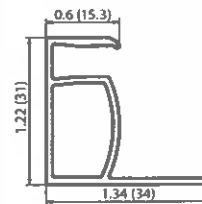
ADDITIONAL DATA

Power tolerance ²⁾	-0 Wp / +5 Wp
J-Box	IP66
Connector	MC4
Module efficiency	14.61 %
Fire rating (UL 790)	Class C



VERSION 2.0 FRAME

- Compatible with "Top-Down" mounting methods
- Grounding Locations: 4 corners of the frame



VERSION 2.5 FRAME

- Compatible with both "Top-Down" and "Bottom" mounting methods
- Grounding Locations: 4 corners of the frame, 4 locations along the length of the module in the extended flange†

1) Sunmodules dedicated for the United States and Canada are tested to UL 1703 Standard and listed by a third party laboratory. The laboratory may vary by product and region. Check with your SolarWorld representative to confirm which laboratory has a listing for the product.
2) Measuring tolerance traceable to TUV Rheinland; +/- 2% (TUV Power Controlled)



SolarWorld quick facts www.solarworld.com



TEST WINNER



PHOTON MODULE TEST
2008 AND 2009

The independent Photon magazine confirms: SolarWorld® is test winner. Up to 12% more yield!

SOLARWORLD QUICK FACTS

SolarWorld is one of the largest PV companies in the world with annual revenues exceeding \$1.4 billion (USD) in 2009.

SolarWorld AG stock (symbol SWV) is publicly traded on the Frankfurt Securities Exchange and is included in the German TecDAX and the Dow Jones STOXX 600 indexes.

SolarWorld is completely vertically integrated, from silicon to solar cells, modules and solar systems integration.

SolarWorld's main factories are located in the USA and Germany.

SolarWorld employs over 2,900 people world-wide and is the largest PV manufacturer in the U.S. where we are adding new jobs every day.

SolarWorld has been in the U.S. since the early days of the PV industry under several well-known and respected company names:

- ARCO Solar (Atlantic Richfield) 1977-1989
- Siemens Solar 1990-2001
- Shell Solar (Royal Dutch Shell/Shell Oil) 2001-2006

SolarWorld is an industry leader

- First to offer a 25 year warranty for PV modules
- First to manufacture UL listed PV modules
- First to fully recycle crystalline PV modules
- First to build 1 MW+solar PV projects
- First to offer grid tied PV kits

SolarWorld products are the highest quality available

- Tested to 113 psf for IEC 61215 heavy load compliance
- NEC 2008 compliant module and connections
- Unsurpassed 25 year linear warranty

SolarWorld Sunmodules produce the most kWh

- Proven in independent real-world testing by Photon International
- Up to 12% more kWh/kW than other major brand modules
- Superior low-light performance through cell texturing
- Plus sorted to deliver every Watt on the name plate

SolarWorld is a sustainable, socially responsible manufacturer

- Environmental impacts reported along side financial results
- Local manufacturing under strict environmental regulations
- SolarWorld initiative supplies projects in developing nations
- Broken or obsolete modules are recycled





SolarWorld sells to commercial customers and through distributors and dealers for residential and commercial markets, homeowners are served through our Sunkits® installer network.

American manufacturing

- Silicon reprocessing in Vancouver, WA
- Crystal growing and wafering in Hillsboro, OR
- Cell manufacturing in Hillsboro, OR
- Module assembly, sales & customer service in Camarillo, CA

Why “made in America” is important to our customers

- Highest quality products
- Reliable delivery schedules
- Local warranty and product support
- Real energy independence vs importing
- Avoids environmental costs of overseas shipping
- Meets and exceeds all federal Buy America requirements
- Money spent stimulates the US economy and creates US jobs
- Processes meet stringent US labor and environmental policies

SolarWorld Americas

Sales: 805-388-6590
4650 Adohr Lane
Camarillo, CA 93012
service@solarworld-usa.com



SolarWorld grows!

SolarWorld is investing over \$ 500 million to expand US-based manufacturing, which generates hundreds of millions of dollars each year for American workers, goods and services.





We turn sunlight into power.

4650 Adohr Lane
Camarillo, CA 93012
Tel: (805) 482-6800
Fax: (805) 388-6395

Manufacturer's Certification

SolarWorld Silver Photovoltaic Modules Sunmodule SW175 – SW260

January 9, 2012

This certification applies to SolarWorld Sunmodules, SW175/210/215/220/225/230/235/240/245/250/255/260, Mono Silver, Mono Black, or Poly Silver that have been manufactured in the United States. The modules are produced at our US manufacturing facility located in Hillsboro, OR.

It is hereby certified that the referenced modules:

1. Qualify as photovoltaic devices which use solar energy to generate electricity and qualify as solar electric property.
2. Meet or exceed the Federal Trade Commission (FTC) requirements to apply the "Made in USA" label to all advertising materials.
3. Meet or exceed the provisions of the **Buy American Act**.
4. Meet or exceed the provisions of the **American Recovery and Reinvestment Act**.
5. Have been manufactured in a SolarWorld ISO 9001:2008 certified factory.
6. Meet or exceed the UL 1703 requirements and are listed with third party testing agencies (Underwriters Laboratories and/or Intertek).
7. Have been certified to the "Crystalline silicon terrestrial photovoltaic (PV) modules- Design qualification and type approval", IEC 61215 2005-04.
8. SolarWorld will accept these modules for recycling at their end of life.

Under penalties of perjury, I declare that I have examined this certification statement, and to the best of my knowledge and belief, the facts presented are true, correct and complete.

Regards,
Kevin Kil Kelly

President
SolarWorld Americas, LLC.

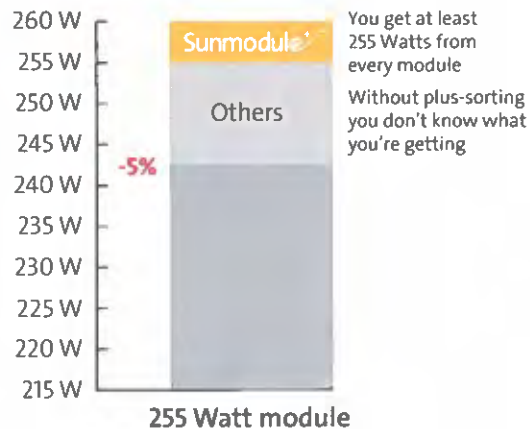
The SolarWorld Sunmodule[®] Advantage

Plus sorting — get all the watts you pay for

SolarWorld's unique plus-sorting method ensures that our customers receive the watts they pay for. Every module is factory flash-tested (at standard test conditions) to determine the peak rated power output, then sorted in 5-watt bin increments. SolarWorld's power rating accounts for initial light-induced degradation (LID) so there are no surprises after installation.

With plus-sorting, SolarWorld delivers only modules that have greater than or equal to the nameplate-rated power. These power ratings are backed up with the factory flash report.

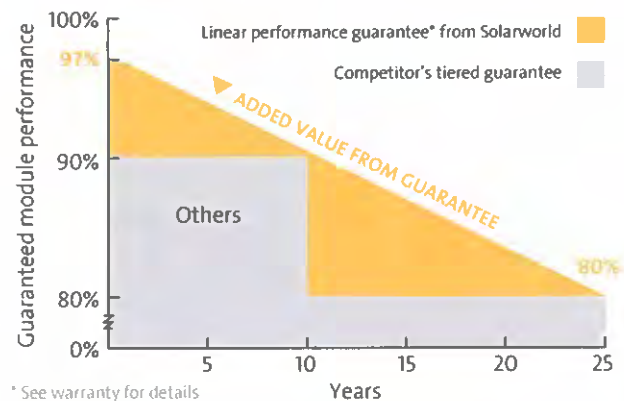
By delivering actual power, plus-sorting ensures that systems operate at top efficiency which results in maximum energy yield year after year. Plus-sorting eliminates nameplate uncertainty and our 5 W bin size makes mismatch losses negligible. Therefore associated de-rate factors in system modeling programs, such as PVWatts, PVSyst, and OnGrid can be minimized, predicting up to 5% greater annual yield.



SolarWorld's linear performance guarantee — long term performance assured

Because SolarWorld produces the highest quality, we can guarantee the best performance. That's why SolarWorld offers a 25-year linear performance guarantee* for all Sunmodule Plus panels purchased after January 1, 2011.

According to our guarantee, the actual power of a new module cannot deviate from the specified rated power by more than 3% during the first year; afterward, the power will not decrease by more than 0.7 percent of the rated power per year. So at year 11, the Sunmodule's capacity is guaranteed to be at least 89.3% of the nameplate, compared with the industry standard guarantee of 80%. At year 20, it's still at least 83%, compared with the industry standard 80%. SolarWorld's linear performance guarantee provides clear added value that you can take to the bank.



* See warranty for details

SolarWorld's workmanship warranty

As a further expression of SolarWorld's industry-leading quality, we have extended the Sunmodule product workmanship warranty to 10 years*.



Limited Warranty (valid from 01.01.2011)



By purchasing the Solar modules from SolarWorld Americas LLC ("SolarWorld") (hereinafter referred to as: products), you have chosen a level of quality, which meets the highest requirements. SolarWorld assumes that use in accordance with this Limited Warranty will reliably maintain the function of the products to produce electricity (hereinafter referred to as: functional capability) as well as reliably maintaining the performance of the products. As a sign of our confidence in this quality, SolarWorld is happy to grant you as the end-user of the products (i.e. the person who put the products into operation correctly for the first time or the person who has legitimately purchased the products from such an end-customer without any modifications) a Ten Year Limited Product Warranty and Twenty-Five Year Limited Service Warranty as presented below:

A Ten Year Limited Product Warranty:

- SolarWorld guarantees the functional capability of the products for ten years beyond the purchase of the product and that the product:
 - will not suffer from any mechanical adverse effects, which limit the stability of the solar module. A condition for this is correct installation and use in accordance with regulations, as described in the installation instructions enclosed with the product.
 - will not be subject to any clouding or discoloration of the glass.
 - with its cable and connector plug will remain safe and operational, if they are installed professionally and are not permanently positioned in water (puddle). However, damage to the cable, which is caused by abrasion on a rough lower surface owing to insufficient fixing or owing to unprotected running of the cable over sharp edges, is excluded. Any damage caused by animals (e.g. rodent bites, birds, insects) is also exempted.
 - with its aluminum frames will not freeze up when it is frosty if it is installed correctly.

The appearance of the product as well as any scratches, stains, mechanical wear, rust, mould, optical deterioration, discoloration and other changes, which occurred after delivery by SolarWorld, do not represent defects, insofar as the change in appearance does not lead to a deterioration in the functional capability of the product. A claim in the event of glass breakage arises only to the extent that there was no external influence.

- If the products exhibit one of the above-mentioned defects during this period and this has an effect on the functional capability of the product, SolarWorld will repair the defective products, supply replacement products or provide the customer with an appropriate residual value of the products as compensation at its discretion.

B Twenty-Five Year Limited Service Warranty:

The products which you have purchased have a performance specification within a certain tolerance range of 3% with regard to the power output (the so-called effective output). The relevant effective output can be found on the nameplate on the reverse of the product. SolarWorld assumes that the actual output of the products will decline only slightly over a period of 25 years as of the purchase of the product.

- SolarWorld guarantees that the actual output of the product will amount to at least 97% of effective output during the first year of operation of the product and as of the second year of the operation of the product, the effective output will decline annually by no more than 0.7% for a period of 24 years, so that by the end of the 25th year of operation an actual output of at least 80.2% of effective output will be achieved. In the event of a negative deviation of actual product performance from the so-called threshold values, SolarWorld will either supply you with replacement products, which make it possible to maintain actual performance, carry out repair measures, which make it possible to achieve actual performance or grant you financial compensation for the reduced performance of the product. During the initial 15 years of the warranty running time, SolarWorld will exclusively either offer to supply replacement products, which will make it possible to maintain actual performance, or to carry out repair measures which make it possible to achieve such actual performance. After the expiry of 15 years of the warranty SolarWorld may freely decide to grant financial compensation for the reduced performance.

- When replacement products are supplied, there is no entitlement for the use of new products or those which are as good as new. On the contrary, SolarWorld is authorized to also supply used and/or repaired products as replacements.

C Further conditions of entitlement:

- The period of the Limited Service Warranty under B) is restricted to a period of 25 years as of the purchase of the product and will not be extended even in the event of a repair or exchange of a product.
- The effective output and the actual output of the products are to be determined for the verification of any guarantee case using standard test conditions, as described under IEC 60904. The decisive measurement of performance is carried out by a recognized measuring institute or through SolarWorld's own measurements (the assessment of measurement tolerances is undertaken in accordance with EN 50380). The guarantee does not cover transport costs to return the products or for a new delivery of repaired or replacement products. It also does not cover the costs of the installation or re-installation of products, as well as other expenditure by the end-customer or seller.
- Ownership of all products which have been replaced pass to SolarWorld.
- The term of the rights granted to you in this Certificate in paragraphs A) and B) starts with the original purchase of the products, insofar as they were purchased by the original end customer after 01.01.2011. SolarWorld retains the right to adjust voluntary special services in accordance with this document at any time. However, any product purchases which have already been concluded, remain unaffected by this – including the voluntary special services in accordance with this document. You can find out about the current status of this document at any time under www.solarworld-usa.com.

D Assertion of claims:

The assertion of the services specified under A) and B) requires you (i) to inform the authorized seller/dealer of the product of the alleged defect in writing, or (ii) to send this written notification directly to the address mentioned in C), if the seller/dealer who should be informed no longer exists (e.g. owing to business closure or insolvency). Any notification of defects is to be added to the original sales receipt as evidence of the purchase and the time of the purchase of the SolarWorld products. The assertion should take place within six weeks of the occurrence of the defect. In the case of claims arising from the product warranty (under A), the starting point for the recognition of an occurrence of a defect is the knowledge of material and/or workmanship errors. In the case of claims arising from the service warranty (under B) the starting point is the knowledge of reduced performance of the products. The return

E Use in accordance with this Limited Warranty:

- The services described above can additionally be ensured only if the product is properly used, operated and installed. Services provided by SolarWorld must therefore be withdrawn if the defects to the product are not exclusively based on the products themselves; e.g. in the following cases:
 - Delays on your part or on the part of the fitter in observing the assembly, operational and maintenance instructions or information, if this leads to defects and/or loss of performance of the products.
 - Exchange, repair or modification of the products if these are not done in a proper and professional way.
 - Incorrect use of the products.
 - Vandalism, destruction through external influences and/or persons/animals.
 - Incorrect storage or inappropriate transport before installation if these lead to defects and/or a reduction of performance of the products.
 - Damage to the customer system or incompatibility of the customer's system equipment with the products if these lead to defects and/or a reduction in performance of the products.
 - Use of products on mobile units such as vehicles or ships.
 - Influences such as dirt or contamination on the face-plate; contamination or damage by e.g. smoke, extraordinary salt contamination, or other chemicals.
 - Force majeure such as flooding, fire, explosions, rock-falls, direct or indirect lightning strikes, or other extreme weather conditions such as hail, hurricanes, whirlwinds, sandstorms or other circumstances outside the control of SolarWorld.
- The entitlements referred to under A) and B) will not be granted if and as soon as the manufacturer's labels or serial numbers on the PV modules have been changed, deleted, peeled off or made unrecognizable.

F Exclusion of liability:

The remedies set forth in this Limited Warranty are the exclusive remedies available to you as a product purchaser. SolarWorld shall not be liable for damage, injury or loss arising out of or related to a product except as set forth in this Limited Warranty. In particular, under no circumstances shall SolarWorld be liable for incidental, consequential, special or other indirect damages in any way connected with a product. SolarWorld's aggregate liability, if any, shall be limited to a product's purchase price or any service furnished in connection with a product, as the case may be.

G Your contacts:

To receive service under this Limited Warranty, please contact the authorized seller/dealer of your product or SolarWorld at the following address: Customer Service, SolarWorld Americas LLC, 4650 Adohr Lane, Camarillo, CA 93012, USA, e-mail: customerservice@solarworld-usa.com, Phone: +1 805 388 6590; Fax: +1 805 388 6395

H Choice of law:

This Limited Warranty, including without limitation the rights and responsibilities granted hereunder, shall be governed and construed in accordance with the laws of the State of Oregon, without regard to the conflicts of law provisions thereof.

I Validity:

The following table contains all the current products to which this Limited Warranty is to be applied. Products, which do not appear in this list, are not subject to this Limited Warranty.

Sunmodule/Sunmodule Plus/laminate/black

SW 135 mono	SW 135 poly	SW 200 mono	SW 200 poly	SW 130 Compact mono
SW 140 mono	SW 140 poly	SW 205 mono	SW 205 poly	SW 135 Compact mono
SW 145 mono	SW 145 poly	SW 210 mono	SW 210 poly	SW 140 Compact mono
SW 150 mono	SW 150 poly	SW 214 mono	SW 214 poly	SW 145 Compact mono
SW 155 mono	SW 155 poly	SW 215 mono	SW 215 poly	SW 150 Compact mono
SW 160 mono	SW 160 poly	SW 220 mono	SW 220 poly	SW 155 Compact mono
SW 165 mono	SW 165 poly	SW 225 mono	SW 225 poly	SW 160 Compact mono
SW 170 mono	SW 170 poly	SW 230 mono	SW 230 poly	SW 165 Compact mono
SW 175 mono	SW 175 poly	SW 235 mono	SW 235 poly	SW 170 Compact mono
SW 180 mono	SW 180 poly	SW 240 mono	SW 240 poly	
SW 185 mono	SW 185 poly	SW 245 mono	SW 245 poly	SW 192 Vario poly
SW 190 mono	SW 190 poly	SW 250 mono	SW 250 poly	SW 196 Vario poly
SW 195 mono	SW 195 poly	SW 255 mono	SW 255 poly	SW 200 Vario poly
		SW 260 mono	SW 260 poly	SW 204 Vario poly

J State Law:

This Limited Warranty is expressly intended to exclude all other express or implied warranties, including without limitation the warranties of merchantability and fitness for a particular purpose, to the periods set forth herein. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on implied warranties or the exclusion or limitation of damages, so some of the above limitations may not apply to you.

K Severability:

If any provision of this Limited Warranty is held unenforceable or illegal by a court or other body of competent jurisdiction, such provisions shall be modified to the minimum extent required such that the rest of this Limited Warranty will continue in full force and effect.

Camarillo, 01.04.2012

Kevin Kilkelly, President

Rajiv Ramamandra Vice President, Sales and Marketing

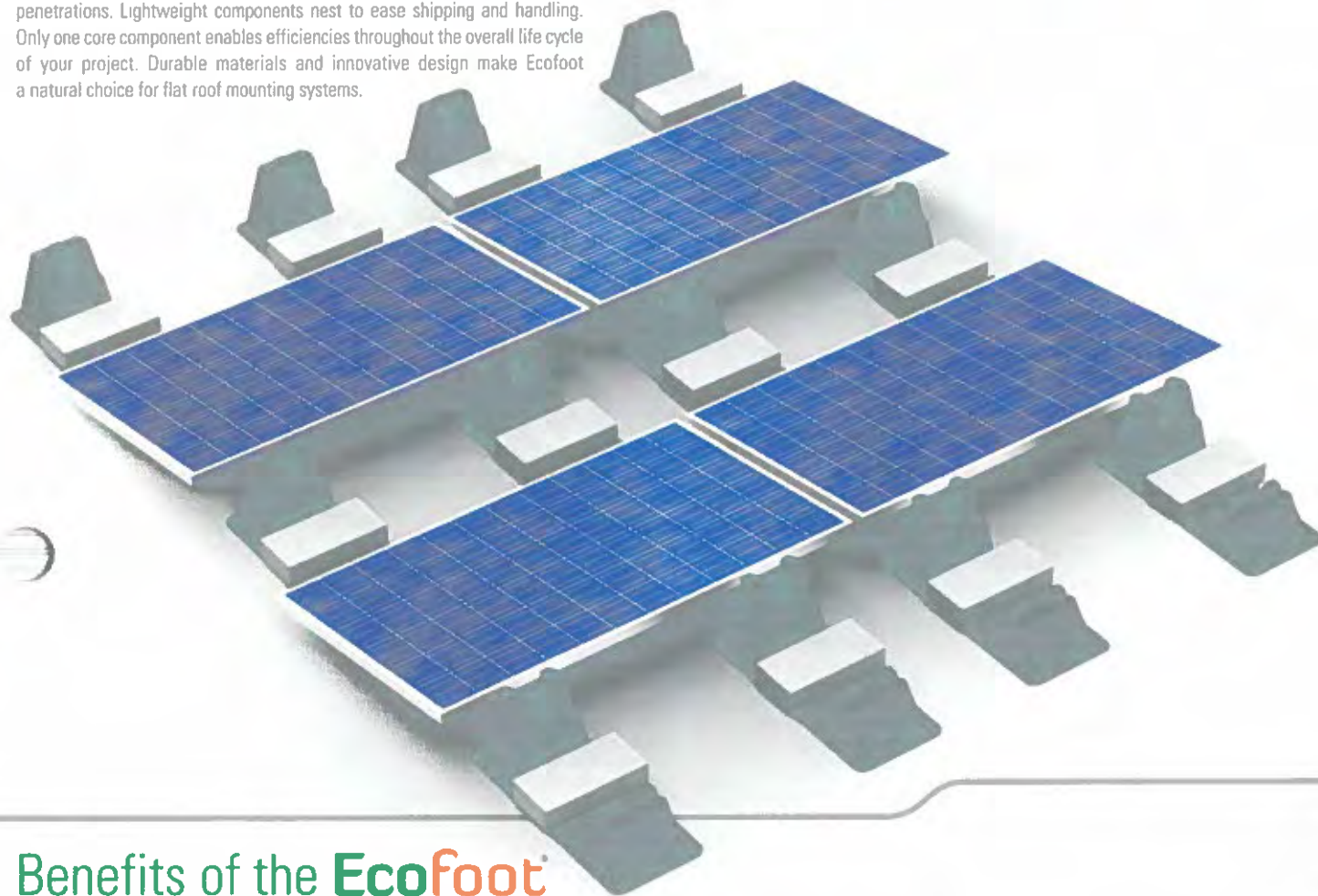


The Naturally Innovative Solar Mounting System

Meet Ecofoot, the next generation of solar flat roof mounting systems. Ecofoot system utilizes a green industrial grade polymer to eliminate the need for grounding and potential for corrosion. Universal and modular design adapts to all common PV modules and challenging roofs, without customization or roof penetrations. Lightweight components nest to ease shipping and handling. Only one core component enables efficiencies throughout the overall life cycle of your project. Durable materials and innovative design make Ecofoot a natural choice for flat roof mounting systems.



EcolibriumSolar



Benefits of the Ecofoot



Carefully Engineered

- Innovative patent-pending design
- Industrial polymer formulated to withstand elements
- Universal to enable use of preferred PV modules
- Rigorously engineered and tested for performance



Quality Support

- 25 year warranty guaranteed to last system life
- Live phone and email support
- PE stamped certification for painless permitting



Cost Effective

- Lowest cost per-watt in class
- Lower life-cycle cost
- Reduced shipping costs



Ecologically Sound

- 100% recycled content
- Close-loop recycling to lower ecological footprint
- Made in the United States

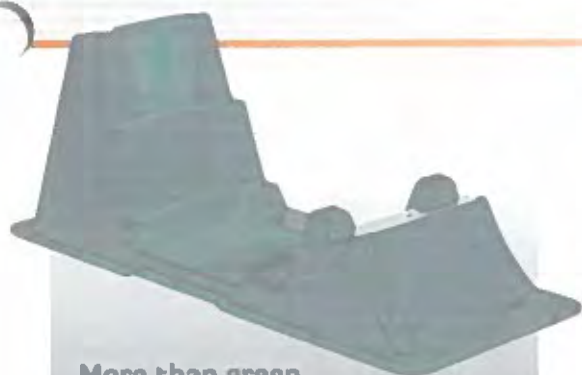


Time Effective

- Low part count allows for hassle-free install
- Modular body saves design time, works around obstructions
- No customization required, lowering lead times



EcolibriumSolar



More than green

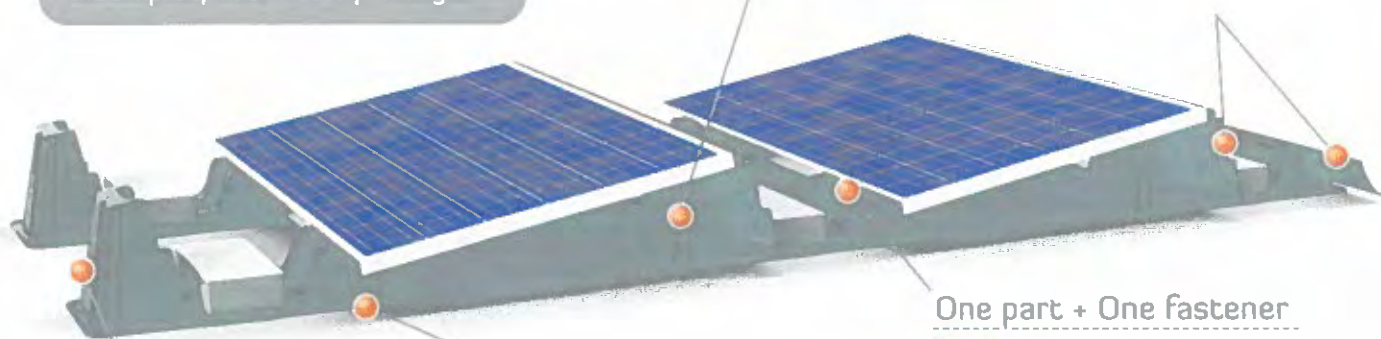
Ecofoot sets a higher standard of speed and simplicity at an industry leading cost.

Industrial Grade Polymer

Durable. Custom-formulated UV inhibitor engineered for stability to last the life of the system. 100% corrosion-free material requires no grounding.

Optional Deflector

Aerodynamic. Reduce total install weight with streamlined deflector, engineered to perform in zones of high wind.



Nestable

Ease of Handling. Progressive design enables stacking for hassle-free storage, shipping and handling.

EPDM Pads

Harmless. Compatible with all roof types, built to prevent damage and preserve roof warranty. Design eliminates penetration of roofing.

One part + One fastener

Simple. Only one core component makes installations quick and painless, promoting further efficiencies throughout the life cycle of the project.

Technical Specifications

System	Ballasted flat roof system with optional attachment method
Materials	High Molecular Weight Polyethylene (HMWPE) with UV inhibitor / 100% recycled content
Dimensions	33"L x 14"W x 12"H
Weight	4 lbs.
Modules	Type: Framed PV module Size: Universal, compatible with all modules Orientation: Landscape Tilt Angle: 10°-12° (depending on panel width) Inter-Row Spacing: 21"
Roof Pitch	0°-5°
Ballast Requirements	4"x8"x16" roof paver (31.5 lbs. each)
Installed Weight	3-7 psf
Installation Time	15 Modules / person / hour
Code Compliance	Building height: Meets ASCE 7-05 up to 60 feet, higher upon request Exposure: Meets ASCE 7-05 category B&C, D upon request Wind Load: Meets ASCE 7-05 up to 120 mph Snow Load: Meets ASCE 7-05 up to 70 psf Seismic Load: Meets ASCE 7-05 in all seismic zones (may require attachment)
Warranty	25 years





Combiners

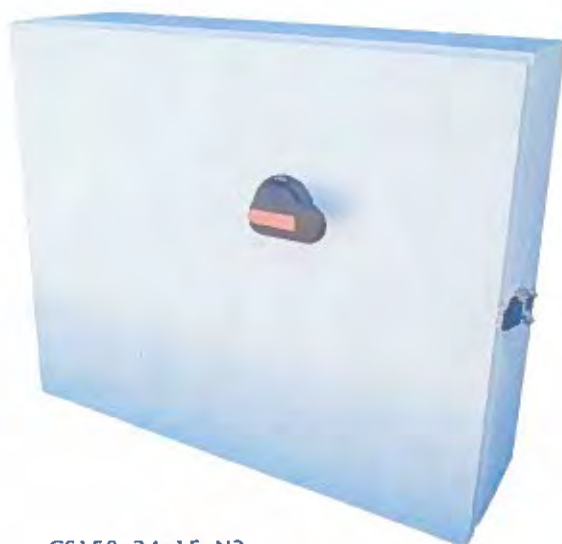


310 Stealth Court, Livermore, CA 94551
925.456.7744 www.solarbos.com

Disconnect Combiners

SolarBOS now offers combiners with integrated load-break 600 VDC disconnects. This allows installers to further reduce system costs by merging the combiner box with the disconnect switch into one product.

SolarBOS disconnect combiners can be specified with 4 to 24 input circuits with a variety of switch sizes up to 245 amps and NEMA-3, 3R, 4 or 4X enclosures. All combiner enclosures offer complete gasketed seals for better protection from the elements as well as plenty of wiring room for ease of installation.



CS150-24-15-N3

SolarBOS products are designed and manufactured with the system integrator in mind, using the highest quality components to ensure long-term field reliability. All products are assembled in Livermore, California, and we guarantee customer satisfaction.

Combiner Features

Listed to UL 1741

28, 55, 75, 150 and 245 amp
integrated disconnects

90C Output Terminals

NEMA-3, 3R, 4 & 4X Rated
Enclosure Options

Steel or Fiberglass Enclosures

Rated for 600 VDC and
Continuous Duty

Touch-Safe Fuse Holders

Cover Doors with Poured-In-Place
Seamless Gaskets

High Quality Negative Input
Terminal Blocks

Configured for both positive and
negative grounded arrays

Clean Design for Ample
Wiring Room

Combiner Specifications

SolarBOS Source Circuit Combiners offer many configuration options, including number of input circuits, ampacity of disconnect switch and enclosure type. These options can be a bit overwhelming for the new customer, but they are, in fact, fairly straightforward.

A common top level part number for a disconnect combiner is a CS150-12-15-N3. This "reads" as a combiner, single output, 150-amp disconnect, 12 input circuits with 15-amp fuses and NEMA-3/3R enclosure.

Please refer to the following table for specific information for the various models.

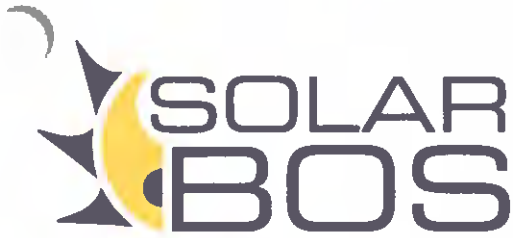
Disconnect Ampacity	28	55	75	150	245
Number of Input Circuits	3 to 6	3 to 6	4 to 12	4 to 24	4 to 24
Input Conductor Size Range (AWG)	#14to 4	#14 to 4	#14 to 4	#14 to 4	#14 to 4
Max Fuse Size (Amps)	30	30	30	30	30
Max Rated Current (ADC Continuous)	28	55	75	150	245
Number of Output Conductors	1	1	1	1	1
Output Conductor Size Range (AWG)	#14 to 2/0	#14 to 2/0	#6 to 350	#6 to 350	#6 to 350
Enclosure NEMA Ratings	4 / 4X	4 / 4X	3 / 3R / 4 / 4X	3 / 3R / 4 / 4X	3 / 3R / 4 / 4X
Steel Enclosure Dimensions (inches)	12x10x6	12x10x6	20x20x6	20x20x6 or 20x24x6	24x24x6
Approx. Weight (Powder Coated or Stainless Steel)	15 lbs	15 lbs	42 lbs	50 lbs	55 lbs
Fiberglass Enclosure Dimensions (inches)	14x12x7	14x12x7	22x18x8	24x20x10 or 24x24x10	24x24x10
Approx. Weight (Fiberglass)	12 lbs	12 lbs	28 lbs	35 lbs	40 lbs

Due to the flexibility of SolarBOS products, part numbers reflect the specific construction of the combiners. Please contact SolarBOS directly for help specifying a combiner for your application.

Two example part numbers are explained below:

CS28-04-08-4XF = Combiner, Single output, 28 amp disconnect, 4 circuit, with 8-amp fuses and NEMA-4X fiberglass enclosure

CS150-12-15-N3 = Combiner, Single output, 150 amp disconnect, 12 circuit, with 15-amp fuses and NEMA-3/3R steel enclosure



310 Stealth Court, Livermore, CA 94551 tel: 925.456.7744 fax: 925.456.7710 www.solarbos.com

SolarBOS 5 Year Product Warranty

Limited Warranty: Materials and Workmanship

SolarBOS warrants its photovoltaic system products to be free from defects in materials or workmanship under normal application, installation, use and service conditions for a period of sixty (60) months from the date of sale to the original purchaser. If the product fails to conform to this warranty within this period of time, SolarBOS will, at its own expense, either repair or replace the product(s) or refund the purchase price. The repair, replacement, or refund shall be the sole and exclusive remedy provided under this warranty, and the form of remedy will be decided solely by SolarBOS.

This warranty applies to all source circuit combiners, array combiners, automatic disconnect switches, and cable assemblies built by SolarBOS. Any product(s) repaired or replaced by SolarBOS under a warranty claim shall be covered by the same warranties and original term as the first product purchased under said claim.

Limitations and Conditions

The limited warranties set forth herein do not apply to any product that, in the sole judgment of SolarBOS, has been subjected to misuse, neglect, or accident, or has been damaged via misuse, alteration, improper installation or application, or negligence in use, storage, transportation, or handling; or has in any way been tampered with or repaired by any one other than an agent or employee of SolarBOS.

The limited warranties do not cover costs associated with product installation, removal, testing, packaging, transportation, reinstallation, or any other costs associated with the replacement of the product; nor do these limited warranties cover lost revenues or profits associated with the performance or non-performance of the product(s).

The limited warranties apply only to the first end-user purchaser of the product(s). SolarBOS shall have no responsibility or liability whatsoever for damage or injury to persons or property, or for other loss or injury resulting from any cause whatsoever arising out of or related to the product, including, without limitation, any defects in the product, or from use or installation. Under no circumstances will SolarBOS be liable for incidental, consequential or special damages, however caused.

Severability

If a part, provision or clause of terms within this document, are held invalid, void, or unenforceable, such holding shall not affect the remainder of the document, and to this end the terms and conditions shall be treated as severable.

PVS-135 (208 V)

PVS-135 (240 V)

PVS-135 (480 V)

Unparalleled Performance

With their advanced system intelligence, next-generation Edge™ MPPT technology, and industrial-grade engineering, PowerGate® Plus inverters maximize system uptime and power production, even in cloudy conditions.

Power Efficiency

Power Level	Output Power ¹	Efficiency ²
10%	13.5 kW	92.9%
20%	27 kW	95.8%
30%	40.5 kW	96.5%
50%	67.5 kW	96.7%
75%	101.25 kW	96.5%
100%	135 kW	96.2%

¹ 310V minimum ² 480V model

Edge MPPT

Provides rapid and accurate control that boosts PV plant kilowatt yield

Provides a wide range of operation across all photovoltaic cell technologies

Printed Circuit Board Durability

Wide thermal operating range: -40° C (-40° F) to 85° C (185° F)

Conformal coated to withstand extreme humidity and air-pollution levels

Proven Reliability

Rugged and reliable, PowerGate Plus PV inverters are engineered from the ground up to meet the demands of large-scale installations.

Low Maintenance

Modular components make service efficient

Safety

UBC Seismic Zone 4 compliant

Built-in DC and AC disconnect switches

Integrated DC two-pole disconnect switch isolates the inverter (with the exception of the GFDI circuit) from the photovoltaic power system to allow inspection and maintenance

Built-in isolation transformer

Protective covers over exposed power connections

PV Inverters | PowerGate Plus 135 kW



PowerGate Plus 135 kW Specifications

UL/CSA

Input Parameters

Maximum Array Input Voltage	600 VDC		•
Input Voltage Range (MPPT; Full Power)	310–600 VDC	208 VAC	•
	320–600 VDC	240 VAC	•
	310–600 VDC	480 VAC	•
Maximum Input Current	454A DC	208 VAC	•
	440A DC	240 VAC	•
	454A DC	480 VAC	•

Output Parameters

Output Voltage Range (L-L)	183–229 VAC	208 VAC	•
	211–264 VAC	240 VAC	•
	422–528 VAC	480 VAC	•
Nominal Output Voltage	208 VAC		•
	240 VAC		•
	480 VAC		•
Output Frequency Range	59.3–60.5 Hz		•
AC Voltage Range (Standard)	-12%/+10%		•
Nominal Output Frequency	60 Hz		•
Number of Phases	3		•
Maximum Output Current per Phase	375A	208 VAC	•
	325A	240 VAC	•
	163A	480 VAC	•
CEC-Weighted Efficiency	96%		•
Maximum Continuous Output Power	135 kW (135 kVA)		•
Tare Losses	63.12 W	208 VAC	•
	63.7 W	240 VAC	•
	63.37 W	480 VAC	•
Power Factor at Full Load	>0.99		•
Harmonic Distortion	<3% THD		•

• Standard • Optional



Output Options

PowerGate Plus 135 kW

UL/CSA	208 VAC Output
	240 VAC Output
	480 VAC Output

Streamlined Design

With all components encased in a single, space-saving enclosure, PowerGate Plus PV inverters are easy to install, operate, and maintain.

Single Cabinet with Small Footprint

Convenient access to all components

Large in-floor cable glands make access to DC and AC cables easy

Rugged Construction

Engineered for outdoor environments

Output Transformer

Provides galvanic isolation

Matches the output voltage of the PV inverter to the grid

PowerGate Plus 135 kW Specifications

UL/CSA

Temperature

Operating Ambient Temperature Range (Full Power) -20° C to +50° C

Storage Temperature Range -30° C to +70° C

Cooling Forced Air

Noise

Noise Level <65 dB(A)

Combiner

Number of Inputs and Fuse Rating 5 (160A DC)

9 (100A DC)

Inverter Cabinet

Enclosure Rating NEMA 3R

Enclosure Finish (14-Gauge, Powder-Coated G90 Steel) RAL-7032

Cabinet Dimensions (Height x Width x Depth) 80" x 65" x 30.84"

Cabinet Weight 2,684 lbs.

Transformer

Integrated Internal Transformer

Low Tap Voltage¹ 20%

Testing and Certification

UL1741, CSA 107.1-01, IEEE 1547, IEEE C62.41.2, IEEE C62.45, IEEE C37.90.1, IEEE C37.90.2

UBC Zone 4 Seismic Rating

Warranty

Five Years

Extended Warranty (up to 10, 15, or 20 years)

Extended Service Agreement

Intelligent Monitoring

Satcon PV View® Plus

Satcon PV Zone®

Third-Party Compatibility

- Standard
- Optional

¹ The 20% boost tap on the isolation transformer increases the AC voltage output range for applications where the solar array DC operating voltage is at or near the lower end of the DC input range. This boost allows for continued inverter operation at lower DC voltage input levels.

Note: Specifications are subject to change

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Delivering the most advanced portfolio of monitoring and management solutions.

Daily Energy Production



Monthly Energy Production



Individual String Voltage and Current*



PV View® Plus is an on-demand monitoring service that allows customers to use an internet connection to retrieve information about the operation of their utility tied photovoltaic system from anywhere in the world. Benefits of using PV View Plus include easy integration, alerts and faults notification, faster problem resolution and higher system uptime. Installers, as well as end users, can have accounts in the system and have visibility into their respective sites.



Standard Features:

In the standard offering, PV View Plus provides the ability to monitor the following information from the inverter within an accuracy of +/- 5%:

Viewable in Web Interface

- DC Input Voltage from PV array
- DC Input Power from PV array
- DC Input Current from PV array
- AC Phase Current from inverter (average)
- AC Voltage from inverter (average)
- AC Real Power from inverter
- Daily, Weekly, Monthly, Yearly and Cumulative Energy Production

Viewable by Report Downloading

• Fault Status	• AC Phase Current from inverter (A, B, C)
• DC Ground Current	• AC Voltage from inverter (A, B, C)
• AC Neutral Current from inverter	• AC Voltage and Current Balance
• AC Reactive Power from inverter	• Inverter Internal Air Temperature
• AC Apparent Power from inverter	• Heatsink Temperature
• AC Power Factor	• Fan Speed

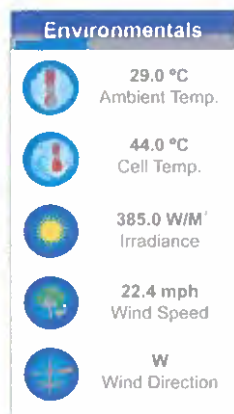
Additionally, email alert notifications of inverter faults and warnings can be sent to the end customer as well as Satcon™ technicians to ensure fast resolution.

*Individual string voltage and current monitoring available only with Satcon Solstice®

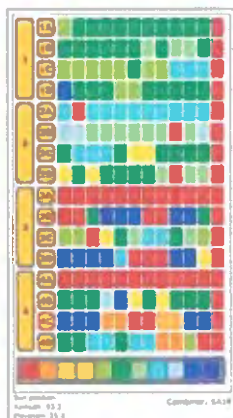


Satcon

Satcon PV View Plus



Individual String Performance Differences*



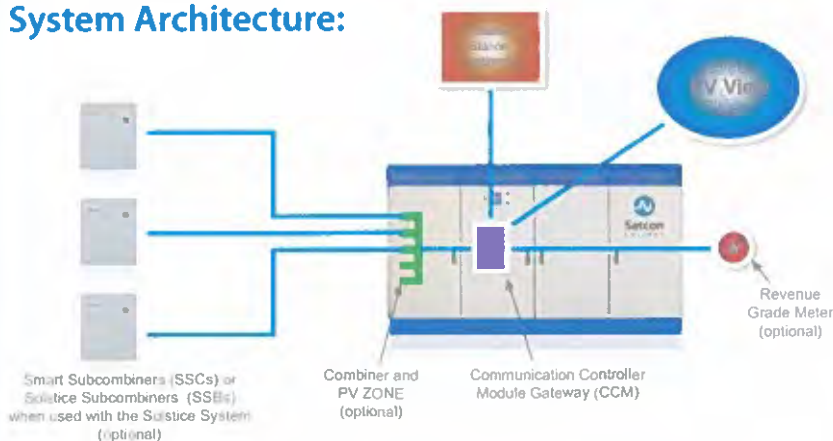
Optional Features:

PV View Plus also gives you the ability to monitor additional system information with these optional accessories:

- **With the Weather Station, users can view the following site specific information useful for calculating expected system performance:**
 - Irradiance
 - Wind speed
 - Wind direction
 - Ambient temperature
 - Photovoltaic cell temperature
- **The Revenue Grade Power Meter provides data with greater accuracy (+/- 2%), including:**
 - Energy Production
 - Inverter AC Voltage output
 - Inverter AC Current output
 - Inverter AC Power output
 - AC Line Power Factor
- **With the Combiner/PV Zone option, DC Current of each sub-array can be monitored and displayed in the web page Detailed System View.**
- **With the Smart Subcombiner (SSC), string level currents can be monitored:**
 - Up to 10 Amp DC current sensing for each module string
 - 12 string capability per combiner
- **With the Solstice system, string level currents and voltages can be monitored, including:**
 - String DC input current and voltage to Solstice Subcombiners (SSBs)
 - String DC output current and voltage from Solstice Subcombiners (SSBs) to Solstice inverter



System Architecture:



Each site may have one or more Communications Controller Module Gateways (CCM), Smart SubCombiners, Revenue Grade Power Meters or Weather Stations connected through RS-485 MODBUS as shown. The PV View PLUS CCM is installed inside the inverter and acts as a gateway to the internet. It automatically establishes a communications link with the secure PV View PLUS server and transmits the data over the internet using a LAN/Ethernet connection. The PV/Inverter site and server communicate with each other using TCP/IP protocol.

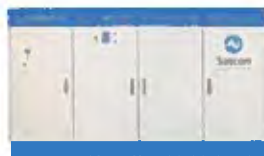
*Views only available with Satcon Solstice or with Satcon Smart Subcombiners

Packages Available:

Base Package:	PV View Plus
Option #1:	DC sub-array current
Option #2:	Individual DC string current
Option #3:	Individual DC string current and voltage
Option #4:	Weather package
Option #5:	Revenue Grade package



Powergate Plus 500kW



Equinox 500kW



Smart Subcombiner



Solstice 500kW

Software and Hardware Requirements:

Requirements for Web Client

- A client computer with internet access to the <http://www.pvviewplus.com> URL
- Microsoft Silverlight plug-in installed at the client end
- Any of the following web browsers:
 - Windows Internet Explorer v6+
 - Opera v9+
 - Firefox v1.5+

Hardware Requirements

Data is transferred using SSL-secured connections to servers at Satcon. All connections are initiated from the communications controller to the server. These connections are only required for customers using the PVView service. Please be sure that the site network is able to contact all of the following ports:

Server	DNS Name	IP	Port(s)
Satcon	pvview.satcon.com	216.209.35.165	13,80,9000
Satcon Service	ras.satcon.com	64.150.176.122	9004

Package Options:

PV View Plus is available for all Satcon PowerGate® Plus, Satcon Solstice, and Equinox™ inverters. It is offered as a base package, as listed below, or with any combination of the options listed:

	Software	Hardware
Base	PV View Plus	Communications Controller Module Gateway (CCM)
Option #1	Monitor DC sub-array currents	Combiner / PV Zone
Option #2	Monitor DC string currents	Smart Subcombiner (SSC)
Option #3	Monitor DC string currents and voltages	Solstice system
Option #4	Monitor weather data	Weather Station
Option #5	Monitor Revenue Grade data	Revenue Grade Meter

For each package listed above, setup of Site Capacity License and Yearly Monitoring Fees are also required. All hardware options are covered under Satcon's warranty.



Satcon Warranty, Preventative Maintenance and Uptime Guarantee Plans



The industry's most comprehensive preventative maintenance program.

Maximize Total System Performance

99% Uptime Guarantee

Minimize Risk

20 Year Complete Factory Warranty

Lower Total Cost of Ownership

Scheduled Preventative Maintenance

Maximize Reliability and Uptime

Bring inverter life span expectancy to parity with panel's



Maximize System Performance Over the Entire Lifespan of Your Project

Satcon's Global Services Organization is dedicated to ensuring that each Satcon solution performs with the highest levels of efficiency and reliability throughout its entire lifespan. Our global service team can help commission, maintain and repair your photovoltaic PV inverter. Our solution experts will respond to any issue that you may have to give you confidence that the key component in your system is operating at the highest levels of performance at all times.



Satcon's industry-leading suite of service plan options, including Standard Warranty, Extended Warranty, Preventative Maintenance Plan, and Uptime Guarantee, will reduce system downtime and lower your total cost of ownership, enabling you to mitigate risk, while at the same time delivering an increased return on your investment.

Standard Satcon 5-Year Warranty

All Satcon solar photovoltaic inverters come with a standard 5-year unlimited hour usage warranty covering service parts and labor used in accordance with the Inverter Service Schedule. The Standard Warranty does not cover filters, fuses or any additional parts that are consumable. The plan will cease either on the plan end date as specified in the terms (years) of warranty coverage unless an additional extension has been purchased through our extended warranty program.



Extended Warranty

The Satcon Extended Warranty Plan is an extension of the Satcon 5-year unlimited hour usage warranty for a period of up to 20 years. The Satcon Extended Warranty can be purchased in five-year blocks at any time at an additional cost within the Warranty period prior to the expiration of the current Warranty term¹. Terms and conditions will be the same as those applying to the Standard Inverter Warranty.

¹Prior to an Extended Warranty purchase, a Satcon Technician or Authorized Service Agent must perform a chargeable evaluation to the product to ensure its eligibility for an Extended Warranty. This Extended Warranty Plan will cover only service parts and labor used in accordance with the Inverter Service Schedule.

	Standard Warranty	Extended Warranty				Preventative Maintenance Plan				Uptime Guarantee			
Term	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years	
Unlimited hour usage	•	•	•	•	•	•	•	•	•	•	•	•	
Service parts and labor	•	•	•	•	•	•	•	•	•	•	•	•	
Transformer (including wiring)	•	•	•	•	•	•	•	•	•	•	•	•	
IGBT's	•	•	•	•	•	•	•	•	•	•	•	•	
DPCD, Gate Driver Board, RDC's and all electronics	•	•	•	•	•	•	•	•	•	•	•	•	
Fans	•	•	•	•	•	•	•	•	•	•	•	•	
Combiners (without fuses)	•	•	•	•	•	•	•	•	•	•	•	•	
GFDI (without fuses)	•	•	•	•	•	•	•	•	•	•	•	•	
Cabinet	•	•	•	•	•	•	•	•	•	•	•	•	
Gasket and seals	•	•	•	•	•	•	•	•	•	•	•	•	
HMI & OIT	•	•	•	•	•	•	•	•	•	•	•	•	
Consumable parts (filters, etc.)	◻△	◻△	◻△	◻△	•	•	•	•	•	•	•	•	
Protection devices (fuses, surge parts, etc.)	◻△	◻△	◻△	◻△	•	•	•	•	•	•	•	•	
Annual Preventative Maintenance	○	○	○	○	•	•	•	•	•	•	•	•	
Measure and record phase-to-phase input voltages and currents	◻	◻	◻	◻	•	•	•	•	•	•	•	•	
Review system performance with the owner in order to address questions	○	○	○	○	•	•	•	•	•	•	•	•	
Issue written inspection report	△	△	△	△	•	•	•	•	•	•	•	•	
Semi-Annual Preventative Maintenance	○	○	○	○	•	•	•	•	•	•	•	•	
Check appearance/cleanliness of the cabinet, ventilation system and insulated surfaces	△	△	△	△	•	•	•	•	•	•	•	•	
Inspect subassemblies, cabling, wiring harnesses, contacts and major components	△	△	△	△	•	•	•	•	•	•	•	•	
Torque terminals, connectors and bolts	△	△	△	△	•	•	•	•	•	•	•	•	
Check the operation of all safety devices (Emergency stop, door switches, GFDI)	△	△	△	△	•	•	•	•	•	•	•	•	
Check for corrosion on all terminals and cables	△	△	△	△	•	•	•	•	•	•	•	•	
Check the condition of both the AC & DC surge suppressors	△	△	△	△	•	•	•	•	•	•	•	•	
Check power capacitors for signs of damage	△	△	△	△	•	•	•	•	•	•	•	•	
Measure and record all low-voltage power supply levels	△	△	△	△	•	•	•	•	•	•	•	•	
Check control fuse clips	△	△	△	△	•	•	•	•	•	•	•	•	
Check cable entry plates	△	△	△	△	•	•	•	•	•	•	•	•	
Check charging resistors	△	△	△	△	•	•	•	•	•	•	•	•	

- Standard
- Not included
- △ Customer responsible for maintenance task to be completed by electrician
- ◻ Customer must engage Satcon or Satcon trained technician to complete task

Note: Specifications are subject to change.



Satcon Warranty, Preventative Maintenance and Uptime Guarantee Plans



Maximize Total System Performance

99% Uptime Guarantee

Minimize Risk

20 Year Complete Factory Warranty

Lower Total Cost of Ownership

Scheduled Preventative Maintenance

Maximize Reliability and Uptime

Bring inverter life span expectancy to parity with panel's



Preventative Maintenance Plan

Satcon offers Preventative Maintenance (PM) Plans to ensure your solutions operate at the highest levels of efficiency and reliability throughout the lifespan of your installation. Administered by and on behalf of Satcon, our experts will care for your PV inverter with annual and semi-annual service. Benefits include:

- Budgeted package to reduce unbudgeted maintenance costs
- Inspected, calibrated and correct electronic subsystems
- Software updates
- Transferable to Third Party upon notification
- Improved product reliability
- Peace of mind/hassle free operation



Additional items included with Satcon Preventative Maintenance Program:

- All upgrades to unit completed as needed
- Regular software updates for main board, free of charge
- Update and install any items that have had Engineering modifications made for the unit – free of charge, including but not limited to the following parts:
 - RDC's
 - DPCB's
 - IGBT's (if required)
 - Cabling
 - Capacitors
- As needed free consumable parts (filters, fans, etc.) and labor
- Thermal scans of the unit during servicing, free of charge
- Communications checkups and software revisions as new releases become available, free of charge
- 24/7 onsite located Service technician(s) – If project is larger than 50MW
- Commissioning services free of charge – If project is larger than 50MW
- Free 2 day training of any personnel on site dealing with the inverters

Only Satcon approved parts are used and work must be consistent with manual and warranty. Warranty is transferable to a third party upon notification. Pricing can be obtained from your Satcon Sales Representative by product, quantity and location.

The Preventative Maintenance Plan is available in five-year blocks up to twenty years and can be added at any time while the inverter is within the term of an active Warranty period.

Uptime Guarantee

Upon the purchase of a Preventative Maintenance (PM) Plan, you can acquire our 99% Uptime Guarantee. If the inverter is not delivering power due to inverter failure for any portion of daylight hours, the system owner will be compensated for the energy (kWh) that would have been delivered by a fully functional inverter. This energy will be calculated based on the solar irradiance, the array capacity, the rate per kWh, and the system efficiency for the hours when the inverter is down.² This plan will start paying if the inverter failure downtime exceeds 44 daylight hours per year (average) and is based on a total of 4,380 daylight hours per year (average).³

Satcon Service Representatives are available 24 hours a day, 365 days a year at 1-866-568-0244 (or Outside Canada and the US: +1-905-639-4692) or via email support@satcon.com.

¹ Calculations will be completed ref IEEE726 and NERC / GADS formulas.

² The Uptime Guarantee needs to be supported by the Preventative Maintenance Plan. During the regularly scheduled maintenance, if a replacement parts are recommended, they need to be replaced (at an additional cost) so that the Uptime Guarantee can be supported. If the decision is made to not follow the recommendations of replacement parts, then the Uptime Guarantee will be affected.



Satcon Warranty, Preventative Maintenance and Uptime Guarantee Plans

	Standard Warranty	Extended Warranty				Preventative Maintenance Plan				Uptime Guarantee			
Check fan for correct rotation, blades and bearings	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Check inverter transformer cooling fans	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Check anti condensation heaters	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Inspect (clean or replace) air filter elements	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Record ambient and operating temperature	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Check that sensors are securely attached and reading correct temperatures	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Perform temperature checks on all breakers, connections, and associated controls	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Check fuses for open or signs of heating (Inverter & Combiner)	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Check IGBTs and inverter boards for discoloration	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Record HMI voltage and current readings	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Check for upgrades - hardware and software	□	□	□	□	□	●	●	●	●	●	●	●	●
Correct all deficiencies detected	□	□	□	□	□	●	●	●	●	●	●	●	●
Attach / complete maintenance schedule card	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Issue written inspection report	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●
Compensation for inverter caused downtime	○	○	○	○	○	○	○	○	○	○	○	○	○

- Standard
- Not included
- ▲ Customer responsible for maintenance task to be completed by electrician
- Customer must engage Satcon or Satcon trained technician to complete task

Note: Specifications are subject to change

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GREEN CLASS METER

E-Mon D-Mon

Energy Monitoring Products & Systems

Features

- Direct-read 8-digit LCD display without multiplier displays accumulative kWh and "real-time" kW load.
- User entered cost per KWH provides to-date energy cost and projected hourly cost based on metered load.
- Displays total carbon (CO₂) emissions in pounds (lbs.) and indicates hourly emissions based on metered load.
- Utility Grade Metering Accuracy.
- 0-2 volt output split-core current sensors promote enhanced safety and allow remote mounting of current sensors up to 2000 feet from meter without power interruption. (Optional solid-core sensors available for 100 & 200 amp meters only.)
- Current sensor installation diagnostic indicator.
- Parallel up to three (3) sets of current sensors for cumulative reading.
- Meter can be used on the following configurations:
 - 3-Phase, 4-Wire
 - 3-Phase, 3-Wire
 - 2-Phase, 3-WireFor other configurations contact factory
- Optional removable terminal block for pulse output
- Industrial-grade JIC steel enclosure with padlocking hasp and mounting flanges for indoor installations with 1 1/16" KO (3/4" Cond.) on bottom of enclosure
- Optional Enclosures:
 - MMU (Multiple-Meter Unit) Cabinets
 - NEMA 4X Raintight Enclosure
- Non-volatile Memory.
- UL Listed/CSA Approved.
- Certified to ANSI C12.1 and C12.16 electronic meter National Accuracy Standards.
- Certified to California metering standards bureau of weights and measures.
- New York City approved, Con Edison approved for RSP program.



Dimensions 7 1/4" H x 7" W x 3 1/4" D

Model Numbers

120/208-240V, 3-Phase, 4W
240V, 3-Phase, 3W

G208100 KIT (100 amp)
G208200 KIT (200 amp)
G208400 KIT (400 amp)
G208800 KIT (800 amp)
G2081600 KIT (1600 amp)
G2083200 KIT (3200 amp)

277/480V, 3-Phase, 4W
480V, 3-Phase, 3W

G480100 KIT (100 amp)
G480200 KIT (200 amp)
G480400 KIT (400 amp)
G480800 KIT (800 amp)
G4801600 KIT (1600 amp)
G4803200 KIT (3200 amp)

NOTE: All meter kits include one set of three (3) split-core current sensors

For MMU-style add suffix "M" to the model number
e.g., 4803200M KIT

For outdoor enclosure add suffix "R" to the model number, e.g., 208200R KIT

E-Mon

Energy Monitoring Products

Display Features

The E-Mon D-Mon Green Class meter offers a scrolling display of energy usage information:

Total Kilowatt-Hours
consumed to date



Projected cost based
on present load



Total energy cost to date



Total lbs. of CO2
emissions to date



Present load in Kilowatts

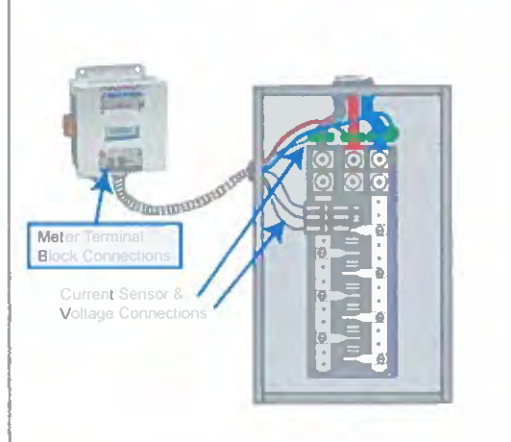


Projected hourly CO2 emissions
based on present load

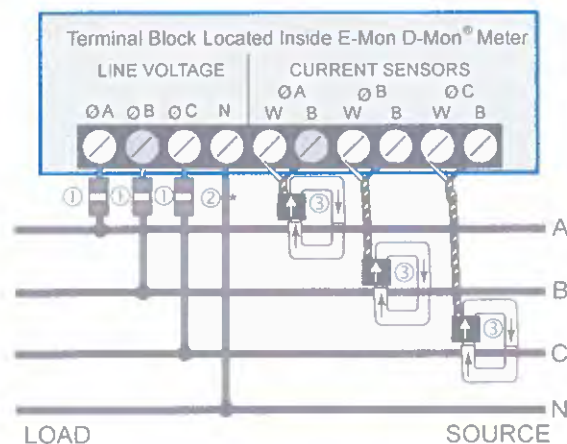


Installation

INSTALLATION OVERVIEW



3-PHASE, 3-WIRE OR 3-PHASE, 4-WIRE INSTALLATION DIAGRAM



- ① Recommended fuses or circuit breaker per the National Electrical Code (Meter load 6VA.)
- *② Neutral not required in delta system.
- ③ Split-core current sensors. Install according to instructions.
- ④ Install jumper

13.0 METER LIMITED WARRANTY

Subject to the exclusions listed below, E-Mon will either repair or replace (at its option) any product that it manufactures and which contains a defect in material or workmanship.

The following exclusions apply:

1. This Limited Warranty is only effective for a period of (5) five years following the date of manufacture when installed in accordance with manufacturer's instructions by qualified personnel.
2. E-Mon must be notified of the defect within ninety (90) days after the defect becomes apparent or known.
3. Buyer's remedies shall be limited to repair or replacement of the product or component which failed to conform to E-mon's express warranty set forth above.
4. Buyer shall be responsible for all freight costs and shall bear all risk of loss or damage to returned goods while in transit.
5. This Limited Warranty does not cover installation, removal, reinstallation, or labor costs, and excludes normal wear and tear. Buyer shall provide labor for the removal of the defective component or item and installation of its replacement at no charge to E-Mon.
6. This Limited Warranty does not cover any product if: (i) a product is altered or modified from its original manufactured condition, (ii) any repairs, alterations or other work has been performed by Buyer or others on such item, other than work performed with E-Mon's authorization and according to its approved procedures; (iii) the alleged defect is a result of abuse, misuse, improper maintenance, improper installation, accident or the negligence of any party; (iv) damaged as a result of events beyond E-Mon's control or other force majeure events or (v) used in conjunction with equipment, components, accessories, parts or materials not supplied or approved by E-Mon.
7. This Limited Warranty is limited to the obligation to repair or replace the manufactured product. This is the sole and exclusive remedy for any breach of warranty. IN NO EVENT SHALL E-MON BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES (INCLUDING ANY DAMAGE FOR LOST PROFITS) ARISING OUT OF OR IN CONNECTION WITH THE FURNISHING OF PRODUCTS, PARTS OR SERVICES, OR THE PERFORMANCE, USE OF, OR INABILITY TO USE ANY PRODUCTS, PARTS OR SERVICES, SALE OF OR OTHERWISE, WHETHER BASED IN CONTRACT, WARRANTY, TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, OR ANY OTHER LEGAL OR EQUITABLE THEORY.
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E-Mon
Energy Monitoring Products

NETGEAR

Connect with Innovation™

Universal WiFi Range Extender

WN3000RP

Extends wireless coverage

Universal compatibility

Easy install—no CD required

Connect iPad®, Smartphones, and more

UNIVERSAL WIFI RANGE EXTENDER

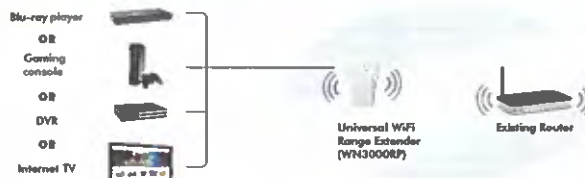
- ✓ Extends range of any wireless router or gateway
- ✓ Wall plug design for convenient placement
- ✓ Finds best location for optimal wireless coverage with dynamic LED indicators
- ✓ Easy installation—no CD or Ethernet cable required
- ✓ Provides security through encryption using WPA/WPA2/WEP

USAGE SCENARIOS

Use as a range extender



Use as a Wireless-N bridge

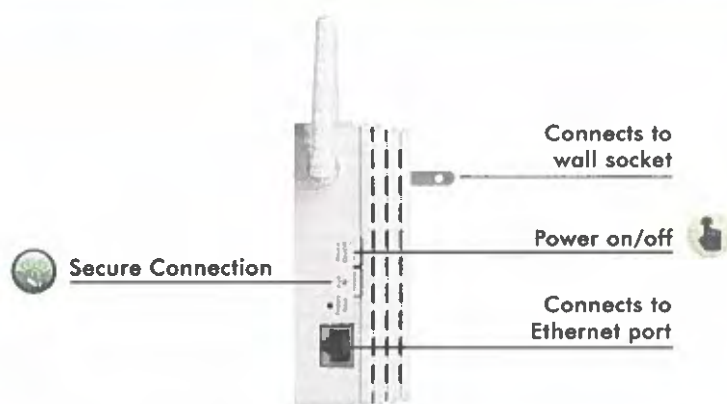


PRODUCT OVERVIEW

The NETGEAR Universal WiFi Range Extender effectively doubles the operating distance of your entire wireless network and conveniently avoids additional need for power cables or device clutter on your office desk or home theater. WN3000RP extends your wireless network to include the area outside the range of your existing wireless router by overcoming obstacles and enhancing overall network signal quality, giving you the freedom to roam anywhere in the house and access Internet without worrying about coverage. The product was specifically designed to be plugged into an electrical outlet, and blends in nicely with any surrounding. It is compatible with wireless b/g/n routers, gateways and Internet service provider devices.

- **Extend Network** — Extend Internet access throughout your home for wireless devices like iPads®, iPods®, laptops, smart phones, game consoles and TVs
- **Enhance Existing Equipment** — Keep your current equipment and improve coverage to eliminate wireless “dead zones”
- **Plug-and-play** — Sets up in minutes, no need to insert a CD or plug in Ethernet cables
- **Push ‘N’ Connect** — Push ‘N’ Connect using Wi-Fi Protected Setup® (WPS) connects computers and/or routers to the Extender quickly and securely
- **Optimal Coverage** — Link-rate LED locates the best placement spot to provide optimal wireless coverage
- **Compatible** — Works with any wireless b/g/n router or gateway from NETGEAR and other brands
- **Superior Security** — Works with all security standards including WPA-PSK, WPA2-PSK, mixed mode and WEP
- **Connect** — Ethernet port allows the Extender to function as a bridge to connect to home theater devices
- **NETGEAR Green features** — Power on/off button, 80% recycled packaging

Range Extender

**DYNAMIC LED Indicators**

Finds best location for optimal wireless coverage and displays real-time, end-to-end network status.



Connection status between router/gateway and Extender

On/off status of Extender

Connection status between Extender and PC

Secure connection with Wi-Fi Protected Setup (WPS)

PUSH 'N' CONNECT USING WPS

A secured connection at the push of a button¹

STEP 1

Push the Push 'N' Connect button on the router

**STEP 2**

Push the Push 'N' Connect button on your extender

**STEP 3**

Secure wireless connection

**Package Contents**

- Universal WiFi Range Extender (WN3000RP)
- Installation guide

Warranty

- Localized to country of sale

System Requirements

- 802.11 b/g/n 2.4 GHz wireless router or gateway
- 802.11 b/g/n 2.4 GHz wireless adapter or Ethernet adapter and cable for each computer
- Microsoft® Windows 7, Vista®, XP®, 2000, Mac OS®, UNIX®, or Linux®
- Microsoft® Internet Explorer® 5.0, Firefox® 2.0 or Safari® 1.4 or higher

Standards

- IEEE® 802.11 b/g/n 2.4 GHz
- Fast Ethernet port

Security

- Wi-Fi Protected Access® (WPA/WPA2—PSK) and WEP

Ease of Use

- CD-less installation
- Push 'N' Connect using Wi-Fi Protected Setup® (WPS)¹

Physical Specifications

- Dimensions: 112 x 74 x 45 mm (4.41 x 2.91 x 1.77 in)
- Weight: 0.245 kg (0.54 lb)

Advanced Features

- Extend Internet access for wireless devices like iPods®, iPads®, laptops, smart phones, game consoles and TVs
- Repeats 2.4 GHz Wi-Fi signals from devices made by NETGEAR® and other brands
- Dynamic LEDs display real-time network connection status
- Fast Ethernet port to connect home A/V devices to the network

NETGEAR Green Features

- Power On/Off Button
- 80% Recycled Packaging
- CEC (California Efficiency)
- RoHS
- WEEE



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24/7 TECHNICAL SUPPORT
*Basic technical support free for 90 days only

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This product is packaged with a limited warranty, the acceptance of which is a condition of sale.

^{*}Basic technical support provided for 90 days from date of purchase.

¹Maximum wireless signal rate derived from IEEE standard 802.11 specifications. Actual data throughput and wireless coverage will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate and wireless coverage. NETGEAR makes no express or implied representations or warranties about this product's compatibility with any future standards.

²Works with devices supporting Wi-Fi Protected Setup® (WPS).