

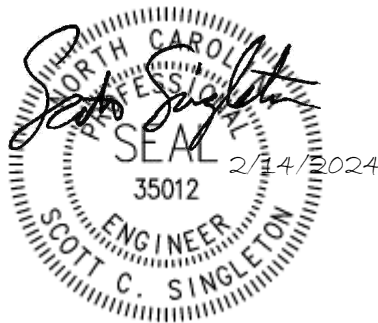
**SPECIFICATIONS**

**Western Carolina University  
Bird Building Roof Replacement  
Cullowhee, North Carolina**

**SCO ID 22-25374-01A  
WCU PR# 2022-017  
SKA Job No. 220533.0**

**February 2024**

***Construction Documents***



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**Scott C. Singleton PE, RRC**

**SKA CONSULTING ENGINEERS, INC.  
7900 Triad Center Drive; Suite 200  
Greensboro, NC 27409  
336.855.0993  
[www.skaeng.com](http://www.skaeng.com)**

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**ADVERTISEMENT FOR BIDS**  
**Western Carolina University**

Sealed proposals will be received until 2:00pm on March 21, 2024 in the Facilities Management Conference Room, 3476 Old Cullowhee Road, Cullowhee, NC 28723 on the campus of Western Carolina University for the Bird Building Roof Replacement SCO ID: 22-25374-01A, at which time and place bids will be opened and read.

Electronic copies of the complete plans and specifications for this project will be available for download from SKA Consulting Engineers, Inc., 7900 Triad Center Drive, Suite 200, Greensboro, NC (336) 855-0993, beginning **February 19, 2024**, during normal office hours. Email request for plans and specifications to bdcuthbertson@skaeng.com. Plans will also be available at Associated General Contractors, Carolinas Branch in Charlotte, NC (704) 372-1450; in the Charlotte, NC offices of McGraw-Hill Dodge Corporation (704) 525-6924; the Eastern Regional Office of Reed Construction Data in Norcross, GA.

A pre-bid conference will be held in the Facilities Management Conference Room, 3476 Old Cullowhee Road, Cullowhee, NC 28723 on the campus of Western Carolina University, on **February 29, 2024 at 2:00pm**.

Western Carolina University encourages participation by MWBE/HUB firms and supports the UNC system's policy of ensuring and promoting opportunities for minority businesses.

The State of North Carolina reserves the unqualified right to reject any and all proposals.

Signed: Daniel Fiskeaux  
Project Manager  
Facilities Management  
Western Carolina University  
3476 Old Cullowhee Rd  
Cullowhee, NC 28723

# NOTICE TO BIDDERS

Sealed proposals will be received by the Western Carolina University in Cullowhee, NC, in the office of Daniel Fiskeaux, in the *Facilities Management, 3476 Old Cullowhee Road, Cullowhee, NC* up to 2:00pm on March 21, 2024 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment entering into the construction of

Western Carolina University  
Bird Building Roof Replacement  
Cullowhee, North Carolina  
SCO# 22-25374-01A

*Removal of the existing roof system down to the gypsum and metal deck and installation of new thermal insulation, insulation protection layer and single-ply roof membrane and installation of new EIFS cladding over designed areas of the limestone cladding, at the Bird Building on the Western Carolina University campus.*

Bids will be received for a *Single Prime Contract*. All proposals shall be lump sum.

## Pre-Bid Meeting

An open pre-bid meeting will be held for all interested bidders on Thursday, February 29, 2024 at 2:00pm at the Facilities Management Conference Room, 3476 Old Cullowhee Road, Cullowhee, NC 28723 on the campus of Western Carolina University. The meeting will address project specific questions, issues, bidding procedures and bid forms.

Complete plans, specifications and contract documents will be open for inspection in the offices of the *Western Carolina Facilities Management* or SKA Consulting Engineers, Inc 7900 Triad Center Drive, Greensboro, North Carolina and in the plan rooms of the Associated General Contractors, Carolinas Branch, in the local North Carolina offices of McGraw-Hill Dodge Corporation, and in the Eastern Regional Office of Reed Construction Data in Norcross, GA.

**NOTE:** The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit A* or *Affidavit B* as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.

General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification Building.

**NOTE--SINGLE PRIME CONTRACTS:** Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed. Therefore a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license. **EXCEPT:** On public buildings being bid single prime, where the total value of the general construction does not exceed 25% of the total construction value, contractors under GS87- Arts 2 and 4 (Plumbing, Mechanical & Electrical) may bid and contract directly with the Owner as the SINGLE PRIME CONTRACTOR and may subcontract to other properly licensed trades. [GS87-1.1- Rules .0210](#)

Plumbing, Mechanical and Electrical prime contractors are notified that General Statutes Chapter 87, Articles 2 & 4, will be observed in receiving and awarding plumbing, mechanical and electrical contracts.

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 30 days.

The owner reserves the right to reject any or all bids and to waive informalities.

Designer:  
SKA Consulting Engineers, Inc  
*(Name)*

7900 Triad Center Drive, Suite 200  
Greensboro, NC  
*(Address)*

336-855-0993  
*(Phone)*

Owner:  
Western Carolina University  
*(Agency/Institution)*

2476 Old Cullowhee Rd  
Cullowhee, NC 28723

828-227-3020

# STATE OF NORTH CAROLINA STANDARD FORM OF INFORMAL CONTRACT AND GENERAL CONDITIONS

FOR

*Western Carolina University  
Bird Building Roof Replacement  
Cullowhee, NC  
SCO# 22-25374-01A  
WCU PR#2022-017*

## SCOPE OF WORK

Removal of existing roof system down to roof deck and installation of new thermal insulation , insulation protection layer, single-ply roof membrane including all flashings and accessories. Project also includes the installation of EIFS cladding over a portion of the existing limestone wall panels.

## NOTICE TO BIDDERS

Sealed bid for this work will be received by:

Western Carolina University  
Facilities Management  
Attn: Daniel Fiskeaux, Assistant Director of Design  
3476 Old Cullowhee Road, Cullowhee, NC 28723  
(828) 227-7224

up to **2:00 PM**, on **March 21, 2024** and immediately thereafter publicly opened and read aloud. Complete plans and specification and contract documents can be obtained from

SKA Consulting Engineers, Inc  
7900 Triad Center Drive  
Greensboro, North Carolina 27409  
Attention: Brian Cuthbertson ([bdcuthbertson@skaeng.com](mailto:bdcuthbertson@skaeng.com))  
o:336-855-0993

Contractors are hereby notified that they must have proper license under the State laws governing their respective trades and that North Carolina General Statute 87 will be observed in receiving and awarding contracts. General Contractors must have general license classification for Building.

No bid may be withdrawn after the opening of bids for a period of 30 days. The Owner reserves the right to reject any or all bids and waive informalities. Bids shall be made only on the BID/ACCEPTANCE form provided herein with all blank spaces for bids properly filled in and all signatures properly executed.

Please note on the envelope – **Bid : Attn:** Daniel Fiskeaux, Assistant Director of Design

WCU Bird Building Roof Replacement  
March 21, 2024 @ 2:00 PM  
(Contractor Name)  
(License Number)

A non-mandatory Pre-Bid meeting will be held on **February 29, 2024 at 2:00 pm** at the Facilities Management Conference Room, 3476 Old Cullowhee Road, Cullowhee, NC 28723 on the campus of Western Carolina University. Attendees will have the opportunity to walk the site and access the roof of Bird Building following the administrative portion of the meeting.



# BID/ACCEPTANCE FORM

for

Western Carolina University  
Bird Building Roof Replacement  
Cullowhee, NC  
SCO# 22-25374-01A  
WCU PR#2022-017

Removal of existing roof system down to roof deck and installation of new thermal insulation , insulation protection layer, single-ply roof membrane including all flashings and accessories. Project also includes the installation of EIFS cladding over a portion of the existing limestone wall panels.

We are in receipt of Addendum \_\_\_\_\_ 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4

The undersigned, as bidder, proposes and agrees if this bid is accepted to contract with the State of North Carolina through the Western Carolina University for the furnishing of all materials, equipment, and labor necessary to complete the construction of the work described in these documents in full and complete accordance with plans, specifications, and contract documents, and to the full and entire satisfaction of the State of North Carolina, Western Carolina University, and the SKA Consulting Engineers, Inc for the sum of:

**BASE BID:** \_\_\_\_\_ **Dollars \$** \_\_\_\_\_

## UNIT PRICES

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

Unit Price No. 1- Unit cost per board foot (bf) for removal, disposal and replacement of any wet, rotten, warped, deteriorated or otherwise damaged wood nailers, blocking, etc. Procedure is specified in Section 061000.

Cost per board foot \$ \_\_\_\_\_ /LF

Unit Price No. 2- Unit cost per location to install new roof drains at existing roof drain locations.

Cost per roof drain \$ \_\_\_\_\_ /Drain

Unit Price No. 3 - Unit cost per square foot (sf) for restoration of slightly rusted but otherwise structurally sound areas of metal decks. Procedure is specified in Section 053110.

Cost per square foot \$ \_\_\_\_\_ /SF

Unit Price No. 4- Unit cost per unit for repair of discrepant metal deck areas with flat sheet metal. Procedure is specified in Section 053110.

Cost per square foot \$ \_\_\_\_\_ /SF

Unit Price No. 5- Unit cost per square foot (sf) for replacement of discrepant metal deck. Procedure is specified in Section 053110.

Cost per square foot \$ \_\_\_\_\_ /SF

Unit Price No.6- Unit cost per square foot (sf) for replacement of discrepant gypsum roof deck. Procedure is specified in Section 035420.

Cost per square foot \$ \_\_\_\_\_ /SF

Respectively submitted this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

\_\_\_\_\_  
**(Contractor's Name)**

Federal ID#: \_\_\_\_\_

By: \_\_\_\_\_

Witness: \_\_\_\_\_

Title: \_\_\_\_\_  
*(Owner, partner, corp. Pres. Or Vice President)*

\_\_\_\_\_  
*(Proprietorship or Partnership)*

Address: \_\_\_\_\_

Attest: *(corporation)*

Email Address: \_\_\_\_\_

**(Corporate Seal)**

By: \_\_\_\_\_ License #: \_\_\_\_\_

Title: \_\_\_\_\_  
*(Corporation, Secretary./Ass't Secretary.)*

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**ACCEPTED by the STATE OF NORTH CAROLINA**  
through the

WESTERN CAROLINA UNIVERSITY

Total amount of accepted by the owner, included base bid and bid alternates: \_\_\_\_\_

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

Date: \_\_\_\_\_

# GENERAL CONDITIONS

## 1. GENERAL

It is understood and agreed that by submitting a bid that the Contractor has examined these contract documents, drawings and specifications and has visited the site of the Work, and has satisfied himself relative to the Work to be performed.

## 2. DEFINITIONS

**Owner:** "Owner" shall mean, The State of North Carolina through Western Carolina University

**Contractor:** "Contractor" shall mean the entity that will provide the services for the Owner.

**Designer:** The **designer(s)** are those referred to within this contract, or their authorized representatives. The Designer(s), as referred to herein, shall mean architect and/or engineer responsible for preparing the project plans and specifications. They will be referred to hereinafter as if each were of the singular number, masculine gender.

**Contract Documents:** "Contract Documents" shall consist of the Notice to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawing and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the bid; the contract; the performance bond if applicable; and insurance certificates. All of these items together form the contract.

## INTENT AND EXECUTION OF DOCUMENTS

The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a complete job. In case of discrepancy or disagreement in the Contract Documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.

In such cases where the nature of the work requires clarification by the Designer/ Owner, the Designer/ Owner shall furnish such clarification. Clarifications and drawings shall be consistent with the intent of the Contract Documents, and shall become a part thereof.

## 4. AS-BUILT MARKED-UP CONSTRUCTION DOCUMENTS

Contractor shall provide one complete set of legible "as-built" marked-up construction drawings and specifications recording any and all changes made to the original design during the course of construction. In the event no changes occurred, submit construction drawings and specifications set with notation "No Changes." The Designer/Owner must receive "As-built" marked-up construction drawings and specifications before the final pay request can be processed.

## 5. SUBMITTAL DATA

The Contractor awarded the contract shall submit all specified submittals to the Owner/Designer. A minimum number of copies as specified by the owner, of all required submittal data pertaining to construction, performance and general dimensional criteria of the components listed in the technical specifications shall be submitted. No material or equipment shall be ordered or installed prior to written approval of the submittals by the Designer/Owner. Failure to provide submittal data for review on equipment listed in the technical specifications will result in removal of equipment by the Contractor at his expense if the equipment is not in compliance with the specifications.

## **6. SUBSTITUTIONS**

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until five (5) days prior to the receipt of bids or by the date specified in the pre bid conference, when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

- a. Name, address, and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model or catalog designation.
- c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, and test results.
- e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum.

## **7. WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE**

The contractor shall maintain, in readable condition at his job site one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the owner, designer or his authorized representative.

The contractor shall maintain at the job site, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after acceptance of the project.

## **8. MATERIALS, EQUIPMENT, EMPLOYEES**

- a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.
- b. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
- c. Upon notice, the contractor shall furnish evidence as to quality of materials.
- d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth

and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; the designer prior to the opening of bids shall make such approval or disapproval. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.

- e. The designer is the judge of equality for proposed substitution of products, materials or equipment.
- f. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.
- g. The Contractor shall cooperate with the designer and the owner in coordinating construction activities.
- h. The Contractor shall maintain qualified personnel and effective supervision at the site at all times during the project, and exercise the appropriate quality control program to ensure compliance with the project drawings and specifications. The designer is responsible for determining compliance with the drawings and specifications.

## **9. CODES, PERMITS AND INSPECTIONS**

The Contractor shall obtain the required permits, if required, give all notices, and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the Contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the Designer in writing. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the Owner, he shall bear all cost arising there from.

All work under this contract shall conform to the current North Carolina Building Code and other state and national codes as are applicable.

Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to county or municipal building codes and may\* not be subject to inspection by county or municipal authorities. Where appropriate, the Contractor shall, cooperate with the county or municipal authorities by obtaining building permits. The contractor at no cost may obtain permits to the owner.

All fire alarm work shall be in accordance with the latest State Construction Office (SCO) *Guidelines for Fire Alarm Installation* (NFPA72). Where the contract documents are in conflict with the SCO guidelines, the SCO guidelines shall govern. The Contractor shall be responsible for all the costs for the correction of the work where he installs it in conflict with the latest edition of the SCO *Guidelines for Fire Alarm Installation*..

\*Inspection and certification of compliance by local authorities is necessary if an architect or engineer was not employed on the project, or if the plans and specifications were not approved and the construction inspected by the State Construction Office.

## **10. PROTECTION OF WORK, PROPERTY, THE PUBLIC AND SAFETY**

- a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times, except as indicated in the Supplemental General Conditions.
- b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other

materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.

- c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
- d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around it. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- e. The contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. *Accident Prevention Manual in Construction*, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
- f. The contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, *Federal Register*), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- i. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 13(b).
- j. Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

## **11. SUBCONTRACTS AND SUBCONTRACTORS**

The Contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The Contractor agrees that no contractual relationship exists between the subcontractor and the Owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the Contractor.

## **12. CONTRACTOR-SUBCONTRACTOR RELATIONSHIPS**

The Contractor agrees that the terms of these Contract Documents shall apply equally to each Subcontractor as to the Contractor, and the Contractor agrees to take such action as may be necessary to bind each Subcontractor to these terms. The Contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to Contractor-Subcontractor relationships. The Owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

## **13. CHANGES IN THE WORK AND CLAIMS FOR EXTRA COST**

- a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.
- b. Except in an emergency endangering life or property, no change shall be made by the contractor except upon receipt of approved change order from the designer, countersigned by the owner

authorizing such change. No claim for adjustments of the contract price shall be valid unless this procedure is followed. Should a claim for extra compensation by the contractor be denied by the designer or the owner, the contractor may pursue his claim in accordance with G.S. 143-135.3.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "c(1)" or Method "c(2)" or both.

- c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:
  - 1. Where the extra work involved is covered by unit prices quoted in the proposal, or subsequently agreed to by the Contractor, Designer, Owner and State Construction Office the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, except in such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c (2) herein. If neither party elects to proceed under c (2), then unit prices shall apply.
  - 2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.
- d. Under Paragraph "b" and Methods "c(2)" above, the allowances for overhead and profit combined shall be as follows: all contractors (the single contracting entity (prime), his subcontractors (1<sup>st</sup> tier subs), or their sub-subcontractors (2<sup>nd</sup> tier subs, 3<sup>rd</sup> tier subs, etc.) shall be allowed a maximum of 10% on work they each self-perform; the prime contractor shall be allowed a maximum of 5% on contracted work of his 1<sup>st</sup> tier sub; 1<sup>st</sup> tier, 2<sup>nd</sup> tier, 3<sup>rd</sup> tier, etc. contractors shall be allowed a maximum of 2.5% on the contracted work of their subs. ; Under Method "c(1)", no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under Method "c(2)" and Paragraph (b) above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.
- e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:
  - 1. The actual costs of materials and supplies incorporated or consumed as part of the work;
  - 2. The actual costs of labor expended on the project site; labor expended in coordination, change order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or on the project site.
  - 3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker's compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed thirty percent (30%) of the actual costs of labor;
  - 4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; and temporary facilities required for the work;
  - 5. The actual costs of premiums for bonds, insurance, permit fees and sales or use taxes related to the work.



Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.

- f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods. All change orders shall be supported by a unit cost breakdown showing method of arriving at net cost as defined above.
- g. Change orders shall be submitted by the contractor in writing to the owner/designer for review and approval. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to the contractor's proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order, within seven (7) days of receipt.

At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

- h. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.
- i. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.

#### **14. ANNULMENT OF CONTRACT**

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety (if applicable) of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the contractor, or the surety (if applicable) shall fail to take over the work to be done under this contract within seven (7) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all

contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety (if applicable). In case the expense so incurred by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety (if applicable) shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety (if applicable) shall be liable and shall pay to the owner the amount of said excess.

## **15. TERMINATION FOR CONVENIENCE**

- a. Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience, after notification to the contractor in writing via certified mail. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.
- b. Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as approved by Owner; (3) plus ten percent (10%) of the cost of the balance of the work to be completed for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

## **16. OWNER'S RIGHT TO DO WORK**

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after seven (7) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

## **17. REQUESTS FOR PAYMENT**

Contractor shall refer to the Supplemental General Conditions for specific directions on payment schedule, procedures and the name and address where to send applications for payments for this project. It is imperative that invoices be sent only to the above address in order to assure proper and timely delivery and handling.

The Designer/Owner will process all Contractor pay requests as the project progresses. The Contractor shall receive payment within thirty (30) consecutive days after Designer/Owner's approval of each pay request. Payment will only be made for work performed as determined by the Designer/Owner.

### **Retainage:**

- a. Retainage withheld will not exceed 5% at any time.
- b. The same terms apply to general contractor and subcontractors alike.
- c. Following 50% completion of the project no further retainage will be withheld if the contractor/subcontractor has performed their work satisfactorily.
- d. Exceptions:
  1. Owner/Contractor can reinstate retainage if the contractor/subcontractor does not continue to perform satisfactorily.

2. Following 50% completion of the project, the owner is authorized to withhold additional retainage from a subsequent periodic payment if the amount of retainage withheld falls below 2.5%.

Final payment will be made within forty-five (45) consecutive days after acceptance of the work, receipt of marked-up "as-built" drawings and specifications and the submission both of notarized Contractor's affidavit and final pay request. All pay requests shall be submitted to the Designer/Owner for approval.

**THE CONTRACTOR'S FINAL PAYMENT AFFIDAVIT SHALL STATE:** "THIS IS TO CERTIFY THAT ALL COSTS OF MATERIALS, EQUIPMENT, LABOR, SUBCONTRACTED WORK, AND ALL ELSE ENTERING INTO THE ACCOMPLISHMENT OF THIS CONTRACT, INCLUDING PAYROLLS, HAVE BEEN PAID IN FULL."

## **18. PAYMENTS WITHHELD**

The designer with the approval of the Owner may withhold payment for the following reasons:

- a. Faulty work not corrected.
- b. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
- c. To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- d. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
  - i. Claims filed against the contractor or evidence that a claim will be filed.
  - ii. Evidence that subcontractors have not been paid.

When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor as provided in G.S. 143-134.1. As provided in G.S. 143-134.1(e), the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.

## **19. MINIMUM INSURANCE REQUIREMENTS**

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall document that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

### **a. Worker's Compensation and Employer's Liability**

The contractor shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

### **b. Public Liability and Property Damage**

The contractor shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property

damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury: \$500,000 per occurrence  
Property Damage: \$100,000 per occurrence / \$300,000 aggregate

In lieu of limits listed above, a \$500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

**c. Property Insurance (Builder's Risk/Installation Floater)**

The contractor shall purchase and maintain property insurance until final acceptance, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and sub-subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

**d. Deductible**

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor.

**e. Other Insurance**

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

**f. Proof of Carriage**

The contractor shall furnish the owner with satisfactory proof of carriage of the insurance required before written approval is granted by the owner.

**20. ASSIGNMENT**

No assignment of the Contractor's obligations or the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the Owner and solely as a convenience to the Contractor, the Owner may: (1) forward the Contractor's payment check directly to any person or entity designated by the Contractor, and (2) include any person or entity designated by Contractor as a joint payee on the Contractor's payment check. In no event shall such approval and action obligate the Owner to anyone other than the Contractor, and the Contractor shall remain responsible for fulfillment of all contract obligations.

**21. CLEANING UP AND RESTORATION OF SITE**

The Contractor shall keep the sites and surrounding area reasonably free from rubbish at all times and shall remove debris from the site from time to time or when directed to do so by the Owner. Before final inspection and acceptance of the project, the Contractor shall thoroughly clean the sites, and completely prepare the project and site for use by the Owner.

At the end of construction, the contractor shall oversee and implement the restoration of the construction site to its original state. Restoration includes but not limited to walks, drives, lawns, trees and shrubs, corridors, stairs and other elements shall be repaired, cleaned or otherwise restored to their original state.

## **22. GUARANTEE**

The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the final acceptance of the work and shall replace such defective materials or workmanship without cost to the owner.

Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.

Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor, which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.

Guarantees for roofing workmanship and materials shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

## **23. STANDARDS**

All manufactured items and/or fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving a connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate State inspector which customarily requires the label or re-examination listing or identification marking of appropriate safety standard organization, such as the American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and/or National Electrical Manufacturers Association for electrically operated assemblies; or the American Gas Association for gas operated assemblies, where such approvals of listings have been established for the type of device offered and furnished. Further, all items furnished shall meet all requirements of the Occupational Safety and Health Act (OSHA), and State and federal requirements relating to clean air and water pollution.

All equipment and products must be independent third party tested and labeled (UL, FM, or CTS) before final connections to Owner services or utilities.

## **24. TAXES**

- a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).
- b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).
- c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work and such costs shall be included in the bid proposal and contract sum.
- d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable and such costs shall be included in the bid proposal and contract sum.
- e. **Accounting Procedures for Refund of County Sales & Use Tax**

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement as of April 1, 1991 from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was

delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

## **25. EQUAL OPPORTUNITY CLAUSE**

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

## **26. MINORITY BUSINESS PARTICIPATION**

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority business in total value of work for each State building project.

For construction contracts with a value of less than \$300,000, the Owner has the responsibility to make a good faith effort to solicit minority bids and to attain the goal. The contractor shall include with his bid a completed Identification of HUB Certified/Minority Business Participation form. Contractor shall submit completed Appendix E MBE Documentation for Contract Payments form with final payment request.

For construction contracts with a value of \$300,000 or greater, the contractor shall comply with the document *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Identification of Minority Business Participation, Affidavits A, B, C, and D, and Appendix E. These forms provided herein are hereby incorporated and made a part of this contract.

## **27. ACCESS TO PERSONS AND RECORDS**

The State Auditor shall have access to persons and records as a result of all contracts or grants entered into by the Owner in accordance with General Statute 147-64.7. The Owner's internal auditors shall also have the right to access and copy the Contractor's records relating to the Contract and Project during the term of the Contract and within two years following the completion of the Project/close-out of the Contract to verify accounts, accuracy, information, calculations and/or data affecting and/or relating to Contractor's requests for payment, requests for

change orders, change orders, claims for extra work, requests for time extensions and related claims for delay/extended general conditions costs, claims for lost productivity, claims for lost efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from Owner and/or its project representatives.

## **28. GOVERNING LAWS**

This contract is made under and shall be governed by and construed in accordance with the laws of the State of North Carolina. The Contractor shall comply with all applicable federal, State and local laws, statutes, ordinances and regulations including, but not limited to, the Omnibus Transportation Act of 1991 and its implementing regulations.

## **29. CONTRACTOR EVALUATION**

The contractor's overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State projects. In addition to final evaluation, an interim evaluation may be prepared during the progress of project. The owner may request the contractor's comments to evaluate the designer.





**SUPPLEMENTARY GENERAL CONDITIONS  
OF THE CONTRACT**

**STANDARD FORM OF INFORMAL CONSTRUCTION CONTRACT**

**WESTERN CAROLINA UNIVERSITY**

## SUPPLEMENTARY GENERAL CONDITIONS (SGC's) OF THE CONTRACT

### 1. GENERAL

This document supplements but does not alter in any way the requirements of the General Conditions of the Contract.

### 2. DEFINITIONS

As defined in Article 1 of the General Conditions, the Supplementary General Conditions as well as the WCU General Requirements are considered part of the contract documents.

The Owner is the State of North Carolina through Western Carolina University.

Provide shall mean purchase, deliver, install, new, clean, completely operational, fully tested and ready for use.

### 5. SUBMITTAL DATA

The submittal requirements are described in Article 5 of the General Conditions. Items for which submittals are required are listed below:

Pre-Submittals:

- The contractor shall provide the Owner a complete list of contact information for the Contractor, his key personnel, and all Subcontractors. This list shall be provided to the Owner prior to beginning the Work and shall be updated regularly with the updated provided to the Owner.
- All items referenced in Technical Specifications

Post-Submittals:

- All previously submitted documents revised to show as-built condition.
- O&M Manuals for any equipment requiring a submittal.

Data on the following items shall be sent to the Designer for review and approval. The submittal process is described in Article 5 of the General Terms and Conditions. Refer to "Technical Specifications" for required submittals. All Pre-Submittals shall be delivered to the Designer and Owner no later than the Preconstruction Meeting. All Post Submittals shall be delivered to the Designer and Owner within thirty (30) days of work completion. The final pay request shall be included with Post-Submittals.

### 7. WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

The Contractor shall maintain at the job site a readable set of the complete set of working drawings and specifications for his work, including all shop drawings. The Contractor shall maintain at the job site an up-to-date, readable set of the As-Built drawings.

**8. MATERIALS, EQUIPMENT, EMPLOYEES**

Should an accident or disruption occur on the project work site, the Contractor shall notify the WCU Project Manager and WCU Safety and Risk Management Office as soon as possible and no less than 24 hours of occurrence.

The Contractor and Subcontractors shall be responsible for security to their equipment and the site-stored materials under their jurisdiction, whether paid for by the Owner or not, until acceptance of the project. The Contractor shall coordinate security requirements with the WCU Project Manager.

**9. CODES, PERMITS AND INSPECTIONS**

The Contractor shall request and obtain permission from the WCU Project Manager for an interruption of utility or services a minimum of seven (7) days in advance. Failure of the Contractor to obtain Owner permission shall not be grounds for an extension of time.

Prior to performing any "hot work" or any work above ceiling in existing buildings, the Contractor shall obtain a permit for such from the WCU Safety and Risk Management Office.

The Contractor shall comply with Owner's Interim Life Safety Plan requirements to maintain egress from all occupied buildings.

**CONSTRUCTION SUPERVISION and SCHEDULE**

The Contractor shall begin project work within two (2) weeks upon receipt of Notice to Proceed. The Contractor shall submit a project work schedule before beginning work. The starting date and work schedule shall be adhered to, and the work shall be performed during the Owner's normal working hours, 8:00 AM to 5:00 PM. Requests by the Contractor to work outside normal working hours shall be made a minimum of one (1) week in advance to the WCU Project Manager on site. The Contractor's bid shall include all costs associated with workers working outside of normal business hours and/or costs associated with workers working overtime as required to meet the specified project schedule. The Owner reserves the right to request work to be performed outside normal working hours and to limit Contractor activities when they conflict with Owner operations. Any increased costs due to Owner requirements for work outside normal hours not specified in the Contract Documents will be negotiated.

The Contractor shall maintain a daily field report including, but not limited to, listing of all personnel on site (including all Subcontractors), weather conditions, major scopes of work under construction, material deliveries, safety incidents, progress photographs, and inspections.

**11. SUBCONTRACTS AND SUBCONTRACTORS**

All Subcontractors shall be identified in writing and approved by the Owner prior to the start of work

**TIME OF COMPLETION, DELAYS, EXTENSION OF TIME, LIQUIDATED DAMAGES**

The Contractor shall commence work to be performed under this Contract on the date to be specified in the Notice to Proceed from the Contract Administrator and shall fully complete all work hereunder

within 122 consecutive calendar days from the date specified in the Notice to Proceed. The following are the critical dates for the project: Anticipated Notice to Proceed: April 1, 2024; Site available for Work: May 13, 2024; Construction Completion: August 1, 2024. No increase in contract time will be allotted for the addition of Bid Alternate work.

If the Contractor should fail to complete the work within the time specified (including approved Change Orders) and this failure directly prevents the Owner from utilizing and/or occupying the building premises or results in other direct costs to the Owner, Liquidated Damages in the amount of \$250.00 (Two-Hundred, Fifty Dollars) per consecutive calendar day will be assessed for each day the schedule of the Work exceeds the contractual duration set forth in the contract or therefore extended by approved change order. Other reduction/restrictions to work hours, site use, and other construction general conditions may occur if the contract time extends beyond the contract time specified (including approved Change Orders).

If the Contractor is delayed at any time in the progress of the Contractor's work by any act or negligence of the Owner, the Owner's employees or the Owner's separate Contractor; by changes ordered in the work; by abnormal weather conditions; by any causes beyond the Contractor's control; or by other causes deemed justifiable by Owner, then the contract time may be reasonably extended in a written order from the Owner upon written request from the Contractor within ten (10) days following the cause for delay.

Non-compensable weather delays affecting the critical path shall be tracked during the period leading up to the building being dried-in, and calculated and awarded via Change Order if warranted, at the end of the construction period.

## USE OF PREMISES

Work under this contract shall be performed in such a manner as to avoid interruption or interference with the operation of any existing activity on the premises or at the location of the work. The Owner may enforce extra restrictions during certain periods of the year. During examination periods, the Contractor shall restrict noise-making activities. If the project involves work in or near a building in which an exam is being conducted, the Contractor shall be required to restrict operations which are disturbing to students during the hours of the exam(s). Work will not be permitted on Graduation Day, or the day preceding it.

While on campus, Contractor's and Sub-Contractor's personnel shall be identifiable at all times, for example, by wearing company names or logos on garments or hard hats.

Damage done to the University premises that are under the control of the Contractor, or damage caused by the contractor to premises used by the contractor, shall be corrected at the Contractor's expense.

The contractor shall schedule deliveries between 7:00 am and 4:00 pm. The contractor shall have adequate personnel and any necessary equipment onsite to receive deliveries. The contractor shall notify the WCU Project Manager of any deliveries of equipment, material or road work that will impede the flow of vehicular or pedestrian traffic. The contractor shall provide traffic control by certified traffic control personnel (vehicular and pedestrian) during these deliveries. Staging for multiple concrete / steel / other large material deliveries, crane and other large pieces of equipment must be coordinated with the WCU Project Manager. Walks, streets, and drives are most congested with pedestrians at the top of the hour, when making deliveries the carrier should be made aware of this and plan his deliveries accordingly.

A minimum five working days' notice must be given to the WCU Project Manager to block parking spaces, drives, roads, streets and pedestrian walks.

Roads, streets, drives, fire lanes must remain open at all times. Adequate clearance must be maintained for emergency vehicles to negotiate the drive. Maintain a minimum of 20 feet for fire lanes. Construction vehicles are not allowed to block, park, or stage in a fire lanes. Vehicles blocking fire lanes will be ticketed and towed at the Contractor's expense.

Construction fences should be covered with fabric screening unless it blocks the view of oncoming traffic. Construction gates will swing into the construction area. The construction fences shall not obstruct pedestrian or vehicle traffic unless alternate ways were designed in the site drawings and approved by the WCU Project Manager.

The Contractor will provide additional cleanup, warning signs, and barricades if deemed necessary by the Owner.

The Contractor's scheduling and staging requirements must be coordinated with, and approved by, the WCU Project Manager.

Contractors working for the University are required to comply with Western Carolina University's policies, which are provided herein and hereby incorporated and made a part of this contract.

- Smoking and Vaping Policies  
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-45.aspx>
- Alcoholic Beverages  
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-81.aspx>
- Weapons on Campus  
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-91.aspx>
- Campus/Workplace Violence Prevention and Management  
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-109.aspx>
- Title IX Sexual Harassment Policy  
<https://www.wcu.edu/discover/leadership/office-of-the-chancellor/legal-counsel-office/university-policies/numerical-index/university-policy-129.aspx>

## **UTILITIES, STRUCTURES, SIGNS**

The Owner will provide water and electricity to the extent they are available at the project site. The Contractor shall be responsible for making connections to provided utilities.

The Contractor shall provide restroom facilities. The Contractor's personnel shall not use toilet or washroom facilities in the existing building.

The Contractor shall be responsible for procedures to make temporary disruptions to existing utilities serving the building(s) as well as disruptions to roads and pedestrian walks and any disruptions shall be planned well in advance of the work. The work shall be executed in a manner to provide

reasonably continuous service throughout the construction period. Any and all disruptions and interruptions of service shall be coordinated with the WCU Project Manager a minimum of seven (7) days in advance. Failure of the Contractor to obtain Owner permission shall not be grounds for an extension of time.

#### **19. MINIMUM INSURANCE REQUIREMENTS**

Automobile Liability insurance (the "Auto Insurance") for claims and all perils for errors, omissions, and damages of any kind or character which may arise out of or result from Contractor's performance under this Agreement. The Auto Liability Insurance shall cover owned, hired, and non-owned commercial vehicles with policy limits of no less than \$150,000 bodily injury and property damage and \$150,000 uninsured/under insured motorist per occurrence.

do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #

Work Type

\*Minority  
Category

\*\*HUB  
Certified  
(Y/N)

[illegible]

\*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**\*\* HUB Certification with the state HUB Office required to be counted toward state participation goals.**

**The total value of minority business contracting will be (\$)**\_\_\_\_\_.

# State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of \_\_\_\_\_

(Name of Bidder)

Affidavit of \_\_\_\_\_

I have made a good faith effort to comply under the following areas checked:

**Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive.** (1 NC Administrative Code 30 I.0101)

- Q 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- Q 2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- Q 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- Q 4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- Q 5 – (10 pts)** Attended pre-bid meetings scheduled by the public owner.
- Q 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- Q 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- Q 8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- Q 9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- Q 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

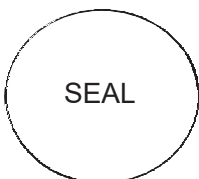
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Notary Public \_\_\_\_\_

My commission expires \_\_\_\_\_



**State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract  
with Own Workforce.**

County of \_\_\_\_\_

Affidavit of \_\_\_\_\_  
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the \_\_\_\_\_  
\_\_\_\_\_ contract.  
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

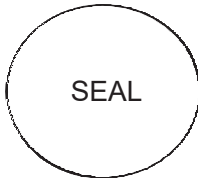
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Notary Public \_\_\_\_\_

My commission expires \_\_\_\_\_

# State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of \_\_\_\_\_

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.  
This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of \_\_\_\_\_ I do hereby certify that on the \_\_\_\_\_  
(Name of Bidder)

(Project Name)  
Project ID# \_\_\_\_\_ Amount of Bid \$ \_\_\_\_\_

I will expend a minimum of \_\_\_\_\_% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

\*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**\*\* HUB Certification with the state HUB Office required to be counted toward state participation goals.**

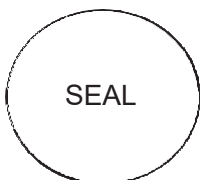
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_ Subscribed  
and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20 Notary Public My  
commission expires \_\_\_\_\_

# State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of \_\_\_\_\_

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of \_\_\_\_\_ I do hereby certify that on the \_\_\_\_\_  
(Name of Bidder)

\_\_\_\_\_  
(Project Name)  
Project ID# \_\_\_\_\_ Amount of Bid \$ \_\_\_\_\_

I will expend a minimum of \_\_\_\_\_% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

\*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**\*\* HUB Certification with the state HUB Office required to be counted toward state participation goals.**

**Examples** of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent as solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

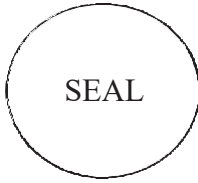
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_



State of \_\_\_\_\_, County of \_\_\_\_\_ Subscribed  
and sworn to before me this \_day of \_20\_\_\_\_\_ Notary Public  
My commission expires \_\_\_\_\_

# **GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE CONSTRUCTION CONTRACTS**

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, construction manager at risk, and alternative contracting methods, on State construction projects in the amount of \$300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

## **SECTION A: INTENT**

It is the intent of these guidelines that the State of North Carolina, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded shall cooperate and in good faith do all things legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

## **SECTION B: DEFINITIONS**

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
  - a. Black, that is, a person having origins in any of the black racial groups in Africa;
  - b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
  - c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
  - d. American Indian, that is, a person having origins in any of the original peoples of North America; or
  - e. Female
2. Minority Business - means a business:
  - a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
  - b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.
3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".
4. Public Entity - means State and all public subdivisions and local governmental units.
5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.
6. Designer - Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.
7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.
9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.
10. Subcontractor - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

## **SECTION C: RESPONSIBILITIES**

1. Office for Historically Underutilized Businesses, Department of Administration (hereinafter referred to as HUB Office).

The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:

- a. Identify those areas of work for which there are minority businesses, as requested.
- b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
- c. Assist in the determination of technical assistance needed by minority business contractors.

In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:

- (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
- (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
- (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
- (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
- (5) The HUB Office also oversees the minority business program by:
  - a. Monitoring compliance with the program requirements.
  - b. Assisting in the implementation of training and technical assistance programs.
  - c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
  - d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. State Construction Office

The State Construction Office will be responsible for the following:

- a. Furnish to the HUB Office a minimum of twenty-one days prior to the bid opening the following:
  - (1) Project description and location;
  - (2) Locations where bidding documents may be reviewed;
  - (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
  - (4) Date, time and location of the bid opening.
  - (5) Date, time and location of prebid conference, if scheduled.
- b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general statutes regarding minority-business participation, including the bidders' responsibilities.

- c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
- d. Reviewing of minority business requirements at Preconstruction conference.
- e. Monitoring of contractors' compliance with minority business requirements in the contract documents during construction.
- f. Provide statistical data and required reports to the HUB Office.
- g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

### 3. Owner

Before awarding a contract, owner shall do the following:

- a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
- b. Attend the scheduled prebid conference.
- c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
  - 1. A description of the work for which the bid is being solicited.
  - 2. The date, time, and location where bids are to be submitted.
  - 3. The name of the individual within the owner's organization who will be available to answer questions about the project.
  - 4. Where bid documents may be reviewed.
  - 5. Any special requirements that may exist.
- d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
- e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
- f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with corresponding total dollar value of the bid and affidavit listing good faith efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award to the State Construction Office.
- g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
- h. Review prime contractors' pay applications for compliance with minority business utilization commitments prior to payment.
- i. Make documentation showing evidence of implementation of Owner's responsibilities available for review by State Construction Office and HUB Office, upon request

### 4. Designer

Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

- a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
- b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
- c. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
- d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S.143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with

corresponding total dollar value of the bid and affidavit listing Good Faith Efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award.

- e. During construction phase of the project, review “MBE Documentation for Contract Payment” – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.
- f. Make documentation showing evidence of implementation of Designer’s responsibilities available for review by State Construction Office and HUB Office, upon request.

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors

Under the single-prime bidding, the separate-prime bidding, construction manager at risk and alternative contracting methods, contractor(s) will:

- a. Attend the scheduled prebid conference.
- b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
- c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification will include the following:
  - (1) A description of the work for which the subbid is being solicited.
  - (2) The date, time and location where subbids are to be submitted.
  - (3) The name of the individual within the company who will be available to answer questions about the project.
  - (4) Where bid documents may be reviewed.
  - (5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.

- d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.
- e. Identify on the bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).
- f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.
- g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.
- h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.
- i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), “MBE Documentation for Contract Payment” – (Appendix E), for designer’s review.
- j. During the construction of a project, at any time, if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office in writing, of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.



- k. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.
- l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. **Minority Business Responsibilities**

While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

**SECTION 4: DISPUTE PROCEDURES**

It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

**SECTION 5:** These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: [www.nc-sco.com](http://www.nc-sco.com)

**SECTION 6:** In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.

## MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

### APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: <http://www.nc-sco.com>

### MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts or affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

**OR**

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, **with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.**

**OR**

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

**The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.**

## **MINIMUM COMPLIANCE REQUIREMENTS:**

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

- (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.
- (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- (5) Attending any prebid meetings scheduled by the public owner.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

## APPENDIX E

### MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: \_\_\_\_\_

Address & Phone: \_\_\_\_\_

Project Name: \_\_\_\_\_

Pay Application #: \_\_\_\_\_ Period: \_\_\_\_\_

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

\*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: \_\_\_\_\_ Approved/Certified By: \_\_\_\_\_

Name

Title

Signature

**SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT**

## Appendix J

### WASTE MANAGEMENT PLAN

#### General

Wastes from construction, renovation, demolition, abatement, decommissioning, and other projects with environmental consequences warrant waste management plans to ensure proper waste management practices and recognition of responsibilities. Many of these types of projects involve contracted services, for which the University and its contractor(s) assume liabilities.

Waste management plans, as developed by WCU, are intended to identify potential wastes to be managed, proper management practices, responsible parties, and needed services in simple and concise forms. Two forms have been developed for this purpose, the first for project design and the second for project implementation (demolition/construction).

Waste management must be addressed as part of project design, and should be incorporated in project and/or bid documents. Project design may include site preparation and/or construction. Site preparation may include land clearing, relocation of utilities, decontamination of existing structures, and demolition of existing structures. As the project progresses, some adjustments may be necessary for waste management activities, including relocation of waste areas and managing newly-discovered waste materials. Completion of the *Designer Waste Information Form* allows WCU to identify wastes of concern and prepare for any necessary services to ensure compliance with environmental regulations. The contractor's Waste Management Plan enables WCU to efficiently plan regulated waste disposal and control costs.

Waste management plans will vary depending on the scale and scope of the project. In the most general terms, the plan should identify the general types of wastes that may be encountered for each phase of the project, the collection and accumulation strategy, marking and identification requirements, and procedures for appropriate removal of wastes from the site.

The forms should be completed by the designer prior to contract award, preferably as part of the bid process. The contractor will submit a waste management plan to the University for approval prior to implementing any work. The approved plan will serve as the basis for project-specific plans. The Plan will specify procedures for all aspects of waste management.

#### Assignment of Waste Responsibilities

Waste generated by demolition, decontamination, decommissioning, abatement, maintenance of fixed facilities, and most site preparation wastes will be attributable to both the contractor and the University as co-generated waste (University waste materials removed under contract, including lamp replacement and remediation). Accumulation and initial management of waste generated by project activities will be the responsibility of the contractor(s). The University may provide oversight to ensure protection of properties and liabilities. The contractor will prepare waste for collection by the University or shipment to facilities identified in the waste management plan. Hazardous or universal waste generated as a direct result of project activities (e.g., decontamination or demolition of structures, removal of batteries or mercury-containing articles) will leave the University under the University's signature.

NOTE: Wastes derived solely from materials that the contractor brought to the site, such as construction materials and cleaning of contractor equipment, will be the responsibility of the contractor, and may be included in the waste management plan. The University Project Manager shall receive copies of disposal certifications and shipping papers for all wastes shipped.

### **Designer Waste Information Form**

The Designer Waste Management Form contains preliminary information beneficial to identifying the types of wastes expected to be removed by the project. Once the designer completes the form, it can be submitted to the WCU Project Manager.

Basic sections of the form that require completion are as follows:

- Project Name;
- Project Designer;
- Waste Types: The types of wastes listed are those that are often subject to environmental regulation due to potential hazards. Indicate if wastes are present within the project area and scope using Y (yes) or N (no). If there are additional wastes on-site, add them next to "Other" and indicate their presence.
- Comment
- Signature (designer)

### **Contractor Waste Management Form**

The Contractor Waste Management Form contains updated and more detailed information for managing wastes of concern for WCU. Once the contract has been awarded, the primary contractor completes the form which identifies the WCU Project Manager, the principal contractor, and any responsible subcontractors. After completing the form, the contractor can submit the form via email to the WCU Project Manager. The contractor is responsible for implementing the plans prepared by the project designer and managing site activities.

- Project Name:
- Contact Information:
  - WCU Project Manager
  - Contractor name, address, phone, and e-mail: Consider this to be the primary contractor.
  - Onsite contact and phone number
  - Emergency contact and phone number: The contractor is generally held accountable for accidents that may occur on a project site. The role of WCU in the event of an emergency is to protect University personnel and property beyond the project boundaries or scope.
  - Subcontractor name, address, phone, and e-mail: Consider this to be the subcontractor(s) responsible for managing project "wastes of concern."
  - Subcontractor's emergency contact and phone number requires information regarding facilities that may recycle, treat, or dispose of "wastes of concern" if disposed by the contractor.
  - Wastes of Concern: Common wastes identified by WCU as posing environmental or regulatory concerns have been listed, and additional wastes may be added by WCU based on project design information. The contractor shall identify container types and specific storage locations for each type of waste listed.
  - Areas where hazardous wastes are accumulated are required to be inspected at least weekly to ensure spills and other releases are minimized and controlled, and wastes are secured.
  - The "wastes of concern" include materials that would be hazardous wastes if not managed properly. The contractor will comply with WCU requirements to document the inspection of waste areas on a weekly basis while "wastes of concern" are present. A weekly inspection log has been provided as a template for minimum inspection requirements.
  - Inspection criteria are presented with a simple description of concerns. The inspector's legible signature, date, and time are required. The "Corrective Actions" should indicate the unacceptable condition, date corrected, and signature.
  - Waste removal: The WCU Project Manager shall contact WCU Recycling

## Management of Regulated Demolition Debris

### Designer Waste Information Form

3

## **Management of Regulated Demolition Debris**

<b>Contractor Waste Management Form</b>			
<b>Project Name:</b>			
<b>Contact Information</b>			
WCU Project Manager:			
Contractor Name:		Subcontractor Name:	
Address:		Address:	
Phone Number:		Phone Number:	
Onsite Contact:		Emergency Contact:	
Phone Number:		Phone Number:	
Emergency Contact:			
Phone Number:			
Recycling/Reclamation Facility:		Phone Number:	
Treatment/Disposal Facility:		Phone Number:	
<b>Wastes of Concern</b>			
Type	Container Type*	Storage Location	Comments
Asbestos			
Decontamination/ Cleaning Liquids			
Lead Paint			
Fluorescent Lamps			
Ballast (PCB or Non PCB)			
Mercury Containing Equipment			
Batteries			
Sink Traps (labs only)			
Oil			
Scrap Tires			
White Goods			
Other:			
Other:			
Other:			
Other:			
Other:			
Other:			
*Container Type - Roll-off, Tank, Drum (specify size), Boxes, Other (specify)			
Signature		Date	
<b>Please complete this form and e-mail to the Project Manager</b>			



## WCU- TRACKING OF CONSTRUCTION AND DEMOLITION MATERIALS RECYCLED OR LANDFILLED

Project Name:

Project ID:

WCU Project Manager:

Name/Company/Phone Number of person completing report

**Include weight tickets or invoices when submitting log sheet. If not available provide written explanation**

Date	Waste Hauler Contractor Name	Material Description	Weight LBS or TONS	Estimated Weight If no ticket	Cost per LBS or TONS	Other Costs	Recycling or Landfill Facility
DATE	Prepared By	Project Totals	Weight LBS or TONS	Estimated LBS or TONS	Cost per LBS or TON	Other Costs (Hauling, Fees)	Total Landfill:
							Total Recycled:

	<b>WESTERN CAROLINA UNIVERSITY</b> <b>REUSE OF CONSTRUCTION AND DEMOLITION MATERIALS</b>
<b>Date</b>	
<b>Location/Job Name:</b>	
<b>Project Manager:</b>	
<b>Released To:</b>	
<b>Phone#:</b>	
<b>Material Description:</b>	
<b>Quantity Each Item:</b>	
<b>Estimate Weight Each Item:</b>	
<b>Estimate \$ Donation Value:</b>	
<b>Released By (WCU):</b>	

Description of Program: The University has established a program to salvage building materials, parts and furnishings that would otherwise be considered construction and demolition waste. Prior to the beginning of construction and renovations projects on campus, Facilities Management will have an opportunity to reclaim C&D materials for reuse. Facilities Management will have first priority in the invitation to salvage materials from construction and renovation projects. Other donees, such as Habitat for Humanity, may receive donation of reusable materials. The following conditions and procedure must be met in order to participate in the reuse program.

**Criteria:**

Clear understanding of the purpose of the reuse program.

**Tracking the reuse materials is extremely important to protect all participants from possible liability claims or false acquisition of materials by shops or done and must be submitted to WCU Project Manager.**

Facilities Management Shop or donee is responsible for removal and transportation of materials, has adequate second use or storage for the materials, and takes responsibility for the timely and lawful surplus or disposal of materials if an adequate reuse is not identified in an appropriate amount of time.

Questions? Contact Facilities Management Project Manager or Recycling Coordinator at 227-7442

## **SECTION 011000 - SUMMARY**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

A. Section Includes:

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

B. Related Requirements: Section 015000, "Temporary Facilities and Controls" for limitations and procedures governing temporary use of the Owner's facilities.

#### **1.2 DEFINITIONS**

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the project work for pricing, permitting and construction.
- B. Approval: Shall be understood to mean submission to the Engineer and their specific written approval prior to action.
- C. Wherever the words "install," "provide," or "furnish" occur, they shall be understood to include all unloading, rigging, hoisting and storing, and the furnishing of all tools, equipment, labor, and materials required to furnish, handle, and completely install the work, unless specifically indicated otherwise.

#### **1.3 PROJECT INFORMATION**

- A. Project Identification: Western Carolina University Bird Building Roof Replacement.
- B. Project Location: Bird Building, Corner of Bird Building Lane and Central Drive, Western Carolina University Campus, Cullowhee, North Carolina
- C. Owner: Western Carolina University  
Owner's Representative: Daniel Fiskeaux  
Email: dfiskeaux@wcu.edu; Phone: 828-227-3020

- D. Engineer: SKA Consulting Engineers, Inc.  
7900 Triad Center Drive, Suite 200  
Greensboro, North Carolina.  
Engineer's Representative: Brian D. Cuthbertson  
Email: bdcuthbertson@skaeng.com ; Phone: 336=855-0993

#### 1.4 WORK COVERED BY THE CONTRACT DOCUMENTS

- A. The work of the project is defined by the Contract Documents and includes, but is not limited to, the furnishing of all labor, materials, equipment, and services necessary to complete the following:
1. Removal of the existing roof membrane, cover board, thermal insulation, and membrane flashings down to the existing gypsum, metal, and wood (canopy) roof deck as designed on the roof plan
  2. Removal and disposal of existing collector heads and downspouts
  3. Removal and disposal of existing sheet metal flashings, expansion joint covers, counterflashings, scuppers etc., unless noted otherwise on the drawings
  4. Removal and disposal of existing roof hatch
  5. Removal and disposal of existing damaged or deteriorated wood blocking
  6. Elimination of the existing abandoned curbs and piping as shown on the drawings
  7. Restoration/replacement of any damage or deteriorated metal roof deck on the penthouse roof (see unit prices)
  8. Repair of shallow damaged areas in the lightweight gypsum roof deck (see unit prices)
  9. Remove any damaged lightweight gypsum fill and form board (see unit prices) and replaced with new as shown on the drawings and specified herein
  10. Provision and installation of new wood nailers on top of the parapet wall, at roof curbs and expansion joints as shown on the drawings and specified herein
  11. Provision and installation of new wood blocking to replace that found damaged or deteriorated, as shown on the drawings, and as required by the membrane manufacturer

12. Raising of the existing roof curbs, expansion joints and other roof penetrations to accommodate the new roof slopes
13. Provision and installation of a mechanically fastened 5/8-inch gypsum thermal barrier over the metal roof deck as shown on the drawings and specified herein
14. Provision and installation of self-adhering vapor retarder/temporary roof membrane and flashings over the thermal barrier as shown on the drawings and specified herein
15. Provision and installation of a cold adhered SBS modified bitumen vapor retarder/temporary roof membrane and flashing over the gypsum roof deck as shown on the drawings and specified herein
16. Provision and installation of flat and tapered thermal roof insulation adhered with low rise foam to the vapor retarder/temporary roof membrane areas as shown on the drawings and specified herein
17. Provision and installation of tapered thermal roof insulation mechanically attached to the wood roof deck at canopy as shown on the drawings and specified herein
18. Provision and installation of an insulation protection layer adhered with low rise foam as shown on the drawings and specified herein
19. Provision and installation of a fully adhered fleece back thermoplastic single-ply roof system over the insulation protection layer as shown on the drawings and specified herein
20. Provision and installation sheet metal slip flashings, counterflashings, pre-manufactured fascia, fascia extenders, scuppers, downspouts, etc. as shown on the drawings and specified herein
21. Provision and installation of the membrane manufacturer's walkpads as shown on the drawings and as specified herein
22. Installation of new EIFS wall cladding over existing limestone panels at locations shown on the drawings and as specified herein
23. Installation of new sealant at membrane, sheet metal and EIFS terminations as shown on the drawings and as specified herein
24. Other work indicated in the Contract Documents

- B. Type of Contract: The project will be constructed under a single prime contract.

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limits on Use of Site:

1. Limit the use of the project site to areas within the Contract limits indicated. Do not disturb portions of the project site beyond areas in which the work is indicated.
2. Confine construction operations to roof areas subject to replacement and agreed upon laydown areas. All closure of parking spaces shall be coordinated and approved by the owner.

- B. Temporary Field Office: There is limited room for material storage and staging, therefore, no field office will be allowed.

- C. Construction materials may be stored on the construction site (in accordance with the manufacturer's recommendations), and shall not be placed to block or cause a hazard to pedestrian or vehicular traffic. Storage shall be in the staging area designated in the preconstruction conference unless otherwise approved by the Owner in writing.

- D. Driveways, Walkways and Entrances: Keep driveways, sidewalks, loading areas, and entrances serving premises clear and available to the Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

1. Schedule deliveries to minimize the use of driveways and entrances by construction operations.
2. Schedule deliveries to minimize the space and time requirements for storage of materials and equipment onsite.

- E. The Contractor shall use parking areas designated by the Owner for parking during the construction. The Contractor is allowed to park within the construction limits of this project; however, it will be the Contractor's responsibility to police the entire area.

- F. Condition of the Existing Building: Maintain portions of the existing building affected by construction operations in a weathertight condition throughout the construction period. Repair damage caused by construction operations.

G. Condition of the Existing Grounds:

1. Maintain portions of the existing grounds, landscaping, and hardscaping affected by construction operations throughout the construction period. Repair damage caused by construction operations.
2. The Contractor shall not wash debris including cementitious residue from tools and equipment into the storm sewer system, onto the grounds or onto the adjacent property.

H. Protection: Protection shall consist (in general) of the following:

1. All plants and lawn areas around the building shall be protected by the Contractor. Damaged plants shall be replaced. Damaged and disturbed lawn areas shall be reseeded by the Contractor.
2. Streets and Walks: The Contractor shall protect all streets, parking areas and walks, and shall make all necessary repairs at his own expense.
3. Private Roads, Entrances and Walks: The Contractor shall protect private roads, entrances, and walks. He shall maintain them during course of work, and shall repair all damages to same at his own expense.
4. Buildings and Equipment: The Contractor shall protect all existing buildings and equipment and shall repair all damages to same at his own expense.
5. Roof: The Contractor shall be responsible to limit traffic on the roof before and after roof replacement/repair and shall be responsible to repair damage to roof and interior damage resulting from leakage resulting from roof damage as a result of his work.
6. Site Utilities: The Contractor shall identify all site utilities including but not limited to underground piping, cleanout, junction boxes, catch basins, vaults, sprinklers, etc. which may be damaged by his work. He shall protect such items or shall notify the Owner in writing if there are items that must be removed in lieu of providing protection. Any items not removed shall be protected and shall be repaired by the Contractor if damaged during the course of the construction.
7. The Contractor shall be responsible for providing adequate protection of the Owner's furnishings, equipment, materials, property, and architectural finishes. Any damage to the Owner's furnishings, equipment, materials, property, and architectural finishes caused by personnel of the Contractor, work within the Contract, or failure of protective measures shall be repaired at no expense to the Owner.



8. The Contractor shall be responsible for providing full protection for all documents and records maintained within the building from precipitation, wind, debris, work materials and any damage, direct or ancillary, associated with the work being performed to complete the project scope.

#### 1.6 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: The Owner/employees/public will occupy the project site and the existing building(s) during the entire construction period. The Contractor personnel will cooperate with the Owner during construction operations to minimize conflicts and to facilitate the Owner's usage. Perform the work so as not to interfere with the Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from the Owner and approval of authorities having jurisdiction.
- C. An Owner's representative will be designated to act as the point of contact for the Contractor. Required coordination with all interior occupants and staff will be directed through the Owner's representative.
- D. The Contractor shall assign and maintain a single person as the Project Superintendent on this project. The superintendent shall be onsite at all times when the work is being performed.
- E. The Contractor shall begin work on the project within seven (7) days after the issuance of the Notice to Proceed, and shall achieve substantial completion of the work one hundred fifty (150) days after the Notice to Proceed. Final completion shall be achieved thirty (30) days after substantial completion.
- F. Notify the Owner not less than seventy-two (72) hours in advance of activities that will affect the Owner's operations.

#### 1.7 WORK RESTRICTIONS

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

- B. Onsite Work Hours: Limit work to between 7:00 am to 5:00 pm, Monday through Friday, unless otherwise indicated. Work hours may be modified to meet the project requirements if approved by the Owner and authorities having jurisdiction. Weekend Hours: Work on weekend hours is not permitted unless specifically authorized by the Owner in writing.
- C. Existing Utility Interruptions: Do not interrupt utilities serving the facilities occupied by the Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to the requirements indicated:
  - 1. Notify the Engineer and the Owner not less than three (3) days in advance of proposed utility interruptions.
  - 2. Obtain the Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to the Owner occupancy with the Owner. Provide protection to air handler units and other air intake devices prior to commencing work that results in dust and odors.
- E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on the project site is not permitted.
- F. Employee Identification: The Owner will provide identification tags for Contractor personnel working on the project site. The Contractor will require personnel to use identification tags at all times.
- G. Employee Screening: Comply with the Owner's requirements for background screening of Contractor personnel working on the project site. The Contractor will maintain a list of approved screened personnel with the Owner's representative.

#### 1.8 SPECIFICATION AND DRAWINGS

- A. Specification Content: The specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

2. Specification requirements are to be performed by the Contractor unless specifically stated otherwise.
  - B. Division 00 Contracting Requirements: The general provisions of the Contract, including the 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.
  - D. Drawing Coordination: Requirements for materials and products identified on the Contract Drawings are described in detail in the specifications. One or more of the following are used on the Contract Drawings to identify materials and products:
    1. Terminology: Materials and products are identified by the typical generic terms used in the individual specification sections.
    2. Abbreviations: Materials and products are identified by abbreviations scheduled on the Contract Drawings.
  - E. Drawings and Dimensions: The drawings are not to be scaled for dimensions not shown. Dimensions of existing facilities shown on the drawings are approximate - field verify dimensions of the existing building prior to ordering materials, fabricating components, performing demolition, or installing repairs. Where adjustments are necessary to suit field conditions, or where additional dimensions or other clarification is required, the Contractor shall promptly request such clarifications as provided by the General Conditions of the Contract.
  - F. Deviations from working drawings or specifications: Deviations from the working drawings or specifications shall not be made in the execution of this work without the specific written approval of the Engineer.
- 1.9 MANUFACTURER'S DIRECTIONS
- A. All items and materials shall be installed in accordance with the manufacturer's written directions, and in accordance with these specifications. The strictest requirement shall govern.
  - B. If manufacturers instructions contradict the drawings and specifications, notify the engineer prior to installation of materials for proper procedures.

1.10 USE OF SUBCONTRACTORS

- A. The Contractor may use subcontractors to accomplish such miscellaneous or associate work as structural modification, plumbing, relocation of conduit, service piping and /or HVAC equipment, etc. A list of all subcontractors must be submitted with bid form.

1.11 BUILDING PERMIT AND INSPECTION

- A. The Contractor shall be required to obtain all building permits that the local, state, or federal agency having jurisdiction over any part of the project requires.
- B. The Contractor shall secure and pay for all construction permits and licenses and will pay all governmental charges and governmental inspection fees necessary for the execution of the work, which are applicable at the time of his/her bid.

1.12 SPECIAL INSPECTIONS AND QUALITY ASSURANCE TESTING

- A. Special inspections are not required for this project.
- B. Testing and inspection as required by manufacturer(s) and described in their respective sections are the responsibility of the Contractor as defined within.
- C. The Owner may employ, at their option and expense, an independent testing firm to conduct quality assurance testing.
- D. The Contractor is responsible for coordinating all quality assurance testing. Re-testing of materials or work because of previously identified deficiencies will be at the Contractor's expense.

1.13 SAFETY

- A. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor shall comply with all safety and other applicable requirements in regard to all phases of this project including but not limited to all applicable regulations of OSHA and EPA. The Contractor shall handle all products with appropriate precautions and care as stated on the Material Safety Data Sheets (MSDS) for each product.

- B. Areas under overhead work will be temporarily closed during limited portions of the project. Such closures may prevent safe, legal occupation of portions of the building. The Contractor shall communicate and coordinate with the Owner and the local Fire Marshall (or other presiding public safety official) to maintain safe, legal access to all open portions of the building at all times. The Contractor shall communicate with the local Fire Marshall (or other presiding public safety official) to determine all required closures during the work. The Contractor shall communicate and coordinate all required closures with the Owner.
- C. Covered walkways or other material restraints shall be used as required to protect pedestrians and vehicles from debris, spillage, spray or rebounding debris. Proposed covers shall be submitted for approval.
- D. The Contractor shall be responsible for preventing access to the roof using construction equipment when not onsite.
- E. The Contractor shall be responsible for preventing access to construction equipment, tools and materials that may be hazardous, misused or stolen to the Owner's acceptance. If not acceptable, the Owner may require additional precautions at the Contractor's expense.
- F. Tobacco products will not be allowed on the site at any time. The Contractor is responsible to enforce the tobacco policy of the Owner with regard to the Contractor's personnel. Non-compliance by any of the Contractor's personnel will be justification for removal of those individuals from this project.
- G. Submit plans for removal and repairs to the Owner for his approval prior to starting work so that, if necessary, inside operations can be coordinated with the work.

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 012000 - PROJECT MEETINGS**

### **PART 1 - GENERAL**

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#### **1.1 DESCRIPTION**

- A. This section specifies administrative and procedural requirements for project meetings including but not limited to:
  - 1. Pre-Construction Meetings
  - 2. Pre-Installation Meetings
  - 3. Progress/Schedule Update/Coordination Meetings

#### **1.2 PRE-CONSTRUCTION MEETING**

- A. The Owner will schedule a pre-construction and organizational meeting at the project site no later than five (5) days after the Owner's written notice to proceed has been issued and prior to commencement of construction activities. The Engineer will conduct the meeting to review with the Contractor the Contractor's responsibilities and personnel assignments.
- B. Attendees: The Owner, Engineer, Contractor and his superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the meeting by persons familiar with and authorized to conclude matters relating to the work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
  - 1. Tentative construction schedule
  - 2. Critical work schedule and sequencing
  - 3. Designation of responsible personnel
  - 4. Procedures for processing field decisions and change orders
  - 5. Procedures for processing applications for payment
  - 6. Distribution of the Contract Documents
  - 7. Submittal of shop drawings, product data and samples
  - 8. Preparation of record documents
  - 9. Use of the premises
  - 10. Work restrictions
  - 11. Owner's occupancy requirements
  - 12. Responsibility for temporary facilities and controls
  - 13. Construction waste
  - 14. Parking
  - 15. Office, work and storage areas

- 16. Equipment deliveries and priorities
- 17. Safety procedures
- 18. First aid
- 19. Security
- 20. Progress cleaning
- 21. Working hours

### 1.3 PRE-INSTALLATION CONFERENCES

- A. Conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction or that requires installation of a specific material or product as noted in certain sections of the specifications. The 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 the Engineer of scheduled meeting dates.
  - 1. Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Engineer.
  - 2. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to the performance of the work and reconvene the conference at the earliest feasible date.

### 1.4 PROGRESS/SCHEDULE UPDATE/COORDINATION MEETINGS

- A. The Contractor will conduct progress/scheduling update/coordination meetings at the project site at biweekly intervals. The Contractor will notify the Owner and Engineer of scheduled meeting dates. Dates of meetings will be coordinated with preparation of the monthly application for payment.
- B. Attendees: In addition to representatives of the Owner, Engineer and Contractor, each subcontractor, supplier or other entity concerned with current progress or involved in the planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the project and authorized to conclude matters relating to progress.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the project.

1. Contractor's Construction Schedule: The Contractor shall review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind 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.
  2. Review the present and future needs of each entity present, including such items as:
    - a. Interface requirements
    - b. Time
    - c. Sequences
    - d. Deliveries
    - e. Off-site fabrication problems
    - f. Access
    - g. Site utilization
    - h. Temporary facilities and services
    - i. Hours of work.
    - j. Hazards and risks
    - k. Housekeeping
    - l. Quality and work standards
    - m. Change orders
    - n. Documentation of information for payment requests
- D. Reporting: After each meeting date, the Contractor will distribute copies of the minutes of the meeting to each party present and to other parties who should have been present.

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**



## **SECTION 012200 - UNIT PRICES**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. This section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
  - 1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling change orders
  - 2. Section 014000 "Quality Requirements" for field testing by an independent testing agency

#### **1.2 DEFINITIONS**

- A. The unit price is an amount incorporated into the agreement, applicable during the duration of the work as a price per unit of measurement for materials, equipment, or services, or a portion of the work, added to or deducted from the Contract sum by appropriate modification, if the scope of the work or estimated quantities of the work required by the Contract Documents are increased or decreased.
- B. The same unit price shall be used for additions and deductions unless noted otherwise.

#### **1.3 PROCEDURES**

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead and profit.
- B. Measurement and Payment: See individual specification sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those sections. Where unit prices are for quantities that are more or less than what is provided for in the base contract, the Contractor shall keep a record of amounts used as the work progresses. Such work shall be recorded daily on the as-built drawings and and Owner approved log for the Engineer to verify. A current and updated log indicating the Owner's prior approval shall be submitted with each pay application.
- C. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves the use of established unit prices and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

- D. The Owner reserves the right to make large changes in the quantities of unit price repairs at the quoted unit price. A revised unit cost may be negotiated in the case that fixed costs for a repair would significantly affect the effective unit cost.
- E. The Contractor shall not install unit price work that exceeds the Contract unit price quantities, including modifications approved by the Owner, without prior written approval. Valid prior written approval shall include approval of an explicit quantity of additional units to be added to the contract and issued by the Owner (via the Engineer). If unit price work is installed in excess of the Contract quantity without valid prior written approval, the Owner has the right to reject payment for all unapproved work.
- F. List of Unit Prices: A schedule of unit prices and associated allowances is included in Part 3 specification sections referenced in Part 3 "Schedule of Unit Prices," and contains requirements for materials described under each unit price.

## **PART 2 - PRODUCTS (Not Used)**

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## **PART 3 - EXECUTION**

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### **3.1 SCHEDULE OF UNIT PRICES**

- A. Unit Price No. 1: Wood Nailer Replacement:
  - 1. Description: The bidder shall include and add/deduct unit cost to remove existing damaged or deteriorated 2x wood nailers at locations identified in the field by the Contractor and the Owner's Representative. Install new 2 wood nailer and secure to the existing metal deck, concrete deck, or wood blocking in accordance with applicable details and as required, in accordance with Section 061000, "Rough Carpentry."
  - 2. Unit of Measurement: Board feet of 2x wood nailer replaced, based on in-place surveys of volume before and after removal
  - 3. Quantity Allowance in the Base Bid: 50 board feet

B. Unit Price No. 2: Roof Drains:

1. Description: The bidder shall include an add unit cost to remove existing damaged roof drains at locations identified in the field by the Contractor and the Owner's representative. Install new roof drains and secure to the existing metal deck or gypsum roof deck in accordance with applicable details and the manufacturer's instructions.
2. Unit of Measurement: Per roof drain
3. Quantity Allowance in the Base Bid: Zero (0) add unit cost only

C. Unit Price No. 3: Metal Deck Restoration:

1. Description: The Bidder shall include an add unit cost per square foot (sf) for restoration of slightly rusted but otherwise structurally sound areas of metal decks. The procedure is specified in Section 052110.
2. Unit of Measurement: Per sf
3. Quantity Allowance in the Base Bid: Zero (0) add unit cost only

D. Unit Price No. 4: Metal Deck Repairs:

1. The Bidder shall include an add unit cost per piece of flat sheet metal for repair of discrepant metal deck areas with flat sheet metal. The procedure is specified in Section 052110.
2. Unit of Measurement: Per piece of flat sheet metal
3. Quantity Allowance in the Base Bid: Zero (0) add unit cost only

E. Unit Price No. 5: Metal Deck Replacement:

1. The Bidder shall include an add unit cost per sf for replacement of discrepant metal deck. The procedure is specified in Section 052110.
2. Unit of Measurement: per sf of metal deck
3. Quantity Allowance in the Base Bid: Zero (0) add unit cost only

F. Unit Price 6: Gypsum Roof Deck Replacement:

1. The Bidder shall include an add unit cost per sf for replacement of damaged gypsum roof deck, including form board, reinforcement, and gypsum fill. The procedure is specified in Section 035420.
2. Unit of Measurement: Per sf of metal deck.
3. Quantity Allowance in the Base Bid: Zero (0) add unit cost only.

**END OF SECTION**

## **SECTION 012600 - CONTRACT MODIFICATION PROCEDURES**

### **PART 1 - GENERAL**

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#### **1.2 SUMMARY**

- A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related sections include the following:
  - 1. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices

#### **1.3 MINOR CHANGES IN THE WORK**

- A. The Owner will issue supplemental instructions authorizing minor changes in the work, not involving adjustment to the Contract sum or the Contract time, on the "Engineer's Supplemental Instructions."

#### **1.4 PROPOSAL REQUESTS**

- A. Owner-Initiated Proposal Requests: The Engineer 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 Contract Documents (drawings and specifications).
  - 1. Within the time specified in the proposal request, after receipt of the proposal request, the Contractor will 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 an updated contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract time.

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change.
    - 1. Include a statement outlining the 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 the total amount of the 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 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.
  - C. Proposal Request Form: Use AIA Document G709 for Proposal Requests.
  - D. Proposal Request Form: For change order proposals, use forms provided by the Owner.
- 1.5 CHANGE ORDER PROCEDURES
- A. On the Owner's approval of a proposal request, the Engineer will issue a change order for the signatures of the Owner and Contractor.
- 1.6 CONSTRUCTION CHANGE DIRECTIVE
- A. Work Change Directive: The Owner may issue a work change directive on AIA Document G714 or other approved form. The work change directive instructs the Contractor to proceed with a change in the work, for subsequent inclusion in a change order. The work change directive contains a complete description of the change in the work. It also designates the method to be followed to determine the change in the Contract sum or the Contract time.
  - B. Documentation: Maintain detailed records on a time and material basis of work required by the Change Directive. After completion of change, submit an itemized account and supporting data necessary to substantiate the cost and time adjustments to the Contract.

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 012900 - PAYMENT PROCEDURES**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. This section includes administrative and procedural requirements necessary to prepare and process applications for payment.
- B. Related Requirements:
  - 1. Section 012200 "Unit Prices" for administrative requirements governing the use of Unit Prices
  - 2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract

#### **1.2 DEFINITIONS**

- A. Schedule of Values: A statement furnished by the Contractor allocating portions of the Contract sum to various portions of the work and used as the basis for reviewing the Contractor's applications for payment.

#### **1.3 SCHEDULE OF VALUES**

- A. Coordination: Coordinate preparation of the schedule of values with the preparation of the Contractor's construction schedule.
  - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in the Contractor's construction schedule.
  - 2. Submit the Schedule of Values to the Engineer at the earliest possible date, but no later than seven (7) days before the date scheduled for submittal of the initial Applications for Payment.
- B. Format and Content: Use the 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. Owner's name



- c. Owner's project number
  - d. State Office of Construction (SCO) number
  - e. Name of Engineer
  - f. Engineer's project number
  - g. Contractor's name and address
  - h. Date of submittal
2. Arrange the schedule of values consistent with the format of AIA Document G703.
  3. Provide a breakdown of the Contract sum in enough detail to facilitate the 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.
  4. Provide a separate line item in the schedule of values for each part of the work where the applications for payment may include materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored onsite and items stored offsite.
  5. Overhead Costs, Proportional Distribution: Include the total cost and proportionate share of general overhead and profit for each line item.
  6. Temporary Facilities: Show the cost of temporary facilities and other major cost items that are not the direct cost of actual work-in-place as separate line items.
  7. Closeout Costs: Include separate line items under the Contractor and principal subcontracts for project closeout requirements in an amount totaling five percent of the Contract sum and subcontract amount.
  8. 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.

#### 1.4 APPLICATIONS FOR PAYMENT

- A. Each application for payment following the initial application for payment shall be consistent with the previous applications and payments, as certified by the Engineer and paid for by the Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each application for payment is the period indicated in the Contract.

- C. Application for Payment Forms: Use the payment authorization form provided by the Owner, AIA Document G702 and AIA Document G703 as the form for applications for payment.
- D. Application Preparation: Complete every entry on the form. Notarize and execute by a person authorized to sign legal documents on behalf of the Contractor. The Engineer will return incomplete applications without action.
  - 1. Entries shall match the data on the schedule of values and the Contractor's construction schedule. Use updated schedules if revisions were made.
  - 2. Include the amounts for the work completed following the previous application for payment, whether or not the payment has been received. Include only amounts for work completed at the time of the application for payment.
  - 3. Include amounts of change orders and construction change directives issued before the last day of the construction period covered by the application for payment.
  - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in the application for payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored onsite and items stored offsite.
  - 1. Provide certificate of insurance, evidence of transfer of title to the Owner, and consent of surety to payment for stored materials.
  - 2. Provide supporting documentation that verifies the amount requested, such as paid invoices. Match the amount requested with the amounts indicated on documentation; do not include overhead and profit on stored materials.
  - 3. Provide summary documentation for stored materials indicating the following:
    - a. The value of materials previously stored and remaining stored as of the date of the previous applications for payment.
    - b. The value of previously stored materials put in place after the date of the previous application for payment and on or before the date of the current application for payment.
    - c. The value of the materials stored since the date of the previous application for payment and remaining stored as of the date of the current application for payment.

- F. Transmittal: Submit each payment authorization form and application for payment to the Engineer by a method ensuring receipt within twenty-four (24) hours. Include waivers of lien and similar attachments if required. Transmit each copy with a transmittal form listing the attachments and recording appropriate information about the application for payment.
- G. Waivers of Mechanic's Lien: With each application for payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for the construction period covered by the previous application for payment.
  - 1. Submit partial waivers on each item for the amount requested in the previous application for payment, after the deduction for retainage on each item.
  - 2. When an application for payment shows completion of an item, submit conditional final or full waivers.
  - 3. The Owner reserves the right to designate which entities involved in the work must submit waivers.
  - 4. Submit the final application for payment with or preceded by conditional final waivers from every entity involved with performance of the work covered by the application for payment who is lawfully entitled to a lien.
  - 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to the Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first application for payment include the following:
  - 1. List of subcontractors
  - 2. Schedule of values
  - 3. Contractor's construction schedule (preliminary if not final)
  - 4. Products list (preliminary if not final)
  - 5. Sustainable design action plans, including preliminary project materials cost data
  - 6. Schedule of unit prices
  - 7. Submittal schedule (preliminary if not final)
  - 8. List of Contractor's staff assignments
  - 9. List of Contractor's principal consultants
  - 10. Copies of building permits
  - 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the work
  - 12. Initial progress report
  - 13. Report of preconstruction conference

- I. Final Payment Application: After completing the project closeout requirements, submit the 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. Certification of completion of final punch list items
  3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid
  4. Updated final statement, accounting for final changes to the Contract sum
  5. AIA Document G706
  6. AIA Document G706A
  7. AIA Document G707
  8. Evidence that claims have been settled
  9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of final completion or when the Owner took possession of and assumed responsibility for corresponding elements of the work
  10. Final liquidated damages settlement statement
  11. Proof that taxes, fees, and similar obligations are paid
  12. Waivers and releases

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 013300 - SUBMITTAL PROCEDURES**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

A. This section Includes:

1. Submittal schedule requirements
2. Administrative and procedural requirements for submittals

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting applications for payment and the schedule of values
2. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections
3. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals
4. Section 017839 "Project Record Documents" for submitting record drawings, record specifications and record product data

#### **1.2 DEFINITIONS**

- A. Action Submittals: Written and graphic information and physical samples that require the Engineer'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 the Engineer'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."

#### **1.3 SUBMITTAL SCHEDULE**

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by the dates required by the construction schedule. Include the time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by the Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with the list of subcontracts, the schedule of values, and the Contractor's construction schedule.
2. Final Submittal Schedule: Submit concurrently with the first complete submittal of the Contractor's construction schedule.
  - a. Submit the revised submittal schedule as required to reflect the changes in the current status and timing for submittals.
3. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal
  - b. Specification section number and title
  - c. Submittal Category: Action; informational
  - d. Name of subcontractor.
  - e. Description of the work covered
  - f. Scheduled date for Engineer's approval

#### 1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name
2. Date
3. Name of Engineer
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 the Owner.

- 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 the Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Electronic Submittals: Prepare submittals as a .pdf package, incorporating complete information into each .pdf file. Name the .pdf file with submittal number.

#### 1.5 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual specification sections. The types of submittals are indicated in the individual specification sections.
  - 1. Email: Prepare submittals as a .pdf package and transmit to the Engineer by sending via email. Include a .pdf transmittal form. Include information in the email subject line as requested by the Engineer. The Engineer will return the annotated file. Annotate and retain one copy of the file as a digital project record document file.
- B. Coordination: Coordinate preparation and processing of submittals with the performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Submit all submittal items required for each specification section concurrently unless partial submittals for portions of the work are indicated on approved submittal schedule.
  - 3. Submit Action Submittals and informational submittals required by the same specification section as separate packages under separate transmittals.
  - 4. Coordinate the transmittal of submittals for related parts of the work specified in different sections, so processing will not be delayed because of need to review submittals concurrently for coordination. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on the Engineer's receipt of the submittal. No extension of the Contract time will be authorized because of failure to transmit submittals enough in advance of the work to permit processing, including resubmittals.

1. Initial Review: Allow ten (10) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The Engineer will advise the Contractor when a submittal being processed must be delayed for coordination.
  2. Resubmittal Review: Allow seven (7) days for review of each resubmittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note the date and content of the previous submittal.
  2. Note the date and content of the revision in the label or title block, and clearly indicate extent of revision.
  3. Resubmit submittals until they are marked with approval notation from the Engineer's action stamp.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on the project site. Use only final Action Submittals that are marked with approval notation from the Engineer's action stamp.

#### 1.6 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 specification
    - c. Standard color chart
    - 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. Submit Product Data before shop drawings, and before or concurrently 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
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
  - 1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
  - 2. Identification: Permanently attach label on the unexposed side of the samples that includes the following:
    - a. Project name and submittal number
    - b. Generic description of sample
    - c. Product name and name of manufacturer
    - d. Sample source
    - e. Number and title of applicable specification section
    - f. Specification paragraph number and generic name of each item
  - 3. Email Transmittal: Provide a .pdf transmittal. Include a digital image file illustrating Sample characteristics and identification information for the record.
  - 4. Disposition: Maintain sets of the approved samples at the project site, available for quality-control comparisons throughout the course of the construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples not incorporated into the work, or otherwise designated as the Owner's property, are the property of the Contractor.

5. Samples for Verification: Submit full-size units or samples of size indicated, prepared from same material to be used for the work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected.
  - a. Number of Samples: Submit three (3) sets of Samples. The Engineer will retain two (2) sample sets; the remainder will be returned. Markup and retain one returned sample set as a project record Sample.
    - 1) Submit a single sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a sample, submit at least three (3) sets of paired units that show approximate limits of variations.
- D. Product Schedule: As required in individual specification sections, prepare a written summary indicating types of products required for the work and their intended location. Include the following information in tabular form:
  1. Type of product; include unique identifier for each product indicated in the Contract Documents or assigned by the Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable
  3. Number and name of room or space
  4. Location within room or space
- E. 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 the submittal.
- F. 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 the manufacturer's letterhead, certifying that the manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. **Material Certificates:** Submit written statements on the manufacturer's letterhead, certifying that the material complies with the requirements in the Contract Documents.
5. **Product Certificates:** Submit written statements on the manufacturer's letterhead, certifying that the product complies with the requirements in the Contract Documents.

**G. 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 substrate preparation and primers required.
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.

1.7 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 the Engineer.
- B. Contractor's Approval: Indicate the Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of the Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents. The Engineer will not review submittals received from the Contractor that do not have the Contractor's review and approval.

1.8 ENGINEER'S REVIEW

- A. Action Submittals: The Engineer will review each submittal, indicate corrections or revisions required, and return.
  - 1. .pdf Submittals: The Engineer will indicate, via markup on each submittal, the appropriate action.
- B. Informational Submittals: The Engineer will review each submittal and will not return it or will return it if it does not comply with requirements. The Engineer will forward each submittal to the appropriate party.
- C. Partial submittals prepared for a portion of the work will be reviewed when the use of partial submittals was received prior approval from the Engineer.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. The Engineer will return without review submittals received from sources other than the Contractor.
- F. Submittals not required by the Contract Documents will be returned by the Engineer without action.

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 014000 - QUALITY REQUIREMENTS**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. This section includes administrative and procedural requirements for quality assurance and quality control.
- B. Specific quality-assurance and quality control requirements for individual work results are specified in their respective specification sections. Requirements in individual Sections may also cover production of standard products.
- C. The Contractor shall arrange with roof system manufacturer to provide qualified personnel to instruct the Project Manager, Owner's inspection representative, Owner's field personnel and any other parties designated by the Owner on the proper handling, installation and maintenance of materials. Instruction shall be performed prior to beginning installation of roofing system on the day that tear off begins.
- D. The Contractor shall arrange with the roof system manufacturer to provide qualified personnel to observe field conditions and material installation on a periodic basis (minimum bi-weekly) when field work is in progress. The manufacturer's representative shall submit written reports to the Project Manager listing observations and recommendations. Inspections by the roof system manufacturer are further specified in Division 7.
- E. The Owner reserves the right to retain the services of an inspection representative to provide full-time inspection of the roofing installation. Testing may be performed to determine any deficiencies in the roofing assembly.
- F. The Cost of the Owner's inspection representative will be borne by the Owner until the completion date stated in the Contract for completion of the work. Any inspection/testing services required after this period of time due to Contractor-controlled non-performance shall be borne by the Contractor. Items such as weather, strikes, material production delays, work of other trades, change in scope of work, etc. are not considered within the control of the Contractor. Insufficient crew size, inexperienced crew, delays in material ordering, priority of other work, etc. are considered within the control of the Contractor.
- G. The Contractor shall be required to notify the Inspection Representative twenty-four (24) hours prior to cancellation of any operations, weather conditions permitting.

- H. Work found to be in violation of the Contract Documents or the manufacturer's specifications, or not in conformance with acceptable roofing standards, shall be subject to rejection including complete removal and replacement with new materials at the Contractor's expense.
- I. The inspection representative shall document installed quantities of those materials bid on a unit basis, as well as other materials. These quantities, in consort with the Contractor's records, will be used as basis of payment.
- J. The Contractor shall ensure that the project superintendent and crew foreman including subcontractors are thoroughly familiar with the contract documents and materials information. This includes drawings, specifications, material data sheets, field observation reports, etc. especially procedures, cure times and weather limitations. The personnel are to be instructed on all relevant steps to the work performed. Field observation reports may include revisions to repairs, clarifications, deficiencies and other information. The Contractor is responsible for prompt delivery of the pertinent information to all parties. Work not in full compliance is subject to correction or replacement at no cost to the Owner.

## 1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed onsite for installation of the work and for the completed work.
- C. Installer/Applicator/Erector: The Contractor or another entity engaged by the Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations. The use of trade-specific terminology in referring to a work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Preconstruction Testing: Tests and inspections performed specifically for the project before products and materials are incorporated into the work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the project do not meet this definition.

- E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."
- H. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- I. Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the work, to evaluate that actual products incorporated into the work and completed construction comply with requirements. The Contractor's quality control services do not include contract administration activities performed by the Engineer.

### 1.3 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two (2) or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Engineer regarding the conflict and obtain clarification prior to proceeding with the work. Refer conflicting requirements that are different, but apparently equal, to the Engineer for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to the Engineer for a decision before proceeding.

### 1.4 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality Control Plan: For quality assurance and quality control activities and responsibilities.

- B. Qualification Data: For the Contractor's quality-control personnel.
- C. Permits, Licenses, and Certificates: For the Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the work.

#### 1.5 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality Control Plan, General: Submit quality-control plan within ten (10) days of the Notice of Award, and not less than five (5) days prior to preconstruction conference. Submit in format acceptable to the Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out the Contractor's quality assurance and quality control responsibilities and to coordinate the Owner's quality assurance and quality control activities. Coordinate with the Contractor's construction schedule.
- B. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the work into compliance with standards of workmanship established by the Contract requirements and approved mockups.

#### 1.6 REPORTS AND DOCUMENTS

- A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other sections. Include the following:
  - 1. Name, address, telephone number, and email address of technical representative making report
  - 2. Statement on condition of substrates and their acceptability for installation of product
  - 3. Statement that products at the project site comply with requirements
  - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken
  - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements
  - 6. Statement of whether conditions, products, and installation will affect the warranty
  - 7. Other required items indicated in individual specification sections



## 1.7 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance.
- D. Manufacturer's Technical Representative Qualifications: An authorized representative of the manufacturer who is trained and approved by the manufacturer to observe and inspect installation of the manufacturer's products that are similar in the material, design, and extent to those indicated for this project.
- E. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

## **PART 2 - PRODUCTS (Not Used)**

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## **PART 3 - EXECUTION**

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### 3.1 REPAIR AND PROTECTION

- A. On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes. Provide materials and comply with installation requirements specified in other specification sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

- B. Protect construction exposed by or for quality control service activities.
- C. Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION**

## **SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. This section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements: Section 011000 "Summary" for work restrictions and limitations on utility interruptions

#### **1.2 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. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- C. Moisture- 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 the completed work, and requirements for replacing water-damaged work.
  - 2. Indicate methods to be used to avoid trapping water in the finished work.

#### **1.3 QUALITY ASSURANCE**

- A. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines.

## **PART 2 - PRODUCTS**

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### **2.1     MATERIALS**

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

### **2.2     TEMPORARY FACILITIES**

- A.   Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations. 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**

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### **3.1     TEMPORARY FACILITIES**

- 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. 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 the Owner's property.

### **3.2     INSTALLATION**

- A.   Locate facilities where they will serve the project adequately and result in minimum interference with performance of the work. Relocate and modify facilities as required by progress of the work. 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. 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. Use of Permanent Toilets: Use of the Owner's existing toilet facilities is not permitted.
- B. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
- C. Water and Electric: Use of available existing electrical and water services incidental to construction is permitted. The Contractor is responsible for providing any required electrical and water utilities required that are above the capacity of the Owner's existing systems.
- D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- E. Ventilation:
  - 1. Provide, as required, facilities to maintain specific storage conditions as described within this specification.
  - 2. Adhesives, solvents and other chemicals will be used for the installation of the roof system. Provide adequate ventilation of enclosed areas to prevent the accumulation of fumes, vapors, and gases.
  - 3. Existing facilities may not be used for storage during construction.

### 3.4 SUPPORT FACILITIES INSTALLATION

- A. 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.
- B. Parking: Use designated areas of the Owner's existing parking areas for construction personnel.

- C. Storage and Staging: Use designated areas of the project site for storage and staging needs.
- D. Project Signs: Provide project signs as indicated. Unauthorized signs are not permitted.
  - 1. Identification Signs: Provide project identification signs as indicated on the Contract Drawings.
  - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to the project. Provide temporary, directional signs for construction personnel and visitors.
  - 3. Maintain and touch up signs, so they are legible at all times.
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.
- F. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- G. Interior access via roof hatch is not permitted. Contractor shall provide stairs and scaffolding for roof access at all times during construction. The Contractor providing the scaffolding shall provide covered/protected exits at each building exit location to meet OSHA regulations and as required to protect pedestrians.

### 3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at the project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- 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. Comply with work restrictions specified in Section 011000 "Summary."

- C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- D. 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. Where work is being performed directly over building entrances that must remain open, provide scaffolding tunnels with 3/4-inch plywood top.
- E. The Contractor shall be responsible for guarding against fires and shall provide suitable and adequate fire extinguishers conveniently located at the site. Competent operators shall be in attendance at all times equipment is subject to use.
- F. The Contractor is responsible for providing all necessary chutes, tarps, or other measures required to protect the walls, sidewalks, streets, parking areas and other work from damage, soiling, staining, etc., that could result from construction activity of this Contract. Any damage caused by construction activity shall be repaired by the Contractor at his own expense.
- G. All plants around the building shall be protected by the Contractor. The Contractor shall fine grade any lawn area which is disturbed and shall reseed after work is complete. The General Contractor will coordinate with the Owner to trim trees and shrubs as required for access to the work in this project.
- H. Plywood, 3/4-inch thick, and/or other suitable materials shall be placed beneath hoists, and other such roof level locations subject to concentrated equipment and foot traffic.
- I. Roof traffic is to be confined to the work areas. The Contractor shall be responsible for repairs and leaks that develop in traffic areas which are a result of the Contractor's negligence.
- J. Parapets, walls, or open roof edges adjacent to loading or unloading areas shall be protected using canvas tarpaulins. Plastic or felt is not acceptable.
- K. Adhesives, solvents and other chemicals will be used for the installation of the roof system. The Contractor shall cover any roof top air intakes during use of adhesives and solvents in the area around the intakes to prevent fumes from entering the building. The Contractor shall coordinate with the owner the shutting of and covering of the air intakes with the owner.
- L. Work shall be coordinated to prevent working over newly completed roof areas.

- M. Telephone numbers shall be given to the Project Manager for contacting the Superintendent and Foreman during off hours and weekends.

3.6 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a twenty-four (24) hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until final completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than final 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 the Contractor. The Owner reserves right to take possession of project identification signs.
  - 2. At Final Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

**END OF SECTION**



## **SECTION 016000 - PRODUCT REQUIREMENTS**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. This section includes administrative and procedural requirements for selection of products for use in the project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for Contractor requirements
  - 2. Section 017700 "Closeout Procedures" for submitting warranties

#### **1.2 DEFINITIONS**

- A. Products: Items obtained for incorporating into the work, whether purchased for the project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by the manufacturer's product name, including make or model number or other designation shown or listed in the manufacturer's published product literature that is current as of the date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
  - 3. Comparable Product: Product by a named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products", to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: 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. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
  - C. 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 or substitution request, if applicable.
  - D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
    1. Identification of basis-of-design product or fabrication or installation method to be replaced, including specification section number and title and drawing numbers and titles
    2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products"
  - E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures"
  - F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.
- 1.3 QUALITY ASSURANCE
- A. Compatibility of Options: If the Contractor is given option of selecting between two or more products for use on the project, select product compatible with products previously selected, even if previously selected products were also options.
  - B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.

#### 1.4 MANUFACTURER'S INSTRUCTIONS

1. Work shall be performed in accordance with the the material manufacturer's specifications as modified by the Contract Documents.
2. Conflicts between the Contract Documents and the material manufacturer's specifications shall be brought to the attention of the Project Manager prior to beginning construction. Work in this area shall not proceed until conflicts are satisfactorily resolved by the Project Manager.
3. Provide Material Safety Data Sheets (MSDS) for all materials brought on the site.

#### 1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

#### 1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with the manufacturer's written instructions.
- B. Delivery and Handling:
  1. Schedule delivery to minimize long-term storage at the project site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  3. Deliver products to the project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at the project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger the project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with the product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at the project site for storage of materials and equipment by the Owner's construction forces. Coordinate location with the Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Written standard warranty form furnished by an individual manufacturer for a particular product and issued in the name of the Owner or endorsed by the manufacturer to the Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for the Owner and issued in the name of the Owner or endorsed by manufacturer to the Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include project-specific information and properly executed.
  2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
  3. See other sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

## **PART 2 - PRODUCTS**

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### **2.1 PRODUCT SELECTION PROCEDURES**

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. The Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
  4. Where products are accompanied by the term "as selected," the Owner and/or the Engineer will make the selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

7. Submit additional documentation required by the Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.

B. Product Selection Procedures:

1. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for the Contractor's convenience will be considered unless otherwise indicated. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
2. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for the Contractor's convenience will be considered unless otherwise indicated. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on the drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

- C. Visual Selection Specification: Where specifications include the phrase "as selected by the Owner from the manufacturer's full range" or a similar phrase, select a product that complies with requirements. The Owner will select color, gloss, pattern, density, or texture from the manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: The Engineer will consider the Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, the Engineer may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the work
  2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
  3. Evidence that proposed product provides specified warranty
  4. List of similar installations for completed projects, with project names and addresses and names and addresses of the Engineers and owners, if requested
  5. Samples, if requested
- B. Engineer's Action on Comparable Products Submittal: If necessary, the Engineer will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures"
  2. Use product specified if the Engineer does not issue a decision on use of a comparable product request within time allocated
- C. Submittal Requirements, Two-Step Process: Approval by the Engineer of the Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 017419 - CLEANING UP**

### **PART 1 - GENERAL**

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#### **1.1 RELATED DOCUMENTS**

- A. The drawings and general provisions of the Contract, including the General and Supplementary Conditions and Division 1 Specification Sections, apply to the work of this section.

#### **1.2 REMOVAL OF DEBRIS**

- A. All debris and waste materials shall become the property of the Contractor and the Contractor shall be responsible for removal of the debris from the project site on a daily basis or as approved by the Owner.
- B. Demolition debris shall be removed in covered trucks or other method that prevents debris, litter, dust, etc. from falling onto streets, sidewalks or soil. Streets, sidewalks and other public and private spaces shall be kept clean and free from debris at all times.
- C. The Contractor shall be responsible for the cleanup of streets, driveways, sidewalks and landscaping. Failure to clean promptly (within one day's notice) will result in the Owner having areas cleaned and deducting costs for same from the Contractor's contract.
- D. No storage of debris or trash will be allowed on the exterior of the building.
- E. The Contractor shall be responsible for cleanup of the property and adjacent properties affected by construction activities including, the roof, sidewalks, building walls, windows, roofs, parking lot, streets, lawns, landscape areas etc.

#### **1.3 DUST AND DEBRIS**

- A. The Contractor shall not allow debris and dust to accumulate on adjacent public streets and driveways as a result of the work of this project.
- B. The measures to be used to prevent littering the pavement shall include (but does not constitute the only measure to be used, if necessary) the following:
  - 1. Maintain dust control.
  - 2. Wash and/or sweep paved areas.



3. Pick up droppings as they occur.
4. Clean existing roofs, parking lots, sidewalks and landscaped areas.

1.4 CLEANING UP

- A. Before final inspection and acceptance of the project, clean work under the Contract, including roofs, staging areas and building perimeters (sidewalks, parking, lot, etc.)

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 017700 - CLOSEOUT PROCEDURES**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. This section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
  - 1. Final completion procedures
  - 2. Warranties
  - 3. Final cleaning
- B. Related Requirements:
  - 1. Section 012900 "Payment Procedures" for requirements for Application for Payment for Final Completion
  - 2. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data

#### **1.2 DEFINITIONS**

- A. List of Incomplete Items: The Contractor-prepared list of items to be completed or corrected, prepared for the Engineer's use prior to the Engineer's inspection, to determine if the work is complete.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of cleaning agent
- B. Contractor's List of Incomplete Items: Initial submittal at Final Completion
- C. Certified List of Incomplete Items: Final submittal at Final Completion

#### **1.4 CLOSEOUT SUBMITTALS**

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

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other sections

1.6 FINAL 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. Inspection: Submit a written request for inspection a minimum of ten (10) days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, the Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Engineer will prepare the certificate of completion after inspection or will notify the Contractor of items, either on the Contractor's list or additional items identified by the Engineer, that must be completed or corrected before certificate will be issued.
  - 1. Request reinspection when the work identified in previous inspections as incomplete is completed or corrected.
  - 2. Results of completed inspection will form the basis of requirements for final completion.
- C. Inspection: Submit a written request for final inspection to determine acceptance a minimum of ten (10) days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, the Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Engineer will prepare a final Certificate for Payment after inspection or will notify the Contractor of construction that must be completed or corrected before certificate will be issued. Request reinspection when the work identified in previous inspections as incomplete is completed or corrected.
- D. Submittals Prior to Final Completion: Complete the following a minimum of ten (10) days prior to requesting inspection for determining date of final completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting the Owner unrestricted use of the work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

#### 1.7 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of the Engineer for designated portions of the work where warranties are indicated to commence on dates other than date of final completion, or when delay in submittal of warranties might limit the Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- C. Warranty Electronic File: Provide warranties and bonds in .pdf format. Assemble complete warranty and bond submittal package into a single electronic .pdf file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document. Submit by email to the Engineer.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.
- E. Guaranty/warranty shall state name of project, location, name of the Owner, name of the Contractor and Manufacturer, and date of final acceptance. The date of final acceptance will be as determined by the Project Manager for the entire system.
- F. All costs for guaranties/warranties shall be included in the base bid.
- G. Total System Guaranty/Warranty:
  1. The roofing membrane manufacturer shall provide written guaranty/ warranty covering defects in materials, and workmanship for a period of twenty (20) years after acceptance of the roof by the Project Manager. The membrane manufacturer shall promptly repair or replace defective work reported within this period, at no cost to Owner. Leaks occurring during normal weather conditions, excluding tornado, lightning, and hailstorm, or winds in excess of 85 mph shall be deemed conclusive evidence of materials and/or workmanship deficiencies. Corrective action required by this guaranty/warranty is not limited to repair of leaks, but also includes repair or replacement where work is defective even though leaks may not have occurred such as wind damage in lieu of total loss.

2. The guaranty/warranty shall cover total system including membrane and flashing, fasteners, membrane manufacturer's metal flashing, adhesives, sealants, thermal barrier, thermal insulation, insulation protection layer and related accessories as supplied and/or approved by the roof system manufacturer.
  3. The guaranty/warranty shall cover wind speeds up to 85 mph as measured and recorded at closest official reporting station.
  4. Within 24 hours of receiving notification of roof leaks, weather permitting, the membrane manufacturer shall begin repair or replacement work as required to bring roof to a leak-free condition and maintain guaranty/warranty. When weather or other conditions do not permit such work to be accomplished immediately, temporary protection shall be provided as required to prevent water damage to buildings and contents. Temporary measures which may be employed by the Owner to protect his property shall not void this guaranty/ warranty nor in any way reduce obligations imposed upon the membrane manufacturer by this guaranty/warranty.
- H. Roofing Contractors Warranty: The roofing contractor shall warrant all work covered under this Contract to remain free from any water penetration and physical defects caused by defective workmanship for a period of three (3) years from date of final acceptance by Project Manager. The Contractor's guaranty/warranty shall neither replace nor negate any agreement furnished by the membrane manufacturer.
- I. Exterior Insulation and Finish System (EIFS) Warranty
1. The EIFS manufacturer shall provide a guaranty-warranty which shall include a ten (10) year material warranty against defective materials.
  2. The Contractor shall provide a guaranty-warranty against defective workmanship for a period of three (3) years following completion and acceptance of the project.
- J. Sheet Metal Warranty
1. Sheet Metal Finish: The manufacturer shall warrant the finish against cracking, peeling, loose of adhesion, excess chalking, and excess color change for a period of twenty (20) years.
  2. Pre-Manufacturer Sheet Metal System: The manufacturer shall provide a finish warranty as stated in Subsection "B" and a Lifetime 120 mph wind warranty for all roof edge systems.

## **PART 2 - PRODUCTS**

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### **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**

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### **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 the manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Final Completion for entire project or for a designated portion of Project:
    - a. Clean all roof, construction areas, adjacent areas and drainage systems. Clean interior and surfaces exposed to view; remove stains and foreign substances. Clean equipment as required. Clean roof membrane with methods approved by the membrane manufacturer.
    - b. Clean the project site of rubbish, waste material, litter, and other foreign substances.
    - c. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - d. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
    - e. Remove tools, construction equipment, machinery, and surplus material from the project site.
    - f. Clean strainers.
    - g. Leave the project clean and in same or better condition.
- C.    Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations required before requesting inspection for determination of Final Completion.

**END OF SECTION**

## **SECTION 017839 - PROJECT RECORD DOCUMENTS**

### **PART 1 - GENERAL**

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#### **1.1 RELATED DOCUMENTS**

- A. The drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 01 Specification Sections apply to this section.

#### **1.2 SUMMARY**

- A. This section includes administrative and procedural requirements for the project record documents, including the following:
  - 1. Record Drawings
  - 2. Record specifications
  - 3. Record Product Data
  - 4. Miscellaneous Record Submittals
- B. Related Requirements: Section 017700 "Closeout Procedures" for general closeout procedures

#### **1.3 CLOSEOUT SUBMITTALS**

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set 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 (1) set of file prints.
      - 2) The Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 1) Submit .pdf electronic files of scanned Record Prints and one (1) set of file prints.
      - 2) Print each drawing, whether or not changes and additional information were recorded.



- B. Record Product Data: Submit annotated .pdf electronic files and directories of each submittal. Where record product data are required as part of operation and maintenance manuals, submit duplicate marked-up product data as a component of manual.

#### 1.4 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. Changes made by change order or construction change directive
    - d. Changes made following Engineer's written orders
    - e. Details not on original Contract Drawings
    - f. Field records for variable and concealed conditions
    - g. 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.
  - a. Name of Engineer
  - b. Name of Contractor

#### 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 the project record documents as they occur; do not wait until end of the project.
- B. Preparation: Mark product data to indicate the actual product installation where installation varies substantially from that indicated in the 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 the 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 an annotated .pdf electronic file. Include record product data directory organized by specification section number and title, electronically linked to each item of record product data.

#### 1.7 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other specification sections for miscellaneous record keeping and submittal in connection with actual performance of the work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as .pdf electronic file. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 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 the project record documents for the Engineer's reference during normal working hours.

**PART 2 - PRODUCTS (Not Used)**

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**PART 3 - EXECUTION (Not Used)**

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**END OF SECTION**

## **SECTION 024119 - SELECTIVE DEMOLITION**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. Section Includes: Demolition and removal of selected portions of the existing roof assembly. See roof plans and details for specific information regarding the existing roof assemblies and the extent of selective demolition required. Demolition shall include the following:
1. Removal of the existing roof membrane, cover board, thermal insulation, and membrane flashings down to the existing gypsum and metal roof deck as designed on the roof plan
  2. Removal and disposal of existing collector heads and downspouts
  3. Removal and disposal of existing sheet metal flashings, expansion joint covers, counterflashings, scuppers etc., unless noted otherwise on the drawings
  4. Removal and disposal of existing roof hatch
  5. Removal and disposal of existing damaged or deteriorated wood blocking
  6. Elimination of the existing abandoned curbs and piping as shown on the drawings
  7. Restoration/replacement of any damage or deteriorated metal roof deck on the penthouse roof (See unit prices)
  8. Repair of shallow damaged areas in the lightweight gypsum roof deck (See unit Prices)
  9. Removal any damaged lightweight gypsum fill and form board (See unit prices) and replaced with new as shown on the drawings and specified herein
- B. Related Requirements: Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.

#### **1.2 DEFINITIONS**

- A. Remove: Detach items from the existing construction and dispose of them offsite unless indicated to be salvaged or reinstalled.
- B. Remove and Reinstall: Detach items from the existing construction in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- C. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

- D. Dismantle: Remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces, disposing of items unless indicated to be salvaged or reinstalled.

### 1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes the property of the Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to the Owner that may be uncovered during demolition remain the property of the Owner. Carefully salvage in a manner to prevent damage and promptly return to the Owner.

### 1.4 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit a report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure the Owner's building managers' and other tenants' onsite operations are uninterrupted.
  - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services
  - 4. Use of elevator and stairs
  - 5. Coordination of the Owner's continuing occupancy of portions of the existing building and of the Owner's partial occupancy of the completed work
- C. Pre-Demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit before the work begins.

- D. Prior to demolition inspect the bottom (interior) of the roof deck. Identify any existing piping, wiring, conduit, installed against the roof deck as well as any pipe hangers, ceiling grid hangers, etc., that have been attached to the bottom of the deck. Notify the Owner of such conditions. Do not start demolition if conditions existing that may result in loss of connections of existing piping, electrical, date, ceiling grid, etc.
- E. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

#### 1.5 FIELD CONDITIONS

- A. The Owner will occupy portions of the building immediately adjacent to the selective demolition area. Conduct selective demolition so the Owner's operations will not be disrupted
- B. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner as far as practical.
- C. Notify the Engineer of discrepancies between existing conditions and Contract Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the work. If suspected hazardous materials are encountered, do not disturb. Immediately notify the Engineer and Owner. Hazardous materials will be removed by the Owner under a separate contract.
- E. Storage or sale of removed items or materials onsite is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations. Maintain fire-protection facilities in service during selective demolition operations.

#### 1.6 COORDINATION

- A. Arrange the selective demolition schedule so as not to interfere with the Owner's operations. Submit the following in accordance with the Conditions of the Contract and Division 1 specification sections.
  - 1. Schedule indicating proposed sequence of operations for selective demolition work to Owner's representative for review prior to start of work. Include methods and procedures for dust and noise control protection and disposal.

2. Photographs or video of existing conditions of surfaces, equipment, and adjacent construction, if any, that might be misconstrued as damage related to removal operations. File with the Owner's representative prior to start of work.
3. Update scheduling of selective demolition with the Owner's representative and the Engineer each week.
4. List of know existing issues related to the roof, staging areas, etc. These would include existing leaks, damaged roof deck, damaged parking areas, sidewalk, landscaping, and buildings walls or other deficiencies.

## **PART 2 - PRODUCTS**

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### **2.1 PERFORMANCE REQUIREMENTS**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

## **PART 3 - EXECUTION**

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### **3.1 EXAMINATION**

- A. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.

### **3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

- A. Existing Services/Systems to Remain: Maintain services/systems and protect them against damage.

### **3.3 PROTECTION**

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of the building.

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Remove temporary barricades and protections where hazards no longer exist.

### 3.4 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the work within limitations of the governing regulations and as follows:

1. Proceed with selective demolition systematically, from the higher to the lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Do not use cutting torches.
3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of offsite.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors or framing.
5. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways and other adjacent occupied and used facilities.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.



4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports and miscellaneous materials necessary to make item functional for the use indicated.

- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Engineer, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete. Damage to existing items to remain shall be replaced with equivalent materials (as determined by the Engineer) at the Contractor's sole expense.

### 3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Roofing: Remove no more existing roofing than what can be covered by the end of the day by new roofing and such that building interior remains watertight and weathertight. See Section 075419 "Polyvinyl-Chloride (PVC) Roofing" for new roofing requirements.
  1. Remove existing roof membrane, flashings, copings and roof accessories.
  2. Remove existing roofing system as noted in Section 070150.19 "Preparation for Reroofing."

### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from the project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to the authorities having jurisdiction.
  1. Do not allow demolished materials to accumulate onsite.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to the condition existing before selective demolition operations began.

**END OF SECTION**

**SECTION 035420 - CEMENTITIOUS LIGHTWEIGHT POURED ROOF DECK (REPLACEMENT/RESTORATION)**

**PART 1 - GENERAL**

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**1.1 SECTION INCLUDES**

- A. Provide and install new cementitious lightweight roof deck and all related accessories at all deteriorated or otherwise damaged roof deck areas as specified herein and shown on the drawings.
- B. Restoration of existing structural steel surfaces.

**1.2 RELATED SECTION**

- A. Demolition for roofing (Section 024119)
- B. Thermal Roof Deck Insulation (Section 072223)

**1.3 QUALITY ASSURANCE**

- A. Qualifications of Installer:
  - 1. Installer (Contractor) of cementitious lightweight roof deck shall have a minimum of five (5) years of experience in erecting comparable metal deck systems/surface restoration.
- B. Qualifications of Manufacturer:
  - 1. Source: Products shall be of a single manufacturer for same function (i.e., roof, etc.) unless specifically noted otherwise.
- C. Reference Standards:
  - 1. Some products and execution are specified in this section by reference to published specifications of standards of the following (with respective abbreviations used):
    - a. American Society for Testing and Materials (ASTM)
    - b. Factory Mutual Research Corporation (FM)
    - c. Underwriters Laboratories (UL)

D. Design Criteria:

1. Cementitious lightweight roof deck and section properties shall comply with requirements of AISI Specifications and ASTM C317/317M Standard Specification for Gypsum Concrete.
2. Cementitious lightweight roof deck installation shall comply with FM 1-28, and Class 1-90.

1.4 SUBMITTALS

A. Shop Drawings:

1. Show details, schedules, procedures and diagrams indicating sequence of erection.
2. Wherever possible, details and sections shown on the Shop Drawings shall be identified by the use of the same marks used on the Contract Drawings.
3. Shop Drawings shall indicate size, depth and spacing.
4. Only Shop Drawings that have been stamped "Approved" by the manufacturer and the Contractor will be acceptable.

B. Samples:

1. Submit samples (in duplicate) of the following:
  - a. Proposed cementitious lightweight decking (minimum 12-inch by 12-inch)
  - b. Gypsum form board (minimum 12-inch by 12-inch)
  - c. All accessories for use with cementitious lightweight deck

C. Product Data:

1. Submit (in pdf format) the manufacturer's printed specifications and product data on products specified herein to indicate compliance with requirements of this section.
2. Rust-Inhibiting Paint/Primer: Provide documentation in form of the manufacturer's written instructions for surface treatment and application procedures. Provide for each type of paint/primer used.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Handle materials in accordance with the manufacturer's printed instructions and in a manner to prevent deformation and scarring.
- B. Store materials off of ground with one end elevated to provide drainage. Store in an area to prevent physical damage.
- C. Protect materials from the elements with waterproof sheeting covering materials and adequate ventilation to prevent condensation.

1.6 INTERIOR PROTECTOIN

- A. The Contractor shall coordinate with the owner the removal of existing and installation of new gypsum form board and lightweight gypsum roof deck.
- B. The Contractor shall provide interior protection where existing roof deck is to be removed and replaced. Protection shall include, at a minimum, removal of ceiling tiles, removing or covering furnishing and finishes, protecting piping, wiring data cable, etc., above ceiling tiles.
- C. The Contractor shall be responsible for cleaning any debris that enters the interior space and replacing/repairing and damages interior finishes and furnishings.

**PART 2 - PRODUCTS**

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2.1 ACCEPTABLE ROOF DECK MANUFACTURERS

- A. United States Gypsum Company - USG
- B. Approved equal

2.2 MATERIALS:

- A. Cementitious Lightweight Roof Deck:
  - 1. Permanent Formboard: 1-inch Type X Gypsum Liner Panels with glass mat finish, width to match existing bulb-tee spacing x 48 inches long minimum (joist spacing – field verify).
  - 2. Reinforcing Mesh: 6x6-W1.4/ W1.4 WWM with a minimum 0.028 in<sup>2</sup>/ft. in each direction or KEYDECK galvanized steel woven wire mesh

3. Plaster Bonder: USG Plaster Border
  4. Gypsum Concrete: USG Securock Gypsum-Concrete (Formerly Pyrofill), mill formulated complying with ASTM C317, Class A, 500 psi ultimate minimum compressive strength.
  5. Water: Potable, without impurities or ice crystals
- B. Rust-Inhibiting Paint/Primer (For Metal Surfaces):
1. For Galvanized Surfaces: Shall be two (2) coat system consisting of base coat and finish coat. Paint/primer shall be specifically formulated for galvanized decking and shall be approved by the Deck Manufacturer.
  2. For Non-Galvanized Surfaces: Shall be Speedy-dry system 1573 rust-inhibiting primer as manufactured by the Rust-Oleum Corporation or equal.

### **PART 3 - EXECUTION**

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#### **3.1 EXAMINATION**

- A. The Contractor shall examine areas to receive cementitious lightweight roof decking and shall examine conditions under which units will be installed. The Contractor shall notify the Project Manager in writing of conditions detrimental to proper and timely completion of the work of this section.
- B. The work of this section shall not proceed until satisfactory/approved interior protection is in place and complete.

#### **3.2 ROOF DECK DEMOLITION**

- A. Roofing: Remove the existing roofing materials, taking care not to damage the gypsum deck surface. Use planking to distribute the load of equipment that is used to carry the material to the disposal area. Rolling or heavy loads may damage the existing deck. Do not remove more roofing than can be replaced in the same day.
- B. Gypsum: Remove powdery or wet and spongy gypsum back to solid gypsum, leaving about 2-3 inches of the reinforcing mesh exposed.
- C. Formboard: Remove formboards that are cracked, broken or otherwise damaged. Formboards that have water stains may be left in place if they are still solid.

- D. Sub-Purlins and Cross Tees: Remove only if they are severely damaged.
- E. Comply with requirements of Section 02 41 19 of this specification for demolition and removal of materials.

### 3.3 ERECTION

- A. Sub-Purlins: Place sub-purlins at spacing required and weld to supports at each contact point. Use fillet welds 1/2-inch minimum long placed on alternate sides and on both sides at end joints.
- B. Formboards: Place formboards on sub-purlin flanges with all ends or cross joints supported. Cut to fit at walls, curves, and openings as required.
- C. Cross Tees: Install cross tees to support end joints of formboards not supported by roof framing.
- D. Reinforcement Placement: Place reinforcing mesh with at right angles to sub-purlins. Lap mesh ends at least 6 inches but do not lap sides of mesh. Place mesh in all areas where gypsum concrete is to be poured. New mesh must be tied to the existing mesh to maintain structural continuity of the deck system.
- E. Plaster Bonder: Apply plaster bonder direct from can using a brush or roller over areas of gypsum that are to be patched.
- F. Gypsum Concrete: Mix gypsum concrete with 8-1/2 gallons of water per bag of gypsum using a paddle blade mixer and a 1/2-inch drill. Use heated water when the temperature is below 40 degrees. Add gypsum to the water, mixing until the material has a consistency of cake batter. Pour over formboard or existing deck to a 2-inch minimum thickness and screed to a smooth, even plane, ready for roofing. Keep equipment clean to avoid flash set of the gypsum.

### 3.4 FIELD REVIEW

- A. Notify the Engineer at least 24 hours in advance to schedule field personnel when the system is completed and ready for field review by the Engineer.

### 3.5 CORRECTION OF WORK

- A. Correct deficiencies in cementitious lightweight roof deck work where inspections have indicated that work is not in compliance with Contract Documents.

- B. Correction of work will be at no additional expense to Owner and no allowance will be made for extension of time.

3.6 WORKMANSHIP

- A. Work of this section which does not conform to specified requirements shall be corrected and/or replaced as directed by Project Manager, at the Contractor's expense without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**



## **SECTION 053100 - STEEL ROOF DECK**

### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

- A. Provision and installation of additional deck fasteners as necessary to comply with requirements of applicable Factory Mutual (FM) Standards
- B. Maintenance, repair or placement of discrepant existing metal deck through one of the following methods specified:
  - 1. Maintenance and restoration of slightly rusted but otherwise structurally sound areas of metal deck encountered during tear-off of designated roof areas. Procedure is specified in Part 3.02 of this section.
  - 2. Repair of discrepant metal deck areas with flat sheet. Procedure is specified in Part 3.03 of this section.
  - 3. Repair of discrepant metal deck areas with an overlay of new metal deck. Procedure is specified in Part 3.04 of this section.
  - 4. Replacement of metal deck areas (involving removal of existing discrepant deck panels). Procedure is specified in Part 3.05 of this section.

Note: While the Contractor's responsibilities described herein include inspection of deck surfaces and attachment conditions, the Project Manager shall direct which of remedies are needed and are to be implemented on existing deck areas. Document quantities of such corrective action for payment.

#### **1.2 RELATED SECTIONS**

- A. Selective Demolition (Section 024119)
- B. Rough Carpentry (Section 061053)

#### **1.3 REFERENCES**

- A. American Society for Testing Materials (ASTM), Annual Book of Standards
- B. ASTM A525-93, Specifications for General Requirements for Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process
- C. Steel Deck Institute (SDI)

#### 1.4 QUALITY ASSURANCE

- A. Application shall conform to procedures recommended by the Steel Deck Institute (SDI), American Iron and Steel Institute (AISI) and shall conform to ASTM Standards.

1. Qualifications of Installer:

- a. Installer (Contractor or subcontractor) of steel roof deck shall have a minimum of five (5) years of experience in erecting comparable metal deck systems/surface restoration.
- b. Submit (in .pdf format) letter stating experience. The letter shall be on company letterhead signed by an officer of company. The letter shall list at least five (5) remedial metal roof deck projects (concurrent with roofing) installed by the Contractor comparable to this project, stating name of project, location, name of the Owner, name of the prime Contractor, date of installation, square feet of metal deck in each project, name of the manufacturer of metal decking, manufacturer's product designation and description, method of securing deck to support and method of fastening side laps.

2. Qualifications of Manufacturer:

- a. Standard: For purposes of designating type and quality for work under this section, drawings and specifications are based on products manufactured or furnished by manufacturers who are members of The Steel Deck Institute.
- b. Source: Products shall be of a single manufacturer for same function (*i.e.*, roof, etc.) unless specifically noted otherwise.

3. Design Criteria:

- a. Metal roof deck and section properties shall comply with requirements of AISI Specifications and SDI manual "Design Manual for Composite Decks, Form Decks, and Roof Decks.
- b. Metal roof deck installation shall comply with FM 1-28, Class 1, 1-60 and Zone 2.
- c. Samples: Submit samples (in duplicate) of the following:
  - (1) Proposed new metal decking (minimum 12 inches by 16 inches) two (2) full ribs
  - (2) All fasteners for use with metal deck securement

4. Product Data: Submit (in .pdf format) the manufacturer's printed specifications and product data on products specified herein to indicate compliance with requirements of this section.

5. Certificates: Submit (in .pdf format) the manufacturer's certification that materials furnished for use on the project comply with requirements of the Contract Documents.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store all materials in a weather-protected environment, clear of ground contact and moisture.
- B. Properly support deck panels during storage and handling to avoid deformation and rejection.

**PART 2 - PRODUCTS**

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2.1 ACCEPTABLE ROOF DECK MANUFACTURERS

- A. Bowman Construction Products
- B. Consolidated Systems, Inc.
- C. Roll-Form Products, Inc.
- D. Vulcraft Division, Nucor Corp.
- E. Wheeling Corrugating Co.

2.2 MATERIALS

- A. Steel Deck:
  - 1. New steel deck shall be 1-1/2-inch 22-gauge, wide rib, complying with application parameters recommended by the SDI. Product shall have G-90 coating and shall comply with ASTM A-525. The Contractor shall verify type prior to ordering material.
  - 2. Replacement steel deck shall duplicate existing gauge and rib profile and comply with application procedures recommended by the SDI. Product shall have G-90 coating and conform to ASTM A-525.
- B. Fasteners:
  - 1. Deck Attachment Screws: Shall be Teks Self-Drilling No. 5 as manufactured by Buildex Division of Illinois Tool Works, Inc. Product shall be used to secure deck sheets to steel framing.
  - 2. Side Lap Stitching Screws: Shall be Teks No. 3 as manufactured by Buildex Division of Illinois Tool Works, Inc. Product listed in Item No. 1 shall be used to secure deck sheets to steel framing at side lap intersection lines.

- C. Primer: Shall be a gray, VOC-compliant, moisture-curing urethane zinc-rich primer designated and approved for use as a steel deck rust inhibitor as manufactured by Sherwin-Williams Company List as Corothane 1. Primer shall be formulated for G-90 coating.
- D. Flat Metal: Shall be 20-gauge galvanized conforming to ASTM A-525, G-90. Closure strips shall be a minimum of 6 inches wide. Closure plates shall be a minimum of 12 inches square, sized as required to extend a minimum of 4-1/2-inch past opening in deck on all sides.

### 2.3 FABRICATION

- A. Deck Units: Shall be formed in maximum practical lengths to span two (2) or more support spacings with flush ends and nesting side laps. End laps shall be located over supporting members. Minimum end lap shall be 4 inches.
- B. Metal Closure Strips:
  - 1. Form metal closure strips to close openings between decking and other related construction. Form to configuration required to provide tight-fitting closures at open ends of ribs and sides of decking.
  - 2. Fabricate closures (dimensions as required) from material as listed in Part 2.02 of this section.

### 2.4 INSPECTION (DECK REPAIR AREAS)

- A. Carefully inspect areas of deck to determine which (if any) of the procedures described in Part 1.01 B of this section are applicable. Coordinate this work with the Project Manager.
- B. Quantities of this work shall be documented for payment in accordance with unit price items contained in Section 01 22 00 and as shown on the bid form..

## **PART 3 - EXECUTION**

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### 3.1 PARAMETERS FOR THE RESTORATION OF DECKS (ROOF REPLACEMENT AREAS)

- A. Only proceed with deck repair/replacement when weather conditions allow for completion of entire process. Due to operations below, this item may require work during off-hours, shutdowns and/or weekends.

- B. Provide complete and functional protection beneath removal areas. The Contractor is responsible for debris cleanup. The work of this section shall not proceed until satisfactory/ approved interior protection is in place and complete.

### 3.2 RESTORATION OF RUSTED YET STRUCTURALLY SOUND DECKING

- A. Areas shall be wire-brushed to a sound surface. Presentation of bright metal is not required; however, complete removal of rust and scale is required prior to painting. Power tooling (electric wire wheel) may be required.
- B. Prime-coat with Sherwin-Williams Corothane 1 zinc primer applied in compliance with the manufacturer's instructions.

### 3.3 DECK REPAIR WITH FLAT SHEET (18 INCHES SQUARE)

- A. This repair is intended for rusting holes or pitting through deck surface compromising areas not larger than 7 inches on a side and involving no more than one (1) flute (rib).
- B. Install a 20-gauge galvanized sheet (18 inches square) extending beyond discrepant area by 4-1/2-inch (minimum).
- C. Attach to existing deck with self-drilling stitching screws 6 inches on center around periphery of new flat sheet.

### 3.4 STEEL DECK REPAIRS USING OVERLAY OF NEW METAL DECK

- A. This repair is intended for rusting, holes or compromised areas no larger than 16 inches and involving no more than three (3) flutes (ribs).
- B. Install new segment of 20-gauge (minimum) roof deck, extending beyond discrepant area by 12 inches (minimum) all sides.
- C. Attach with self-drilling stitching screws paired onto each upper flange of the adjacent roof deck remaining in place.

### 3.5 STEEL DECK REPLACEMENT

- A. This repair is intended for areas of steel deck containing holes or with area(s) of rusting/pitting through deck surface larger than 16 inches and involving more than three (3) flutes (ribs). Note: Damaged deck panels are to be removed.

- B. Install replacement deck panels bearing on a structural support on each end and overlapped at least one (1) flute (rib) along side. Minimum end lap and bearing shall be 4 inches. Do not stretch or deform end laps.
- C. Secure to joists with Teks No. 5, each flute (rib).
- D. Install Teks No. 3 side lap stitching screws at intervals not to exceed 18 inches or 1/3 purlin spacing, whichever is less.
- E. Comply with Item 3.01 of this Section for new steel roof deck installation.

### 3.6 ADDITIONAL DECK FASTENING

- A. Install new deck fasteners as required by FM to bring current deck attachment up to 1-90 Standards.
- B. Comply with LPDS 1-28 and 1-29 (current) for fastening. Field/perimeter/corner areas are as specified for the insulation and membrane attachment. Minimum requirements are:
  - 1. Field: 12 inches on center
  - 2. Perimeter: 6 inches on center
  - 3. Corner: 6 inches on center

### 3.7 WORKMANSHIP

- A. Work of this section that does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager, at the Contractor's expense, without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**

## **SECTION 061000 - ROUGH CARPENTRY**

### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

- A. Provision and installation of new treated wood nailers as shown on the drawings, as specified herein and as required by the membrane manufacturer
- B. Replacement of existing wet, rotten, warped, deteriorated or otherwise damaged wood nailers, blocking, etc., encountered during the work
- C. Modification of existing curbs, area dividers, expansion joints, etc., as shown on the drawings to facilitate removal, replacement and detailing of the roof system as required
- D. Provision and installation of new exterior grade plywood sheathing as shown on the drawings and as specified herein

#### **1.2 RELATED SECTIONS**

- A. Demolition for Roofing (Section 024119)
- B. Polyvinyl-Chloride (PVC) Roofing (Section 075419)
- C. Metal Flashing and Trim (Section 076200)

#### **1.3 SYSTEM DESCRIPTION**

- A. Components and installation for work of this section shall meet or exceed the requirements of FM LPDS 1-49 taking note of those specific requirements herein for that standard to be exceeded.

#### **1.4 QUALITY ASSURANCE**

- A. Some products and execution are specified in this section by reference to published specifications and/or standards of the following (with respective abbreviations used).
  - 1. American Wood Preservations Association (AWPA)
  - 2. U. S. Dept. of Commerce Voluntary Product Standards (PS)
  - 3. American Plywood Association (APA)
  - 4. FM Global (FM)
  - 5. Environmental Protection Agency (EPA)
  - 6. National Institute of Standards and Technology (NIST)

1.5 SUBMITTALS

- A. All submittals shall be provided in accordance with Section 013300 and as specified herein.
- B. Shop Drawings: Show wood nailers and fasteners used in work of this section which are to be integrated in the shop drawings required for work of other sections.
- C. Certificates: Submit certificate from processor of preservative treatment stating type of treatment, manufacturer of treating material and degree of treatment of wood members processed for this project. The certificate shall be signed by an officer of the company.
- D. Samples: Submit samples of all fasteners used for securing work of this section.
- E. Product Data:
  - 1. Submit technical data including degree of treatment, grade, and fire/exposure rating for each type of wood product.
  - 2. Submit technical data on all fasteners required for work of this section. Data shall include load capacities (pull-out values) from applicable substrates and types of corrosion resistant coatings.
  - 3. Submit documentation of EPA approval/acceptance of preservative treatment.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Storage and handling of materials shall be in strict accordance with the following instructions and Section 016000.
  - 1. Materials delivered to site in a wet condition shall be rejected and removed from the Owner's property.
  - 2. Stack lumber to ensure proper ventilation and drainage. Protect lumber from the elements prior to and subsequent to installation.
  - 3. Store in a manner that will prevent warping. Store off ground, covered with tarps.
  - 4. Do not accept delivery of wood products during inclement weather.



## 1.7 PROJECT CONDITIONS

- A. Time delivery and installation of wood materials to avoid delaying other operations whose work is dependent on or may be affected by the carpentry work.
- B. Protect installed wood products from damage due to other work activities and weather.
- C. Select fasteners for attachment of wood products based on substrate and required securement.

## **PART 2 - PRODUCTS**

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### 2.1 MATERIALS

- A. Nailers:
  - 1. Moisture Content: Solid wood, pressure treated, shall be kiln-dried after treatment (KDAT) to an amount not to exceed 19 percent
  - 2. Grade and Trademark: Grade and trademark shall be on each piece of lumber (or bundle in bundled stock). Use only recognized official marks of association under whose rules it is graded.
  - 3. Quality:
    - a. Lumber shall be sound, thoroughly seasoned, well manufactured and free from warp that cannot be corrected in process of bridging, bolting or nailing.
    - b. Lumber shall comply with Voluntary Product Standard PS-20 and shall be identified with grade mark.
  - 4. Grades and Species of Solid Wood: All members shall be No. 2 Southern Yellow Pine unless otherwise noted on the drawings or herein.
  - 5. Plywood:
    - a. Plywood shall meet the requirements of the Voluntary Product Standard PS1-07.
    - b. Plywood shall be identified with Trademark of American Plywood Association.
    - c. Plywood shall be exterior type with 100% waterproof glue-line. Glue shall be of resorinoc or phenolic resin base.
    - d. Plywood shall be APA Structural I rated sheathing.
    - e. Plywood shall be dimensioned as required by job conditions or as shown on Drawings but in no case less than 1/2-inch unless being utilized as a shim material.

6. Preservative Treatment:

- a. Where preservative treatment only is called for, lumber/plywood shall be pressure-treated with Osmose ACQ (Alkaline Copper Quaternary or Wolman E Copper Azole. Preservative treatment shall be in accordance with AWP Standard U1, UC3B (previously Standard C2) for material not in contact with ground or in water. Preservative shall not be carried in petroleum solvents.
- b. Wood preservative shall be approved by the EPA.

2.2 ACCESSORIES

- A. Nails: Shall be minimum 12-gauge, hot-dipped G-185 galvanized or stainless steel (series 300), annular shank with minimum 3/8-inch flat head and length as required by construction. Minimum penetration is 1 inch.
- B. Spikes (if used): Shall be one-piece, 1/4-inch diameter, mechanically-galvanized (G-185), minimum 150,000 psi tensile, 304 stainless steel for attachment into concrete.
- C. Screws: All screws shall be corrosion-resistant stainless steel (series 300) (unless otherwise noted) and shall meet or exceed FM Specification No. 4470.
- D. Applications (Where Not Specifically Shown/Detailed Otherwise):
- E. Wood to Metal/Wood: No. 12/No. 14 Screws with a minimum head diameter of .400". Penetration shall be minimum of 1/2-inch and maximum of 1 inch through structural steel deck and minimum 1.5-inch (or thickness of member) into wood.
  1. Wood to Masonry: 1/4-inch diameter stainless steel concrete screws length as required for minimum 1-inch embedment or as specified on the drawings or approved equal.
  2. Wood to Concrete: 1/4-inch diameter stainless steel concrete screws length as required for minimum 1.25-inch embedment or as specified on the Drawings.
  3. Wood to Channelcrete Planks: 1/4-inch diameter stainless steel toggle-bolts length as required to penetrate nailers and deck components with toggle-nut attached or as specified on the drawings.
  4. Washers: Shall be hot-dipped G-185 galvanized or 300 series stainless steel.

### **PART 3 - EXECUTION:**

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#### **3.1 EXAMINATION**

- A. The Contractor must examine the substrate and supporting structure and the conditions under which the work is to be installed. Notify the Project Manager in writing of conditions detrimental to the work. Do not proceed with the installation until unsatisfactory conditions have been corrected.
- B. Remove and discard units of material that are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate the work with a minimum of joints or the optimum jointing arrangement.
- C. The Contractor shall thoroughly examine interior conditions to ensure adequate fastener penetration and clearances for items such as process piping, conduits, fire protection equipment, etc. Do not penetrate existing piping or conduit on underdeck side.

#### **3.2 INSTALLATION**

- A. General:
  - 1. Fit carpentry work to other work. Scribe and cope as required for accurate fit.
  - 2. Set carpentry work accurately to required levels and lines with members plumb and true.
  - 3. Securely attach carpentry work to substrates by anchoring and fastening as specified herein, as shown on the drawings, and as required by applicable building codes.
    - a. Provide stainless steel washers under bolt heads/nuts that come in contact with wood.
    - b. Countersink fastener heads as shown on the drawings and where heads may protrude into membrane, flashing, sheet metal or other materials that may be damaged or disfigured.
  - 4. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Tighten screws at installation and retighten as required for tight connections prior to the closing in or at completion of work. A minimum of two (2) fasteners shall be used per section regardless of length.
  - 5. Where multiple layers of wood members are required, stacking (intermittent) spacers are not permitted. The uppermost member shall fully bear on lower member along the entire length and width.

6. Where multiple members exceed 6 inches in height or where members are placed on edge over 5.5 inches in height, lateral bracing to stiffen and prevent rotation is required.
7. When stacking multiple members, stagger joints by a minimum of 24 inches. Provide lateral support for all upright members over 6 inches by bracing with wood cant strips or utilizing clip angles at a maximum spacing of 24 inches on-center.
8. Where shims are required to match thickness of roof components, place shims on structural deck and secure together with stacked wood members. Shims as the top stacked wood member are not acceptable. Select wood members to provide a minimum shim thickness of 3/8-inch.
9. All fasteners into concrete shall be pre-drilled with a device having a reverse function to clean pilot hole. Pre-measure concrete and utilize a drill stop to prevent spalling from back or underside of concrete.
10. Where treated plywood and/or wood nailers are to come into direct contact with bare metals, such as unpainted/uncoated steel or aluminum, the Contractor shall provide a separation layer between the two. G185 galvanized steel, 304 stainless steel and metals with coatings approved for contact with pressure-treated wood need no separation layer.
11. New, treated wood nailers shall be installed where existing nailers are removed, as shown on the drawings and where required by the membrane manufacturer. All nailers shall be of sufficient thickness to be flush with the insulation/membrane interface and securely anchored to resist a force of 350 pounds/linear foot in any direction. Fastener spacing shall not exceed 12 inches on-center unless noted otherwise on the drawings.
12. Install new nailers with 1/8-inch to 1/4-inch gap between each length or as required to accommodate future expansion/contraction based on climatic conditions at the time of installation.
13. Caution: Prior to placement of any fasteners that will penetrate the metal deck, the Contractor shall thoroughly examine interior conditions to ensure adequate clearance for items such as process piping, conduits, fire protection equipment, etc.
14. Wood nailers, blocking, cants, etc., shall be chamfered, beveled, shaved, planed or shimmed as necessary to provide a smooth transition to adjacent materials.

B. Existing Nailers:

1. Existing nailers are to remain in place where they are determined to be sound, undamaged and properly treated.
2. Replace any wet, warped, deteriorated or otherwise damaged existing nailers with new nailers. Removal and disposal are specified in Section 024119.
3. Re-secure existing nailers, as required, to resist a force of 350 pounds/ linear foot in any direction (maximum spacing 12 inches on-center) or as shown on the drawings.

**Caution:** Prior to placement of any fasteners that will penetrate the metal deck, the Contractor shall thoroughly examine interior conditions to ensure adequate clearance for items such as process piping, conduits, fire protection equipment, etc.

4. Re-securement includes lateral bracing as specified in 3.02A.6 and 7.

C. Plywood (Flashing Substrates):

1. Install cut-to-fit plywood flashing substrates, backers, etc., as shown on the drawings.
2. Install applicable fasteners at a rate no less than one (1) per two (2) square feet with a minimum of four (4) per piece. Fastening shall include metal plates or washers as approved by the membrane manufacturer to prevent floating or bowing of the attached panels.

3.3 WORKMANSHIP

- A. Work of this section that does not conform to specified requirements, including tolerances and finishes, shall be corrected and/or replaced as directed by the Project Manager, at the Contractor's expense, without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**

## **SECTION 072122 - THERMAL ROOF DECK INSULATION SYSTEM**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

- A. Provision and installation of adhered thermal roof insulation over approved substrate as shown on the drawings and as specified herein
- B. Provision and installation of mechanically attached thermal roof insulation over approved substrate as shown on the drawings and as specified herein

#### **1.2 RELATED SECTIONS**

- A. Rough Carpentry for Roofing (Section 061000)
- B. Insulation Protection Layer (Section 072200)
- C. Vapor Retarder/Temporary Roof (Section 075210)
- D. Polyvinyl-Chloride (PVC) Roofing (Section 075419)

#### **1.3 SYSTEM DESCRIPTION**

- A. Thermal roof insulation shall consist of polyisocyanurate unless noted otherwise on the drawings.
- B. Thermal roof insulation system shall provide and maintain an average minimum R-value of 5.6 per inch.
- C. Roof insulation shall be installed over the approved substrate meeting the specified wind uplift values, as shown on the drawings and as specified herein.
- D. Roof insulation board stock shall be maximum and 4 feet by 4 feet where adhered and 4 feet by 8 feet where mechanically attached and minimum 2 feet by 2 feet installed with joints staggered half the board width.
- E. Insulation shall be FM approved for Class 1 construction.

#### **1.4 QUALITY ASSURANCE**

- A. Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).

1. The American Society for Testing and Materials (ASTM)
2. Factory Mutual Research Corporation (FM)
3. Underwriters Laboratories (UL)

- B. Qualifications - Roofing Contractor: Before beginning any part of the work, submit (in triplicate) a letter from the insulation manufacturer stating that the Contractor has been trained by the manufacturer in application of insulation system specified herein; and that the Contractor is approved for this work by the manufacturer. Submit the letter on company letterhead signed by an officer of the company.

#### 1.5 SUBMITTALS

- A. All Submittals shall be provided in accordance with Section 013300 and as specified herein.
- B. List of Materials: Submit (in .pdf format) complete list of materials proposed for use in work of this section. List shall designate specific Manufacturer and product designation, along with specific quality reference (for instance, ASTM Specification No. 1).
- C. Shop Drawings:
1. Use of the Contract Drawings reproduced for shop drawings is prohibited.
  2. Only Shop Drawings that have been stamped "Approved" by the Contractor will be accepted for review.
  3. Show dimensions and layouts.
  4. Show tapered insulation around drains.
- D. Samples: Submit samples (in duplicate) of insulation not less than 1 foot square. Samples shall be of the material thickness and specific type to be used on project.
- E. Product Data: Submit (in .pdf format) the manufacturer's printed installation requirements and data on physical/performance characteristics of materials and systems for the work of this section.

F. Product Use Approval:

1. Submit (in .pdf format) letters of approval from both the insulation and membrane manufacturers stating the acceptability for use of their respective products with the other product. Approval shall be on company letterhead and shall be signed by an officer of the company.
2. Submit (in .pdf format) letters of approval from the insulation manufacturers stating their respective products are acceptable for use in the proposed system and their products meet or exceed the requirements of the Contract Documents. Approval shall be on company letterhead and signed by an officer of the company.

- G. Certificate (Subsequent to Completion of Work): Submit (in .pdf format) a written certificate of compliance from the manufacturer and jointly signed by the Contractor, stating installation of insulation was in accordance with the Contract Documents, and in accordance with the manufacturer's printed installation instructions. The certificate shall be on company letterhead signed by an officer of the company.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Coordinate storage locations with the Project Manager.
- B. Deliver materials in original, unopened packages or bundles, bearing brand name of the manufacturer, clearly marked with letter-number designations identifying contents as to size, type, physical and performance characteristics.
- C. Store materials in a dry place, under cover. Store in a manner to prevent deterioration or intrusion of foreign materials. Store off of ground, protected with waterproof tarps. Factory applied wrapping is not acceptable as the sole means of protection.
- D. Storage and protection shall comply with requirements of Section 016000.
- E. Thermal insulation shall be protected from ultraviolet light at all times prior to installation. If subject to exposure, cover with a light-colored, opaque tarp.
- F. Materials on roof shall be stored in a safe manner so as not to exceed allowable roof loads.
- G. Materials that are damaged in any way or indicate moisture content above equilibrium shall be rejected as unacceptable. Ensure adequate ventilation to prevent condensation.



## 1.7 ENVIRONMENTAL CONDITIONS

- A. Installation of insulation shall not commence or proceed during inclement weather or under threat of inclement weather such as rain, snow or sleet.
- B. All surfaces to be joined/overlaid shall be completely dry and free of condensation, dew, frost or other form of moisture.
- C. Do not commence with installation of insulation when air temperature is below 40 degrees F or 40 degrees F and falling unless approved in writing by the Manufacturer of insulation materials.

## 1.8 GUARANTY/WARRANTY

- A. Work of this section is part of total system warranty/guaranty as specified in Section 017700.

# **PART 2 - PRODUCTS**

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## 2.1 MATERIALS

- A. Thermal Roof Insulation:

- 1. Shall be polyisocyanurate foam board with non-perforated fiberglass facer meeting or exceeding the following physical properties:

Physical Property	Test Method/ Standard	Value
Comp. Strength	ASTM D1621	20 psi min. (certifiable)
R-Value aged at 75 degrees for 5 years	ASTM C518	R=5.6/inch min.
Water Absorption (by Volume)	ASTM C209	1.0% max.
Dimensional Stability	ASTM D2126	2% max. linear change
Density	ASTM D1622	2.0 pcf min.
Foam Flame Spread	ASTM E84	25 max.
Closed Cell Content	ASTM D2856	98% min.

2. Minimum thickness of roof insulation shall be as follows:

Flat	1.5-inch minimum
Tapered	1-inch minimum (tapered rates shown on roof plan)

3. Thermal insulation boards shall be maximum 4 feet by 4 feet for adhered, 4 feet by 8 feet for mechanically attached and minimum 2 feet by 2 feet.

B. Cricket and Tapered Edge Insulation:

1. Starter course shall be tapered edge (0 – 1 inch) high-density wood fiber as shown on the typical cricket layout on the drawings.

2. Remaining courses shall be minimum 1-inch polyisocyanurate.

C. Insulation Adhesive: Shall be a one or two part, 100% solids, solvent free, VOC compliant, urethane low rise adhesive for use in adhering rigid insulation board to roof deck and other insulation boards as supplied and/or approved by the roof system manufacturer.

D. Mechanical Fasteners: Fasteners for securing insulation base layer to metal roof deck shall be #14 coated screws as approved for FM 1-90 wind securement and be approved by the membrane manufacturer.

E. Plate Washers/Insulation Plates: Plate washers/insulation plates shall be galvalume discs as approved for FM 1-90 wind securement and approved by the membrane manufacturer.

F. Joint Filler:

1. Shall be single-component, urethane foam sealant having a minimum density of 2.0 pcf and minimum compressive strength of 10 psi
2. Shall be UL Class A rated
3. Shall be a semi-liquid as installed, curing to an expanding, rigid mass

### **PART 3 - EXECUTION**

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#### **3.1 CONDITION OF SURFACES**

- A. Surfaces to receive materials shall be clean, dry, free of loose or weak material, contaminants, foreign matter, or any irregularities which would adversely affect the insulation or its application.

- B. Prepare surface in accordance with Section 024119.
- C. Verify roof drains are installed to elevation ensuring proper drainage.
- D. Verify that all required roof deck repairs have been performed in accordance with the drawings and specifications.
- E. Verify that the roof deck securement meets the specified wind uplift requirements.
- F. Before installation of any insulation, the Contractor and Project Manager or his representative, together, shall inspect completed work to determine its fitness to receive insulation system. Any conditions making it unsuitable shall be corrected prior to commencing work.

### 3.2 INSTALLATION

- A. General Requirements for Application of Thermal Roof Insulation:
  - 1. Do not attempt to install more insulation than can be completely covered with membrane and flashing the same day.
  - 2. Materials shall be placed only by workmen skilled in this type of installation. Installation shall be in accordance with the Contract Documents and applicable manufacturer's specifications for such work.
  - 3. Install units of insulation with long joints continuous and end joints staggered by half the board width. Broken boards shall be trimmed with straightedge and replaced with cut-to-fit boards as required.
  - 4. Joints shall be tightly butted. Cut and fit around roof penetrations with straightedge and saw. Voids greater than 1/4-inch in width shall be filled with approved joint filler. Voids greater than 1/2-inch shall be filled with cut-to-fit pieces of insulation board.
  - 5. In-place vertical insulation joint offsets between adjacent boards shall be less than 1/4-inch. Offsets greater than 1/4-inch shall be trimmed flush.
- B. Adhered Thermal Roof Insulation: Install as follows:
  - 1. Prior to using insulation adhesive in cold temperatures, for ease of use, keep the material in a heated area (70 degrees F). Overnight storage should be sufficient.

2. Insulation adhesive has a recommended coverage rate vary depending on bead spacing, time of year and manufacturer. Coverage may be slightly higher over irregular surfaces. The adhesive is applied in ribbons at a minimum rate of 12 inches on-center, four ribbons per 4-foot-wide board. Increase ribbon spacing in the perimeters and corner zones to meet the wind securement criteria and as shown on the drawings. The following shall be minimum requirements for the wind zones.
    - a. Perimeters: Not more than 60% of the field-of-roof spacing between rows or area
    - b. Corners: Not more than 40% of the field-of-roof spacing between rows or area
  3. Insulation adhesive is typically applied via dual cartridges or canisters for two component adhesive and applied utilizing a spreader or straight out of the bucket for one component adhesive. Follow the manufacturer's application instructions when applying.
  4. As adhesive is applied, immediately place insulation boards into wet adhesive, do not slide the board across wet adhesive. Do not allow the adhesive to skin. Step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weight may be required to ensure proper contact. Provide ballast on the insulation until adhesive has cured.
  5. When a sufficient amount of insulation is installed, begin roof system application in accordance to the roof system manufacturer's recommendation.
  6. Cleanup:
    - a. Wet Adhesive: Use mineral spirits or xylol
    - b. Dry or Cured Adhesive: Peel away from pre-treated surfaces. Scrape or cut from untreated surfaces.
- C. Mechanically Attached Requirements:
1. Mechanically fasten thermal roof insulation to metal deck with specified fasteners and stress plates in accordance with the manufacturer's FM 1-90 securement criteria and LPDS 1-28 and 1-29. The following are considered minimum attachment requirements:
    - a. Corners: 1 fastener per 1 square foot
    - b. Perimeters: 1 fastener per 2 square feet
    - c. Field: 1 fastener per 4 square feet
    - d. Cut-to-Fit Pieces: Minimum 2 fasteners

2. All screws shall be driven into deck/panel and shall securely engage deck. Do not over drive so as to strip deck/screw or fracture/deform the insulation or insulation protection layer.
3. Screws shall be fully sealed in stress plates. Protrusion of screw heads above stress plates is not acceptable. Proper fastener seating has been achieved when the screw head fully contacts the plate and when the plate can no longer be moved by firm lateral pressure.
4. Fastener installation shall be executed with equipment containing a device to ensure installation of screws perpendicular (90 degrees) to deck.

D. General Requirements for Application of Cricket Insulation:

1. Install over thermal roof insulation at locations depicted on the roof plan and identified in the general roofing notes in accordance with the layout parameters depicted in the Typical Cricket Layout Detail on the drawings.
2. Materials shall be placed only by workmen skilled in this type of installation. Installation shall be in accordance with the Contract Documents and applicable manufacturer's specifications for such work. Exercise caution to prevent damage to thermal roof insulation during application of cricket insulation. Where damage occurs, restore to original condition.
3. Joints shall be tightly butted. Cut and fit around roof penetrations with straightedge and saw. Voids greater than 1/4-inch in width shall be filled with approved joint filler. Voids greater than 1/2-inch shall be filled with cut-to-fit pieces of insulation board.
4. In-place vertical insulation joint offsets between adjacent boards shall be less than 1/4-inch. Offsets greater than 1/4-inch shall be trimmed flush.

3.3 WORKMANSHIP

- A. Work of this section that does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager at the Contractor's expense, without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**

## **SECTION 072222 - GYPSUM THERMAL BARRIER**

### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

- A. Provision and installation of fiberglass faced, treated gypsum board thermal barrier over the steel roof deck

#### **1.2 RELATED SECTIONS**

- A. Steel Roof Deck (Replacement/Restoration) (Section 053100)
- B. Rough Carpentry for Roofing (Section 061000)
- C. Thermal Roof Deck Insulation System (Section 072223)
- D. Polyvinyl-Chloride (PVC) Roofing (Section 075419)
- E. Metal Flashing and Trim (Section 076200)
- F. Sealants for Roofing (Section 079200)

#### **1.3 SYSTEM DESCRIPTION**

- A. Thermal barrier shall consist of a 5/8-inch thick, fiberglass faced (both sides), treated, gypsum core panel.
- B. Thermal barrier shall be installed over the metal and plywood roof deck and mechanically fastened as specified herein.
- C. Thermal barrier shall be FM approved/accepted for Class 1 Construction.

#### **1.4 QUALITY ASSURANCE**

- A. Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).
  - 1. The American Society for Testing and Materials (ASTM)
  - 2. Factory Mutual Research Corporation (FM)
- B. Qualifications - Roofing Contractor: Before beginning any part of the work, submit (in triplicate) a letter from roofing contractor certifying that the contractor's personnel have been trained in application of the gypsum thermal barrier specified herein. Submit on letterhead of the company, and signed by an officer of the company.

1.5 SUBMITTALS

- A. All submittals shall be provided in accordance with Section 013300 and as specified herein.
- B. List of Materials: Submit (in triplicate) complete list of materials proposed for use in the work of this section. List shall designate specific manufacturer and product designation, along with specific quality reference (for instance, ASTM Specification).
- C. Shop Drawings:
  - 1. Use of the Contract Drawings reproduced for Shop Drawings is prohibited except in specific cases where the Contractor intends to install and does install materials in complete accordance with the Contract Drawings (no deviations allowed).
  - 2. Only Shop Drawings that have been stamped "Approved by Contractor" will be accepted for review.
  - 3. Only Shop Drawings that have been stamped approved by the roof system manufacturer will be accepted for review.
  - 4. Show dimensions and layouts of gypsum thermal barrier including fastening layouts complete with identification of plate washers/insulation plates and fasteners.
- D. Samples: Submit samples (in duplicate) of gypsum thermal barrier, plate washer/insulation plate and fastener. Samples shall be of material thickness and construction to be used on project.
- E. Product Data: Submit (in pdf format) the manufacturer's printed installation requirements and data on physical/performance characteristics of materials and systems for work of this section.
- F. Product Use Approval:
  - 1. Submit (in triplicate) letters of approval from the gypsum thermal barrier manufacturer, modified bitumen air/vapor retarder Manufacturer and Roof System Manufacturer stating their respective acceptance and approval for use of their respective products with the other product. Approval shall be on company letterhead and signed by an officer of the company.

2. Submit (in .pdf format) a letter of approval from the gypsum thermal barrier manufacturer stating their respective product is acceptable for use in the proposed system and their product meets or exceeds the requirements of the Contract Documents. Approval shall be on company letterhead and shall be signed by an officer of the company.

G. Certificate (Subsequent to Completion of Work): Submit (in .pdf format) a written certificate of compliance from the Contractor, stating installation of gypsum thermal barrier was in accordance with the Contract Documents, and in accordance with the manufacturer's printed installation instructions. The certificate shall be on company letterhead and signed by an officer of the company.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Coordinate storage locations with the Project Manager.
- B. Deliver materials in original, unopened packages or bundles, bearing brand name of the manufacturer, clearly marked with letter-number designations identifying contents as to size, type, physical and performance characteristics.
- C. Store materials in a dry place, under cover. Store in a manner to prevent deterioration or intrusion of foreign materials. Store off of the ground, protected with waterproof tarps. Factory applied wrapping is not acceptable as the sole means of protection.
- D. Storage and protection shall comply with requirements of Section 016000.
- E. Materials on the roof shall be stored in a safe manner so as not to exceed allowable roof loads.
- F. Materials that are damaged in any way or indicate moisture content above equilibrium shall be rejected as unacceptable. Ensure adequate ventilation to prevent condensation.

#### 1.7 ENVIRONMENTAL CONDITIONS

- A. Installation of gypsum thermal barrier shall not commence or proceed during inclement weather or under threat of inclement weather such as rain, snow or sleet.
- B. All surfaces to be joined/overlaid shall be completely dry and free of condensation, dew, frost or other form of moisture.



- C. Do not commence with installation of gypsum thermal barrier when air temperature is below 40 Degrees F or 40 degrees F and falling unless approved in writing by the manufacturer of the thermal barrier and the Project Manager.

## **PART 2 - PRODUCTS**

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### **2.1 MATERIALS**

- A. The gypsum thermal barrier shall be 5/8-inch thick treated, fiberglass faced (both sides) gypsum board. Boards shall be 48 inches by 96 inches.

Physical Property	Value
Size	5/8-inch thickness, 4'-0" x 8'-0"
Weight (pounds per square foot)	2.5 pounds
Surfacing	Inorganic Fiberglass Mat
"R" Value	0.67/inch
Absorption (%) by Weight	10.0 maximum
Compression, psi (Nominal)	500-900

- B. Plate washers/insulation plates shall be galvalume discs as approved by FM for Class 1-90 securement.
- C. Fasteners for securing gypsum thermal barrier to the metal roof deck shall be #14 coated screws as approved by FM for Class 1-90 securement.

## **PART 3 - EXECUTION**

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### **3.1 CONDITION OF SURFACES**

- A. Surfaces to receive materials shall be clean, dry, free of loose or weak material, contaminants, foreign matter, or any irregularities which would adversely affect the thermal barrier or its application.
- B. Prepare surface in accordance with Section 053100.
- C. Verify that wood nailers are installed in accordance with Project Documents. See Section 061000.

- D. Before installation of any thermal barrier, the Contractor and Project Manager or his representative, together shall inspect completed work to determine its fitness to receive thermal barrier. Any conditions making it unsuitable shall be corrected prior to commencing work.

### 3.2 INSTALLATION

- A. Do not attempt to install more thermal barrier than can be completely covered with insulation, roofing membrane and flashing the same day.
- B. Materials shall be placed only by workmen skilled in this type of installation. Installation shall be in accordance with the Contract Documents and applicable manufacturer's specifications for such work. Where damage occurs, restore to the original condition.
- C. Install units of thermal barrier with long joints continuous and end joints staggered by half the board width. Broken boards shall be trimmed with straightedge and replaced with cut to fit boards as required. End joints shall be fully supported on metal roof deck flute and shall not terminate over a deck rib.
- D. Joints shall be tightly butted. Cut and fit around roof penetrations with straightedge and saw. Voids greater than 1/4-inch in width shall be filled with cut to fit pieces of thermal barrier but in no case shall the cut-to-fit piece be less than 2 feet by 2 feet.
- E. Mechanically fasten thermal roof insulation to metal deck with specified fasteners and stress plates in accordance with the manufacturer's FM 1-90 securement criteria and LPDS 1-28 and 1-29. The following are considered minimum attachment requirements:
  - 1. Corners: 1 fastener per 1 square foot
  - 2. Perimeters: 1 fastener per 2 square feet
  - 3. Field: 1 fastener per 4 square feet
  - 4. Cut-to-Fit Pieces: Minimum 2 fasteners
- F. All screws shall be driven into deck/panel and shall securely engage deck. Do not over drive so as to strip deck/screw or fracture/deform the insulation or insulation protection layer.
- G. Screws shall be fully sealed in stress plates. Protrusion of screw heads above stress plates is not acceptable. Proper fastener seating has been achieved when the screw head fully contacts the plate and when the plate can no longer be moved by firm lateral pressure.
- H. Fastener installation shall be executed with equipment containing a device to ensure installation of screws perpendicular (90 degrees) to the deck.

- I. No heavy construction or repetitive traffic shall be allowed over new roofing materials once work of this section commences.
- J. Protect installed thermal barrier from contamination from debris and residue from demolition operations.

3.3 WORKMANSHIP

- A. Work of this section that does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager at the Contractor's expense without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**

## **SECTION 072223 - INSULATION PROTECTION LAYER**

### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

- A. Provision and installation of fiberglass faced, treated gypsum board insulation protection layer with a pre-primed surface over existing thermal roof insulation at specified roof areas on the drawings

#### **1.2 RELATED SECTIONS**

- A. Rough Carpentry for Roofing (Section 061000)
- B. Insulation Protection Layer (Section 072200)
- C. Polyvinyl-Chloride (PVC) Roofing (Section 075419)
- D. Metal Flashing, Trim and Accessories (Section 076200)
- E. Sealants (Section 079200)

#### **1.3 SYSTEM DESCRIPTION**

- A. Insulation protection layer shall consist of a 1/2-inch thick, fiberglass faced (both sides), treated, gypsum core panel with a pre-primed surface.
- B. Insulation protection layer shall be adhered over the thermal roof, cricket and tapered edge insulation at all areas.
- C. Insulation protection layer shall be FM approved/accepted for Class 1 Construction.

#### **1.4 QUALITY ASSURANCE**

- A. References: Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).
  - 1. The American Society for Testing and Materials (ASTM)
  - 2. Factory Mutual Research Corporation (FM)

- B. Qualifications - Roofing Contractor: Before beginning any part of the work, submit (in pdf format) a letter from gypsum panel manufacturers stating that the Contractor has been trained by the manufacturer in application of gypsum panel insulation protection layer specified herein; and that the Contractor is approved for this work by the manufacturer. Submit on letterhead of the company signed by an officer of the company.

#### 1.5 SUBMITTALS

- A. All Submittals shall be provided in accordance with Section 013300 and as specified herein.
- B. List of Materials: Submit (in .pdf format) a complete list of materials proposed for use in work of this section. List shall designate specific manufacturer and product designation, along with specific quality reference (for instance, ASTM Specification No. 1).
- C. Shop Drawings:
  - 1. Use of the Contract Drawings reproduced for Shop Drawings is prohibited.
  - 2. Only shop drawings that have been stamped "Approved" by the Contractor and manufacturer will be accepted for review.
  - 3. Show dimensions and layouts of insulation protection layer from high to low points.
- D. Samples: Submit samples (2 minimum) of insulation protection layer not less than 1-foot square. Samples shall be of material thickness and construction to be used on project.
- E. Product Data: Submit (in .pdf format) the manufacturer's printed installation requirements and data on physical/performance characteristics of materials and systems for work of this section.
- F. Product Use Approval:
  - 1. Submit (in .pdf format) letters of approval from both the insulation protection layer and membrane manufacturers stating the acceptability for use of their respective product(s) with the other product(s). Approval shall be on company letterhead and shall be signed by an officer of the company.

2. Submit (in .pdf format) letters of approval from the insulation protection layer manufacturers stating their respective products are acceptable for use in the proposed system and their products meet or exceed the requirements of the Contract Documents. Approval shall be on company letterhead and shall be signed by an officer of the company.

G. Certificate (Subsequent to Completion of Work): Submit (in .pdf format) a written certificate of compliance from the manufacturer and jointly signed by the Contractor, stating installation of insulation protection layer was in accordance with the Contract Documents, and in accordance with the manufacturer's printed installation instructions. The certificate shall be on company letterhead and shall be signed by an officer of the company.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Coordinate storage locations with the Project Manager.
- B. Deliver materials in original, unopened packages or bundles, bearing brand name of the manufacturer, clearly marked with letter-number designations identifying contents as to size, type, physical and performance characteristics.
- C. Store materials in a dry place, under cover. Store in a manner to prevent deterioration or intrusion of foreign materials. Store off of ground, protected with waterproof tarps. Factory applied wrapping is not acceptable as the sole means of protection.
- D. Storage and protection shall comply with requirements of Section 016000.
- E. Materials on roof shall be stored in a safe manner so as not to exceed allowable roof loads.
- F. Materials that are damaged in any way or indicate moisture content above equilibrium shall be rejected. Ensure adequate ventilation to prevent condensation.

#### 1.7 ENVIRONMENTAL CONDITIONS

- A. Installation of insulation protection layer shall not commence or proceed during inclement weather or under threat of inclement weather such as rain, snow or sleet.
- B. All surfaces to be joined/overlaid shall be completely dry and free of condensation, dew, frost or other form of moisture.

- C. Do not commence with installation of insulation protection layer when air temperature is below 40 degrees F or 40 degrees F and falling unless approved in writing by the manufacturer of protection layer.

1.8 GUARANTY/WARRANTY

- A. The work of this section is part of total system warranty/ guaranty as specified in Section 017700.

**PART 2 - PRODUCTS**

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2.1 MATERIALS

- A. Insulation Protection Layer:

1. Insulation protection layer shall be a treated gypsum board with continuous reinforced fiberglass facers on both surfaces, one side pre-primed, meeting or exceeding the following physical properties:

Physical Property	Value
Size	1.2-inch thickness, 4'-0" x 4'-0"
Weight (lb./sq. ft.)	2.0
Surfacing	Glass Mat with one side pre-primed
"R" Value	0.56/inch
Absorption (%)	5.0 maximum
Compression, psi	900

2. Minimum thickness of insulation protection layer shall be 1/2-inch.
3. Fabricated tolerances shall be as follows:
- Length:  $\pm 1/4$ -inch/8 feet
  - Width:  $\pm 1/8$ -inch/4 feet
4. Adhered insulation protection layer boards shall be 4 feet by 4 feet.
- B. Insulation Adhesive: Shall be a one or two part, 100% solids, solvent free, VOC compliant, urethane low rise adhesive for use in adhering rigid insulation board to roof deck and other insulation boards as supplied and/or approved by the roof system Manufacturer.

### **PART 3 - EXECUTION**

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#### **3.1 CONDITION OF SURFACES**

- A. Surfaces to receive materials shall be clean, dry, free of loose or weak material, contaminants, foreign matter, or any irregularities which would adversely affect the protection layer or its application.
- B. Prepare surface in accordance with Section 024119.
- C. Verify nailers are installed to proper elevations to ensure drainage at roof perimeter.
- D. Before installation of any insulation protection layer, the Contractor and Project Manager or his representative, together, shall inspect completed work to determine its fitness to receive insulation protection layer. Any conditions making it unsuitable shall be corrected prior to commencing work.

#### **3.2 INSTALLATION**

- A. General Requirements for Application of Thermal Roof Insulation:
  - 1. Do not attempt to install more insulation protection layer than can be completely covered with membrane and flashing the same day.
  - 2. Materials shall be placed only by workmen skilled in this type of installation. Installation shall be in accordance with the Contract Documents and applicable manufacturer's specifications for such work. Where damage occurs restore to original condition.
  - 3. Install units of insulation protection layer with long joints continuous and end joints staggered by half the board width. Broken boards shall be trimmed with straightedge and replaced with cut to fit boards as required. Stagger insulation board joints by half the board length over the thermal roof insulation.
  - 4. Joints shall be tightly butted. Cut and fit around roof penetrations with straightedge and saw. Voids greater than 1/4-inch in width shall be filled with cut-to-fit pieces of protection layer, but in no case shall the cut-to-fit piece be less than 2 feet by 2 feet.
  - 5. In-place vertical protection layer joint offsets between adjacent boards shall be less than 1/8-inch. Offsets greater than 1/8-inch shall be trimmed flush.



6. No heavy construction or repetitive traffic shall occur over new roofing materials once the work of this section commences.
7. Protect installed insulation protection layer from contamination from debris and residue from demolition operations.

B. Adhered Insulation Protection Layer: Install as follows:

1. Prior to using insulation adhesive in cold temperatures, for ease of use, keep the material in a heated area (70 degrees F). Overnight storage should be sufficient.
2. Insulation adhesive has a recommended coverage rate vary depending on bead spacing, time of year and manufacturer. Coverage may be slightly higher over irregular surfaces. The adhesive is applied in ribbons at a minimum rate of 12 inches on-center, four ribbons per 4-foot-wide board. Increase ribbon spacing in the perimeters and corner zones to meet the wind securement criteria and as shown on the drawings. The following shall be minimum requirements for the wind zones.
  - a. Perimeters: Not more than 60% of the field-of-roof spacing between rows or area
  - b. Corners: Not more than 40% of the field-of-roof spacing between rows or area
3. Insulation adhesive is typically applied via dual cartridges or canisters for two component adhesive and applied utilizing a spreader or straight out of the bucket for one component adhesive. Follow the manufacturer's application instructions when applying.
4. As adhesive is applied, immediately place insulation boards into wet adhesive, do not slide the board across wet adhesive. Do not allow the adhesive to skin. Step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weight may be required to ensure proper contact. Provide ballast on the insulation until adhesive has cured.
5. When a sufficient amount of insulation is installed, begin roof system application in accordance to the roof system manufacturer's recommendation.
6. Cleanup:
  - a. Wet Adhesive: Use mineral spirits or xylol
  - b. Dry or Cured Adhesive: Peel away from pre-treated surfaces. Scrape or cut from untreated surfaces.

3.3 WORKMANSHIP

- A. Work of this section that does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager at the Contractor's expense, without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**

**SECTION 072413 - EXTERIOR INSULATION AND FINISH SYSTEM (EIFS) - CLASS PB**

**PART 1 - GENERAL**

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**1.1 RELATED DOCUMENTS**

- A. The drawings and general provisions of the Contract, including the General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Exterior Insulation and Finish System (EIFS) applied over the existing substrate
- B. Related Sections include the following:
  - 1. Metal Flashing (Section 076200)
  - 2. Sealants (Section 079000)

**1.3 DEFINITIONS**

- A. ClassPB EIFS adhesively attached drainable system, as described in ASTM C1397-03, is defined as a non-load bearing, exterior wall cladding system that consists of an insulation board attached either adhesively, mechanically, or both to the substrate; an integrally reinforced base coat; and a texture protective finish coat.
- B. Systems refer to ClassPB EIFS.
- C. System manufacturer refers to EIFS manufacturer.
- D. Drainable EIFS system is defined as an EIFS system with a drainage cavity and secondary weather barrier in the wall assembly that collects incidental moisture within the wall system to the exterior.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Provide systems that comply with the following performance requirements:

1. Bond Integrity: Free from bond failure within system components or between system and supporting wall construction, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
  2. Weathertightness: Resistant to water penetration from exterior into system components and assemblies behind it or through them into interior of building that results in deterioration of thermal-insulating effectiveness or other degradation of system and assemblies behind it, including substrates, supporting wall construction, and interior finish.
- B. Physical Properties of Class PB System: Provide EIFS whose physical properties and structural performance comply with the following when tested per methods referenced:
1. Abrasion Resistance: Sample consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for a minimum of 28 days; and showing no cracking, checking, or loss of film integrity after exposure to 528 quarts (500 L) of sand when tested per ASTM D 968, Method A
  2. Accelerated Weathering Characteristics: Sample of size suitable for test equipment and consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, blistering, peeling, or delamination after testing for 2000 hours when viewed under five times magnification per the following: ASTM G 53
  3. Absorption-Freeze Resistance: No visible deleterious effects and negligible weight loss after 60 cycles per EIMA 101.01
  4. Mildew Resistance: Sample consisting of finish coat applied to 2-by-2-inch (50.8-by-50.8-mm) clean glass substrate; cured for 28 days; and showing no growth when tested per ASTM D 3273
  5. Salt-Spray Resistance: Sample consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, blistering, peeling, or delamination after testing for 300 hours per ASTM B 117.
  6. Tensile Adhesion: No failure in the adhesive, base coat, or finish coat. Minimum 5-psi (34.5-kPa) tensile strength before and after freeze-thaw and accelerated weathering tests per EIMA 101.03.

7. Water Penetration: Sample consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for 28 days; and showing no water penetration into the plane of the base coat to expanded polystyrene board interface of the test specimen after 15 minutes at 6.24 lbf/sq. ft. (299 Pa) of air pressure difference or 20 percent of positive design wind pressure, whichever is greater, across the specimen during a test period when tested per EIMA 101.02.
8. Water Resistance: Sample consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, blistering, peeling, or delamination after testing for 14 days per ASTM D 2247.
9. Impact Resistance: Sample consisting of 1-inch- (25.4-mm-) thick EIFS when constructed, conditioned, and tested per EIMA 101.86; and meeting or exceeding the following impact classification and range:
  - a. Standard Impact Resistance: 25-49 inch-lb (2.8-5.6 J)
  - b. Medium Impact Resistance: 50-89 inch-lb (5.7-10.1 J)
  - c. High Impact Resistance: 90-150 inch-lb (10.2-17 J)
  - d. Ultra-High Impact Resistance: More than 150 inch-lb (17 J)
10. Field Adhesion: Field adhesion tests shall demonstrate minimum 15 psi tensile adhesion strength.
11. Service Wind Loads: Uniform pressure (velocity pressure) acting inward or outward in accordance with the following schedules:

*All Wind Zones:                      44 lb/sq. ft. inward*  
*33 lb/sq. ft. outward*
12. Drainage: 3 samples capable of draining water, and having an average minimum true drainage efficiency of 90 percent when tested per EIMA 200.2.

#### 1.5 SUBMITTALS

- A. Product Data: For each component of EIFS specified
- B. Shop Drawings: Show fabrication and installation of system including plans, elevations, sections, details of components, joint locations and configurations within system and between system and construction penetrating it, termination details, and attachments to construction behind system.

- C. Samples for Initial Selection: Manufacturer's color charts and small-scale samples consisting of units or sections of units showing the full range of colors, textures, and patterns available for each finish choice indicated. Provide similar samples with joint sealants and exposed accessories involving color selection.
- D. Samples for Verification: 24-inch- (600-mm-) square panels for each finish, color, texture, and pattern specified. Prepare samples using same tools and techniques intended for actual work.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and address of architects and owners, and other information specified.
- F. Product Test Reports: Indicate compliance of proposed EIFS with physical property requirements specified in "Performance Requirements" Article based on comprehensive testing of current products by a qualified testing and inspecting agency.
- G. Research/Evaluation Reports: Evidence of EIFS compliance with current applicable Building Code.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed a minimum of three (3) projects with systems similar in material, design, and extent to those indicated for this project and with a record of successful in-service performance. Provide a letter from the manufacturer stating that the installer is qualified to install manufacturer's system.
- B. Source Limitations: Obtain materials for system from one source and by a single manufacturer or by manufacturers approved by EIFS manufacturer as compatible with other system components.
- C. Fire-Test-Response Characteristics: Provide system assemblies and components with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting agency.
  - 1. Flame Spread of Insulation Board and Finish Coats: 75 or less when tested individually per ASTM E 84

2. Smoke Developed of Insulation Board and Finish Coats: 450 or less when tested individually per ASTM E 84

1.7 GUARANTY-WARRANTY

- A. The EIFS manufacturer shall provide a guaranty-warranty which shall include a ten (10) year material warranty against defective materials.
- B. The Contractor shall provide a guaranty-warranty against defective workmanship for a period of two (2) years following completion and acceptance of the project.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original, unopened packages with manufacturer's labels intact and clearly identifying products.
- B. Store materials inside and under cover; keep them dry and protected from the weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes. Stack insulation board flat and off the ground.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install system when ambient outdoor air and substrate temperatures are 40 degrees F (4.4 degrees C) and falling unless temporary protection and heat are provided to maintain ambient temperatures above 40 degrees F (4.4 degrees C) during installation of wet materials and until they have dried thoroughly and become weather resistant, but for at least 24 hours after installation. Proceed with installation only when existing and forecasted weather conditions and ambient outdoor air and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION AND SCHEDULING

- A. Coordinate installation of EIFS with related work specified in other sections to ensure that wall assemblies, including sheathing, flashing, trim, joint sealers, windows, and doors, are protected against damage from the effects of weather, age, corrosion, moisture, and other causes. Do not allow water to penetrate into wall system.

## **PART 2 - PRODUCTS**

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### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide ClassPB systems by the following:
1. Sto Corp.
  2. Drivit
  3. Parex

### **2.2 MATERIALS**

- A. Compatibility: Provide substrates, adhesive, board insulation, reinforcing meshes, base- and finish-coat materials, sealants, and accessories that are compatible with one another and approved for use by system manufacturer for the project.
- B. Colors, Textures, and Patterns of Finish Coat: Comply with the following requirements:
1. Provide Architect's selections from system manufacturer's full range of colors, textures, and patterns for type of finish coat indicated.
- C. Vapor Permeable Air and Moisture Barrier: Shall be as provided by the EIFS manufacturer.
- D. Trowel Grade Monolithic Flashing: Shall be as provided by the EIFS manufacturer.
- E. Molded-Polystyrene Board Insulation: Nominal 1 lb/ft<sup>3</sup> (16 kg/m<sup>3</sup>) density, rigid, cellular thermal insulation formed by expansion of polystyrene resin beads or granules in a closed mold. Comply with system manufacturer's requirements, ASTM C-578 for Type I, and "EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board" for more stringent requirements for material performance and qualities of insulation, including dimensions and permissible variations, and the following:
1. Before cutting and shipping, age insulation in block form by air drying for not less than six (6) weeks or by another method approved by EIMA that produces equivalent results.
  2. Provide insulation in boards not more than 24 by 48 inches (610 by 1219 mm) and in thickness indicated.



- F. Adhesive for Application of Insulation: As provided by the EIFS manufacturer designed for indicated use, compatible with substrate, and complying with one of the following requirements:
  - 1. Single component polyurethane low rise foam adhesive as supplied by the EIFS manufacturer
- G. Reinforcing Mesh:
  - 1. Field Mesh: 4.5 oz/yd<sup>2</sup>
  - 2. Detail Mesh: 4.2 oz/yd<sup>2</sup>
- H. Base-Coat Materials: As provided by the EIFS manufacturer.
- I. Waterproof Base-Coat Materials: System manufacturer's standard waterproof mixture complying with the following requirements for material composition and method of combining materials:
  - 1. Factory-mixed formulation of Portland cement complying with ASTM C-150, Type I, white or natural color and fiber reinforced acrylic base coat
- J. Primer: As provided by the EIFS manufacturer.
- K. Finish-Coat Materials: EIFS manufacturer's vapor permeable textured wall finish with an integrated hydrophobic water repellent.
- L. Water: Potable.
- M. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with system manufacturer's written requirements, manufactured from vinyl plastic.
- N. Mechanical Fasteners: Shall be Wind-Lock Wind-Devil 2 with 2-inch diameter washers as approved by the system manufacturer.
  - 1. For attachment to steel studs from 0.033 to 0.112 inch (0.84 to 2.84 mm) in thickness, provide steel drill screws complying with ASTM C-954.
- O. Drainage Mat: Prefabricated self-furring drainage medium as specified by the EIFS manufacturer.

## 2.3 MIXING

- A. Comply with system manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as recommended by system manufacturer. Mix materials in clean containers. Use materials within time period specified by system manufacturer or discard.

## **PART 3 - EXECUTION**

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### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of system. Proceed with installation of system only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Protect contiguous work from moisture deterioration and soiling caused by application of systems. Provide temporary covering and other protection needed to prevent spattering of base coats and exterior finish coats on other work.
- B. Protect system, substrates, and wall construction behind them from inclement weather during installation. Prevent infiltration of moisture behind system and deterioration of substrates.

### 3.3 INSTALLATION

- A. Comply with ASTM C-1397-03 and system manufacturer's written instructions for installation of system as applicable to each type of substrate indicated. Install approved air and moisture resistive barrier over new exterior sheathing board and existing stucco.
- B. Apply trim accessories as indicated. Use drip screed at bottom edge of system, unless otherwise indicated.
- C. Adhesively attach insulation to comply the EIFS manufacturer's written requirements, and the following:

1. Apply insulation boards over dry substrates in courses with long edges oriented horizontally. Apply adhesive to the back of the insulation board (as approved by the manufacturer) with a 5/8 x 5/8 inch (16x16mm) stainless steel square-notched trowel (as approved by the manufacturer). Apply uniform ribbons of adhesive parallel with the short dimension of the board. Begin first course from a level base line, a drip screed or flashing line and work upward.
2. Immediately place insulation boards in a running bond pattern on the walls with the long dimension horizontal. Start by inserting the first course of insulation board in the starter track. Apply firm pressure over the entire surface of the boards to properly key the adhesive to substrate. Bridge substrate seams by a minimum of 8 inches (200 mm).
3. Butt all board joints tightly together to eliminate any thermal breaks in the EIFS. Do not allow adhesive to get between the joints of the boards.
4. Cut insulation board in an L-shaped pattern to fit precisely around openings and projections to produce edges and shapes complying with details indicated. Do not align board joints with corners of openings.
5. Remove individual boards periodically while the adhesive is still wet to check for satisfactory keying to the substrate and the back of the insulation board. An equal amount of adhesive must be on the substrate and the board when they are removed, as an indication of adequate keying.
6. Stagger vertical joints in successive courses to produce running bond pattern. Locate joints so no piece of insulation is less than 12 inches (300 mm) wide or 6 inches (150 mm) high. Offset joints not less than 6 inches (150 mm) from corners of window and door openings.
7. Interlock ends at internal and external corners.
8. Abut boards tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between insulation boards. Fill all open gaps with insulation or other approved material to fit gaps exactly; insert insulation without using adhesive or other material.
9. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/32 inch (0.8 mm) from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch (1.6 mm).

10. Interrupt insulation for expansion joints where indicated.
  11. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
  12. Treat exposed edges of insulation board as follows:
    - a. Wrap edges after installing insulation board and before applying field-applied reinforcing mesh.
    - b. Wrap mesh of width required to extend not less than 4 inches (100 mm) onto substrate behind insulation board, cover insulation board edge, and extend not less than 4 inches (100 mm) onto insulation board face.
    - c. Wrap edges of insulation board by encapsulating with base coat, reinforcing mesh, and finish coat.
    - d. Wrap edges of insulation board forming substrates of sealant joints within system or between system and other work by encapsulating with base coat and reinforcing mesh.
  13. Treat edges of insulation board at trim accessories by extending base coat, reinforcing mesh, and finish coat over face leg of accessories.
  14. Coordinate flashing installation with installation of insulation to produce a wall system that does not allow water to penetrate behind protective coating.
- D. Install trim accessories at locations indicated according to system manufacturer's written instructions.
- E. Install expansion joints at locations indicated, where required by system manufacturer, and as follows:
1. Where expansion joints are indicated on the drawings.
- F. Apply base coat to exposed surfaces of insulation in minimum thickness recommended in writing by system manufacturer, **but not less than 1/16-inch (1.6-mm) dry-coat thickness.**

- G. Embed reinforcing mesh of type indicated below in wet base coat to produce wrinkle-free installation with mesh continuous at corners and overlapped not less than 2-1/2 inches (64 mm) or otherwise treated at joints to comply with ASTM C 1397-03 and the system manufacturer's written requirements. Do not lap reinforcing mesh within 8 inches (204 mm) of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are not visible. Use standard reinforcing mesh, unless otherwise indicated.
- H. Additional Reinforcing Mesh: Apply strip reinforcing mesh around openings extending 4 inches (100 mm) beyond perimeter. Apply additional 9-by-12-inch (230-by-305-mm) strip reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch- (200-mm-) wide strip reinforcing mesh at both inside and outside corners, unless base layer of mesh is lapped not less than 4 inches (100 mm) on each side of corners. Embed strip reinforcing mesh in base coat before applying first layer of reinforcing mesh.
- I. Apply primer over dry base coat according to system manufacturer's written instruction.
- J. Apply finish coat over dry primer, maintaining a wet edge at all times for uniform appearance, in thickness required by the system manufacturer to produce a uniform finish of color and texture matching approved sample.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: The Owner may engage a qualified independent testing and inspecting agency to perform field quality-control tests and inspections and to prepare test reports. Testing and inspecting agency will interpret tests and report whether tested work complies with or deviates from requirements.
- B. Correct deficiencies in or remove and replace EIFS that inspections and test reports indicate do not comply with requirements.
- C. Additional testing and inspecting, at the Contractor's expense, will be performed to determine compliance of corrected work with requirements.
- D. Cooperation of Contractor with Testing Agency
  - 1. Provide access for testing agency to places where structural steel work is being fabricated or produced so that inspection and testing can be accomplished as required by the Engineer.
  - 2. The Contractor shall assist testing laboratory by providing access.

3. The Contractor shall make repairs of damage as a result of testing.

- E. The EIFS manufacturer technical representative shall perform from the scaffolding bi-weekly inspections of the EIFS installation to verify installation in accordance with the EIFS manufacturer's written procedures. Submit report to the Engineer after each biweekly site visit.
- F. The Engineer will perform random sampling of the EIFS base coat for field testing of base coat thickness and will also perform random tests of the drainability of the notched base coat behind the EPS board.

3.5 CLEANING AND PROTECTING

- A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames, balcony rails and other surfaces outside areas indicated to receive system coatings.
- B. Provide final protection and maintain conditions, in a manner acceptable to Installer and the system manufacturer that ensure system is without damage or deterioration at the time of substantial completion.

**END OF SECTION**

**SECTION 075210 - BITUMINOUS VAPOR RETARDER/TEMPORARY ROOF**

**PART 1 - GENERAL**

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1.1 SECTION INCLUDES

- A. Provision and installation of self-adhering bituminous vapor retarder/temporary roof over gypsum thermal barrier as specified herein
- B. Provision and installation of a cold adhered bituminous vapor retarder/temporary roof over existing gypsum roof deck as specified herein

1.2 RELATED SECTIONS

- A. Selective Demolition (Section 024119)
- B. Rough Carpentry for Roofing (Section 061000)
- C. Gypsum Thermal Barrier (Section 072222)

1.3 SYSTEM DESCRIPTION

- A. Over Existing Concrete Roof Deck: The bituminous vapor retarder installation as described herein shall consist of a "SBS" self-adhering modified bitumen membrane applied over the existing concrete roof deck.

1.4 QUALITY ASSURANCE

- A. Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).
  - 1. The American Society for Testing and Materials (ASTM)
  - 2. Factory Mutual Global (FM)
  - 3. National Roofing Contractors' Association (NRCA)
- B. Roofing Contractor: The company shall specialize in built-up bituminous roof application with a minimum of five (5) years of experience.

1.5 SUBMITTALS

- A. List of Materials: Submit (in .pdf format) complete list of materials proposed for use on this project for work of this section. List shall designate specific manufacturer and product designation, along with specific quality reference (for instance, ASTM Specification No., FM approval, etc.).
- B. Samples: Submit samples (in duplicate) of the following: Bituminous Vapor Retarder (12 inches by 12 inches)

1.6 DELIVERY, STORAGE AND HANDLING

- A. Coordinate storage locations with the Owner.
- B. Materials shall be delivered to site in original containers, with each container or roll bearing label of the manufacturer. All materials shall be labeled with appropriate labels clearly identifying contents as to size, type, physical and performance characteristics and agency approvals.
- C. Storage and handling of materials shall be strictly in accordance with the following instructions.
  - 1. Roofing materials shall be supplied dry, and shall be kept dry at all times prior to application. Materials, other than bitumen, shall be stored in an enclosed, dry storage space. Materials indicating moisture content above equilibrium shall be rejected as unacceptable. Ensure adequate ventilation to prevent condensation.
  - 2. Roll goods shall be stored on clean floors, on platforms, and stood on end only. Rolls with damaged ends shall not be used. Out-of-round rolls shall not be used.
  - 3. Store solvent-bearing or emulsion materials in dry, cool storage, minimum 40 degrees F, exercising appropriate precautions against fire and hazard to health.
  - 4. After partial use of solvent-bearing materials and emulsions, replace lids promptly and tightly to prevent escape of solvents.
- D. Roofing materials shall not be stored on roof in quantities that will exceed design loads, damage existing system, hinder installation/drainage or be more than can be used each day.



## 1.7 PROTECTION

- A. Building walls shall be protected adequately (with tarps, or other suitable material) from soil or spillage at all hoisting points. Roofing felts shall not be used for this purpose. The Contractor shall be responsible for preventing damage from any operation under this contract. Any such damage shall be repaired to original condition at no expense to the Owner.
- B. Provide barricades, retaining ropes and any appropriate signage required by OSHA or the Project Manager.

## 1.8 ENVIRONMENTAL CONDITIONS

- A. Application of materials shall neither commence nor proceed during inclement weather.
- B. All surfaces to receive materials shall be thoroughly dry and free of dew or frost.
- C. All surfaces to receive materials shall be clean and free of all loose particles, dirt and debris.
- D. Do not commence with application of bituminous materials when air temperature is below 14 degrees F or 14 degrees F and falling unless approved in writing by the Project Manager.

## 1.9 WARRANTIES

- A. Work of this section is included from the roof membrane manufacturer's total system warranty and roofing contractor's warranty as specified in Section 01700.

# **PART 2 - PRODUCTS**

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## 2.1 MATERIALS

- A. Bituminous Materials:
  - 1. Modified Bitumen Membrane: Shall be approved by the roof membrane manufacturer or use in the specified roof system and as follows:
    - a. Metal Deck Roof Areas:
      - 1) Self-adhering Sopravap'R styrene-butadiene-styrene (SBS), as manufactured by Soprema

- 2) Self-adhering VaporTite styrene-butadiene-styrene (SBS), as provided by Fibertite
  - 3) Self-adhering SA 31 styrene-butadiene-styrene (SBS), as provided by Sika-Sarnafil
  - 4) Approved equal
- b. Lightweight Gypsum Roof Deck Areas
- 1) Cold-adhered Elastophene Sanded 2.2 styrene-butadiene-styrene (SBS), as manufactured by Soprema
  - 2) Cold-adhered FTR SBS Ply 3.7 styrene-butadiene-styrene (SBS), as provided by Fibertite
  - 3) Cold-adhered Ply Sheet HA 87 styrene-butadiene-styrene (SBS), as provided by Sika-Sarnafil
  - 4) Approved equal
2. Primer: Prime substrate prior to vapor retarder/temporary roof installation, conforming to ASTM D41 and as approved by the roof membrane manufacturer.
3. Cold Adhesive: As specified by the roof membrane manufacturer.

### **PART 3 - EXECUTION**

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#### **3.1 PREPARATION OF SUBSTRATE**

- A. Any substrate to receive materials shall be clean, dry, free of loose or weak material, contaminants, abrupt changes in level, and projections which would damage roofing materials. Flashing surfaces shall be free of all previous roofing material residue. Prime surfaces where required to aid adhesion.
- B. Do not start roofing work until surfaces to be covered are suitable to receive work of this section.
- C. Before installation of new vapor retarder/temporary roof, the roofing contractor and the Project Manager together shall inspect surface of existing roof deck to determine its fitness to receive materials. Any condition making it unsuitable shall be corrected prior to commencing work.
- D. Verify compliance with the requirements of Section 024119.

### 3.2 INSTALLATION

#### A. General Requirements for Application of Roofing Materials:

1. Application of materials shall be accomplished in such a way that each area started will be complete at end of each day of work. All membrane edges and flashings shall be protected against water entry at all times. Cut- offs and temporary protection shall be completely removed prior to resumption of work.
2. Leave no existing roof deck exposed to weather without surface protection longer than day following application. Do not leave existing roof deck exposed to precipitation at any time.
3. Protect all areas where work is being performed. Movement of materials and equipment across existing roof system shall be limited to prevent damage. If movement is necessary, provide complete protection for affected areas. The Contractor is responsible for any damage to the existing system.

#### B. Vapor Retarder/Temporary Roof:

1. Vapor Retarder/Temporary Roof shall be installed in accordance with the membrane manufacturers printed instructions.
2. SBS modified bitumen to be unrolled, positioned in place and trimmed as necessary around roof projections. SBS modified bitumen shall be self-adhered over gypsum thermal barrier and cold adhered over lightweight gypsum roof deck. Side laps shall be a minimum of 3 inches and end laps shall be a minimum of 6 inches. The modified bitumen shall be installed free of wrinkles, creases, fishmouths or blisters. All surface defects shall be completely cut out and repaired. The modified bitumen shall extend 2 inches vertical minimum at roof penetrations, curbs, etc., and be shall be continuously sealed.
3. Modified bitumen shall be uniformly and continuously adhered with no voids, skips, or dry spots.
4. Exercise caution to prevent encapsulation of dirt or debris within or under sheets. Where this condition occurs, the affected area shall be completely cut out and replaced with new materials.
5. Firmly press in modified bitumen over the approved substrate. Apply additional pressure at laps to ensure adhesion.

6. Use a strong bristled broom to ensure adhesion immediately after application.

3.3 WORKMANSHIP

- A. Roofing work which does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager at the Contractor's expense without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to work of this section.

**END OF SECTION**

## **SECTION 075419 - POLYVINYL-CHLORIDE (PVC) ROOFING**

### **PART 1 - GENERAL**

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#### **1.1 SUMMARY**

A. Section Includes:

1. Provision and installation of new adhered polyvinyl chloride (PVC) roofing system, including flashings and accessories
2. Provision and installation of new membrane manufacturers walkpad

B. Related Requirements:

1. Rough Carpentry for Roofing (Section 061000)
2. Insulation Protection Layer (Section 072200)
3. Metal Flashing, Trim and Accessories (Section 076200)
4. Sealants (Section 079200)

#### **1.2 DEFINITIONS**

- A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

#### **1.3 SUBMITTALS**

- A. All Submittals shall be provided in accordance with Section 013300 and as specified herein.
- B. List of Materials: Submit (in pdf format) a complete list of materials proposed for use in work of this section. List shall designate specific manufacturer and product designation, along with specific quality reference (for instance, ASTM Specification No. 1).
- C. Wind Uplift Resistance Submittal: For the roofing system, indicating compliance with wind uplift performance requirements.
- D. Shop Drawings:
1. Use of the Contract Drawings reproduced for shop drawings is prohibited.
  2. Only shop drawings that have been stamped "Approved" by the Contractor and manufacturer will be accepted for review.

3. Show dimensions and layouts of insulation protection layer from high to low points.
- E. Samples: Submit samples (2 minimum) of membrane layer not less than 1-foot square. Samples shall be of material thickness and construction to be used on project.
- F. Product Data: Submit (in .pdf format) manufacturer's printed installation requirements and data on physical/performance characteristics of materials and systems for work of this section.
- G. Product Use Approval:
  1. Submit (in .pdf format) letters of approval from both the insulation protection layer and membrane manufacturers stating the acceptability for use of their respective product(s) with the other product(s). Approval shall be on company letterhead and shall be signed by an officer of the company.
  2. Submit (in .pdf format) letters of approval from the membrane manufacturers stating their respective products are acceptable for use in the proposed system and their products meet or exceed the requirements of the Contract Documents. Approval shall be on company letterhead and shall be signed by an officer of the company.
- H. Certificate (Subsequent to Completion of Work): Submit (in .pdf format) a written certificate of compliance from the manufacturer and jointly signed by the Contractor, stating installation roof membrane was in accordance with the Contract Documents, and in accordance with the manufacturer's printed installation instructions. The certificate shall be on company letterhead and shall be signed by an officer of the company.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For the roofing system to including in the maintenance manuals
- B. All warranties as specified in Section 017700

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by the roofing system manufacturer to install the manufacturer's product and that is eligible to receive the manufacturer's special warranty.
- B. Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).
  1. The American Society for Testing and Materials (ASTM)

2. Federal Specification (FS)
3. Factory Mutual Engineering Corporation (FM)

C. Qualifications - Roofing Contractor:

1. Before beginning any part of the work, submit (in .pdf format) copies of the Approved (Licensed) Applicator Agreement between the Contractor and roofing membrane manufacturer.
2. Before beginning any part of the work, submit (in .pdf format) a letter from the membrane manufacturer stating that the Contractor has been trained by the manufacturer in application of the roofing system specified herein; and that the Contractor is approved for this work by the manufacturer. Submit on company letterhead signed by an officer of the company.

- D. Qualifications - Manufacturer: Before beginning any part of the work, submit (in .pdf format) a letter from the membrane manufacturer stating that the membrane manufacturer has marketed the roof system specified herein for a period of five (5) years; and that the membrane manufacturer has marketed thermoplastic single-ply roof systems for a consecutive period of thirty (30) years. Submit the letter on company letterhead, signed by an officer of the company.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver roofing materials to the project site in their original containers with seals unbroken and labeled with the manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by the roofing system manufacturer. Protect stored liquid material from direct sunlight. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with the insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of the deck.

- E. Storage of roofing materials in their original shipping wrapping is adequate. Materials shall be protected by use of tarpaulins or other similar protective wrapping.
- F. Roll goods shall be stored on clean, dry surfaces on platforms. Rolls with damaged ends or other forms of damage shall not be used. Flattened rolls shall not be used.

1.7 PROTECTION

- A. Protection of facilities shall comply with provisions of the Contract Documents.
- B. Building walls shall be protected adequately (with tarps or other suitable material) from soil or spillage at all hoisting points. The Contractor shall be responsible to prevent damage from any operation under this Contract. Any such damage shall be repaired at the Contractor's expense to the Owner's satisfaction or be restored to original condition.
- C. Provide barricades, retaining ropes and any appropriate signage required by OSHA and/or by the Owner.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when the existing and forecasted weather conditions permit the roofing system to be installed according to the manufacturer's written instructions and warranty requirements.
- B. Prior to and during installation of membrane and flashing materials all dirt, dust, debris, and existing bituminous materials shall be removed from surfaces. Under no circumstances shall foreign substances be allowed to contaminate lap/seam areas. At flashing locations where existing bituminous residue cannot be removed, the installation of an approved separation sheet is required.
- C. All surfaces to be joined, seamed or overlaid shall be completely dry and free of condensation, dew, frost or other forms of moisture.
- D. Do not commence with installation of membrane or flashing when air temperature is below 40 degrees F or 40 degrees F and falling unless approved in writing by the manufacturer of membrane materials.



## 1.9 WARRANTY

- A. Roof Warranty: Work under this section is part of the total system warranty/guaranty as specified in Section 017700. The manufacturer agrees to repair or replace components of the roofing system that fail in materials or workmanship within the specified warranty period.
  - 1. Roof warranty includes roof membrane, base flashings, roof insulation, cover boards, substrate board and all other new components of the roofing system.
  - 2. Warranty: Twenty (20 year) No Dollar Limit from date of final completion
  - 3. Provide 60 mph wind warranty as specified in Section 017700.
  - 4. Provide certification from the manufacturer that all warranty requirements will be met. Provide with submittals.
- B. Roofing Contractors Warranty: Work under this section is part of the roofing contractor's Warranty as specified in Section 017700.

## **PART 2 - PRODUCTS**

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### 2.1 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. The roof system and flashings shall remain watertight.
  - 1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
  - 2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272/D4272M or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by the roof membrane manufacturer based on testing and field experience.

- C. Wind Uplift Resistance: Roof system shall meet FM 1-90 (min) wind securement criteria as follows:
  - 1. Zone 1 (Roof Area Field): See drawings.
  - 2. Zone 2 (Roof Area Perimeter): See drawings.
  - 3. Zone 3 (Roof Area Corners): See drawings.
- D. Energy Performance: Roofing system to have a three (3) year aged solar reflectance of not less than 0.55 and a three-year aged thermal emittance of not less than 0.75 when tested in accordance with CRRC-1 Standard.
- E. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of the applicable testing agency.
- F. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.
- G. The membrane, including factory seams, shall be watertight and free of pinholes, foreign matter or other manufacturing defects that might affect serviceability.
- H. Polymer coating shall be completely integrated with reinforcement and shall be continuously and uniformly dispersed on both sides of reinforcement. In no place shall reinforcement be exposed.
- I. Reinforcement shall be treated with fungicide, anti-wicking and anti-bacterial agents. Treatment in no way shall alter published/specified physical properties.

## 2.2 POLYVINYL CHLORIDE (PVC) ROOFING

- A. PVC Sheet: Fabric/felt backed
  - 1. Manufacturers: Provide products by one of the following:
    - a. FiberTite: FiberTite 60-mil FB SM Membrane
    - b. IB Roof Systems: IB PVC Single-Ply FB 60
    - c. Sika Sarnafil: Sarnafil G 410-60 Feltback
  - 2. Exposed Face Color: White.
- B. Source Limitations: Obtain components for roofing system from the roof membrane manufacturer.

## 2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
  - 1. Adhesives and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.
- C. Laminated/Coated/Clad Metal: Pourable Sealer Pans, Flashing and Counterflashing, etc., shall be supplied by the membrane manufacturer consisting of membrane material laminated to aluminum sheet metal.
- D. Liquid Flashings: Shall be a two-part rapid setting reinforced polymethyl methacrylate (PMMA) system as provided by the roof membrane manufacturer. Use summer or winter grade formulation as recommended by the manufacturer depending on temperature conditions. Reinforcement shall be non-woven polyester as provided by the roof membrane manufacturer designed to use with the PMMA flashing.
- E. Flashing at Stacks, Vents and Corners: Shall be prefabricated where possible. Field-fabricate from material supplied by the membrane manufacturer if necessary.
- F. Adhesives:
  - 1. Membrane Adhesive: The roof system manufacturer's recommended low VOC membrane adhesive designed to secure fleece back/felt back membrane to the specified substrate and capable of meeting the specified uplift requirements.
  - 2. Flashing Bonding Adhesive: Manufacturer's standard, water based
- G. Slip Sheet: The manufacturer's standard, of thickness required for application.
- H. Metal Termination/Pressure Bars:
  - 1. All termination/pressure bars shall be a minimum of 0.125-inch-thick aluminum and pressure bars shall be a minimum of 0.100-inch-thick aluminum, both pre-punched a maximum of 8 inches on-center. All bars shall be straight and true with no sharp edges, corners or projections.
  - 2. Termination bars shall have a caulk lip sufficient to accept and retain required sealants.

- I. Fasteners: Factory-coated steel fasteners and galvanized metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer. See drawings for specified fasteners for specific conditions.
- J. Pourable Sealer for Pitch Pans: Shall be one-part or two-part, self-leveling urethane sealant as supplied by the membrane manufacturer and have the following characteristics:
  - 1. Solvent Free, 100% solids
  - 2. No outgassing on damp surfaces
  - 3. UV Stable
  - 4. Paintable

## 2.4 WALKPADS

- A. Flexible Walkpads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 60 mil thick and acceptable to roofing system manufacturer.
  - 1. Size: Approximately 30 (min) by 100 feet
  - 2. Color: Contrasting with roof membrane
  - 3. Do not install walkways over seams
  - 4. Supplied by the roof membrane manufacturer

## **PART 3 - EXECUTION**

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### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the work. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Before installation of any roofing materials, the Contractor and Project Manager or his representative, together, shall inspect completed work to determine its fitness to receive roofing system. Any condition making it unsuitable shall be corrected prior to commencing roofing work.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to the roofing system installation according to the roofing system manufacturer's written instructions. Remove sharp projections.
- B. Surfaces to receive roofing materials shall be free of abrupt changes in level and free of projections that would adversely affect roofing materials or their installation.
- C. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

### 3.3 INSTALLATION OF ROOFING

- A. Install roofing system according to the roofing system manufacturer's written instructions, SPRI's Directory of Roof Assemblies listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29. The Contractor shall strictly adhere to the applicable Manufacturer's Specifications for installation unless otherwise specified. Instructions and procedures described herein are to be considered minimum requirements for installation of materials
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of the roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning the work on adjoining roofing.
- C. Install the roof membrane and auxiliary materials to tie-in to the existing roofing to maintain weathertightness of transition.

### 3.4 INSTALLATION OF ADHERED ROOF MEMBRANE

- A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll, position in place, and cut and trim each sheet as necessary around roof openings, vent pipes, etc. Allow membrane to relax as recommended by the manufacturer.
- C. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by the manufacturer. Stagger end laps.

- D. Determine the direction of water drainage and the low point of the deck. The orientation of laps shall be such that the direction of water flow is over the laps. The direction of the overlap shall be changed as the direction of the water flow changes. Felt/fleece back membrane may be butted together and the butt joint stripped in with a membrane cover strip if approved by the membrane manufacturer and installed in accordance with the membrane manufacturer's instructions
- E. Over the properly installed and prepared substrate surface, adhesive shall be applied using approved solvent-resistant 3/4-inch nap paint rollers. The adhesive shall be applied at the rate specified by the membrane manufacturer to the substrate and underside of roof membrane. The adhesive shall be applied in a smooth, even coating with no globs, voids, puddles, or similar irregularities. Only an area that can be covered completely in the same day's operations shall be coated with adhesive. Note: Drying time increases with cooler temperatures. Also, the Contractor is cautioned against work on days of high humidity because of extremely slow evaporation of the solvent. The Contractor shall check with a roof system manufacturer's representative prior to roof operations on such days.
- F. Apply adhesive to substrate and allow to become tacky. Roll the membrane into the adhesive, avoiding any wrinkles or air pockets, followed by brooming to ensure full contact of membrane and adhesive. Complete the bonding process by rolling the membrane with a weighted, foam-covered roller. Adjacent sheets shall be lapped a minimum of three inches or butted together and stripped in with a membrane cover strip when approved by the membrane manufacturer at side laps. All end laps shall be butted together and stripped in with a membrane cover strip. The amount of adhesive that can be applied before rolling the membrane into the substrate will be determined by ambient temperature, humidity and manpower.
- G. No adhesive shall be applied in lap areas. All sheets shall be applied in the same manner, lapping or butting all sheets as required by welding techniques.
- H. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.
- I. Seams:
  - 1. All seam areas of membrane shall be cleaned and dried prior to welding. Any contaminated membrane shall be solvent cleaned with a solution as recommended and approved in writing by the manufacturer. Minimize solvent dispersion on top of roof membrane. Allow solvent to flash-off. Solvent shall not be allowed to enter drains.

2. Seaming shall be by hot air welding using automatic machine welder. Hand-held welders are not acceptable for main/end seams except at T-joints. Minimum width of homogenous field welds is 2 inches. Seaming to laminated metal on horizontal leg shall be by machine only with minimum 2 inches homogenous weld. Hand welding to the horizontal leg of laminated metal is only allowed when the field sheet is extended under the metal, properly terminated and the metal is stripped-in with a minimum 6-inch-wide cover strip.
3. Instruct operator as to appropriate amounts of heat to be used. Voltage fluctuations and climatic conditions will affect the temperature of the heat welding equipment. Excessive heat will cause damage to roof membrane and insulation. Insufficient heat will result in inferior seaming. Automatic welder and/or the power source (generator, etc.) shall be equipped with a device to regulate voltage fluctuations.
4. The membrane shall be held tight during welding to prevent wrinkles, fishmouths, etc., at seams. Take special care in workmanship at T-joints to ensure continuous seam integrity.
5. All seams including main seams, end seams, splices, patches, flashing, etc., shall be dry, smooth, straight and of correct width prior to joining. Clean as specified.
6. All seams and non-seamed edges of the sheet, such as top edge of flashing, shall be straight, square and true. Use of a straight edge, chalk line, etc., is required wherever cutting of membrane is necessary.
7. All T-joints shall receive a minimum 6-inch cover patch fully hot air welded.
8. All seams shall be checked after cooling and repaired, if required, by the Contractor within 24 hours after hot air welding. Checking of seams shall be accomplished along the entire length with the use of a tool manufactured or fabricated for this specific purpose. Ballpoint pens, screwdrivers, nails, etc., are not acceptable. A cotter pin extractor with the point slightly dulled is acceptable. The entire length of the tool shall be less than 1 foot to maintain proper pressure.
9. Seams with blisters, fishmouths, wrinkles or other defects and/or improperly applied/damaged seam sealant are unacceptable and shall be repaired.
10. Patching and repair of defective seams shall be as directed by the membrane manufacturer and approved by the Project Manager prior to commencing corrective work. Minimum patch shall extend beyond defect a minimum of 3 inches in all directions and be fully hot air welded.

11. The Project Manager may also request the Owner's inspection representative check the seams. This practice is intended to assist the Contractor and in no way diminishes the Contractor's responsibility for the integrity of the seams.

- J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

### 3.5 INSTALLATION OF BASE FLASHING

- A. Install sheet flashings and preformed flashing accessories, and adhere to the substrates according to the roofing system manufacturer's written instructions.
- B. Verify proper preparation of substrate including sheet metal, masonry, nailers, etc. Provide sheet flashing at perimeter walls, over nailers, around mechanical equipment curbs, vents, stacks and other protrusions through the roof.
- C. Where required, lift any curbed units to facilitate membrane terminations, flashing closures and/or to add wood nailers. Resecure units.
- D. Membrane sheet flashing/counterflashing shall be mechanically-fastened with termination bars to prevent slippage. Do not stretch membrane during application. Adhere membrane to vertical surfaces where required with approved bonding adhesive. Apply uniform and continuous bead of approved sealant between top edge of flashing and substrate prior to installing termination bar. Apply another uniform and continuous bead of approved sealant in caulk lip of termination bar after fastening.
- E. Sheet flashing system shall extend a minimum of 8 inches above finished roof level and shall be welded to main roof sheet prior to bonding to the vertical surfaces. Use prefabricated inside and outside corners where possible.
- F. Install laminated metal flashing as shown on the drawings. Metal flashing shall extend a minimum of 8 inches above roof surface or as shown on the drawings. Fasten at top and bottom as shown on the drawings.
- G. Fabricate laminated metal such that the horizontal leg lays flat and follows the surface of the insulation. This may require fabrication with an angle slightly greater than insulation surface.
- H. Maximum length of laminated metal sections is 10 feet. Install with expansion joints between sections. Allow 1/8-inch to 1/4-inch gap between adjacent sections and apply 2-inch bond breaker (duct tape) over gap. Install a minimum 5-inch-wide cover strip of unreinforced flashing material, heat welded a minimum of 1.5 inches on both sides, beyond bond breaker.



- I. Flash penetrations and field-formed inside and outside corners with the manufacturer's standard sheet flashing membrane.
- J. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- K. Pipe Sleeves:
  - 1. Install pre-fabricated pipe flashing at all vent pipes and pipe supports.
  - 2. Provide stainless steel hose clamp at top of pipe flashing and apply approved sealant between pipe and membrane and on top of hose clamp unless shown otherwise. Install copper rain hoods on all pipe flashings.

### 3.6 INSTALLATION OF WALKWAYS

- A. Flexible Walkways: Install walkway products according to the manufacturer's written instructions.
  - 1. Install flexible walkways at the following locations:
    - a. Locations indicated on the drawings
    - b. As required by the roof membrane manufacturer's warranty requirements
  - 2. Provide 6-inch clearance between adjoining pads.
  - 3. Heat weld to the substrate or adhere walkway products to the substrate with a compatible adhesive according to the roofing system manufacturer's written instructions.

### 3.7 MANUFACTURER'S INSPECTIONS

- A. Inspections shall be made by a representative of the membrane manufacturer. The Contractor shall arrange for these inspections and notify the Project Manager each time the membrane manufacturer's representative is present at the project site. These inspections shall be in addition to any inspections that may be made by an employee or representative of the Owner. Written reports of the membrane manufacturer's inspections shall be made, with copies to the Project Manager and to the Contractor. The membrane manufacturer shall inspect work at start and at completion.

- B. The manufacturer shall designate one (1) individual, acceptable to the Project Manager, as the field representative. The representative shall have sufficient training, knowledge and experience as a basis for interpretation and implementation of the Contract Documents and manufacturer's specifications. The representative shall attend the required meetings and perform the required inspections. The representative shall not authorize or approve deviations from the Contract Documents without notifying and obtaining approval from the Project Manager.
- C. Inspections shall be made at such times and frequency as required to determine that:
  - 1. Deck surface is acceptable to receive insulation prior to installation
  - 2. Insulation surface is acceptable to receive roofing membrane prior to installation
  - 3. Materials, equipment and application methods are in accordance with the manufacturer's recommendations.
  - 4. Completed work is acceptable

### 3.8 FIELD QUALITY CONTROL

- A. Testing for conformance with requirements of Contract Documents may be employed by the Owner.
- B. Testing Procedures:
  - 1. Check substrate for moisture and physical condition to determine suitability to receive materials.
  - 2. Determine moisture content of materials.
  - 3. Inspect flashings.
  - 4. Verify pull out values.
  - 5. Check integrity of seams.
  - 6. Verify that completed work is acceptable.

### 3.9 PROTECTING AND CLEANING

- A. Protect the roofing system from damage and wear during the remainder of the construction period. When the remaining construction does not affect or endanger the roofing, inspect the roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to the Engineer and Owner.

- B. Correct deficiencies in or remove the roofing system that does not comply with the requirements, repair substrates, and repair or reinstall the roofing system to a condition free of damage and deterioration at the time of final completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by the manufacturer of the affected construction.
- D. The Contractor shall remove all masking, protection, equipment, materials and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.

**END OF SECTION**

## **SECTION 076200 - METAL FLASHING AND TRIM**

### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

- A. Provision and installation of new shop fabricated sheet metal flashings, including drip edge, rain hoods, extenders, expansion joint covers, closures, accessories, etc., as shown on the drawings, as specified herein and as required by the membrane Manufacturer.
- B. Provision and installation of new shop fabricated sheet metal collector heads, downspouts, scuppers, gutters and related accessories as shown on the drawings and as specified herein.
- C. Provision and installation of new pre-manufactured sheet metal fascia and related accessories as shown on the drawings and as specified herein.

#### **1.2 RELATED SECTIONS**

- A. Rough Carpentry (Section 061000)
- B. Polyvinyl-Chloride (PVC) Roofing (Section 075419)
- C. Sealants for Roofing (Section 079200)

#### **1.3 QUALITY ASSURANCE**

- A. References: Some products and execution are specified in this Section by reference to published Specifications or Standards of the following (with respective abbreviations used):
  - 1. American Iron and Steel Institute (ANSI)
  - 2. Federal Specifications (FS)
  - 3. The American Society for Testing Materials (ASTM)
  - 4. National Roofing Contractors Association (NRCA)
  - 5. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- B. Standard References (As Published by SMACNA): "Architectural Sheet Metal Manual," latest edition; hereinafter referred to as "SMACNA Manual"

#### **1.4 SUBMITTALS**

- A. All Submittals shall be provided in accordance with Section 013300 and as specified herein.

- B. All Submittals shall be submitted in triplicate unless specifically noted otherwise.
- C. Shop Drawings:
  - 1. Use of Contract Drawings reproduced for shop drawings is prohibited.
  - 2. Only shop drawings checked and stamped "Approved" by the Contractor and Fabricator will be acceptable for review.
  - 3. Show weights, gauges or thickness of sheet metal. Show location, lap arrangement, dimensions, materials, connections, anchorage and relation to adjacent work.
  - 4. Show nailers, blocking, etc., that are required to be furnished for securing work of this section.
  - 5. Show terminations, intersections and splices in isometric details.
- D. Samples:
  - 1. Submit samples (in duplicate) of the following:
    - a. All shop fabricated sheet metal shapes shown on the drawings
    - b. Gutters, downspouts, collector heads and scupper sleeves
    - c. All pre-manufactured or shop fabricated accessories
    - d. Restraint bars, termination bars, clamps, and other accessories
  - 2. Samples shall be of same material composition, thickness and dimension as required for construction. Samples shall be a minimum of 12 inches long.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Comply with the provisions of Section 016000.
- B. Sheet metal items shall be handled carefully to prevent damage to surface, edges and ends.
- C. Storage at site shall be above ground in a dry location, free from physical abuse. Store materials in a manner to prevent staining from condensation.

#### 1.6 EXAMINATION OF CONDITIONS

- A. A significant portion of this project will involve sheet metal work. The Contractor shall field measure actual conditions to allow for accurate fabrication and installation.

- B. Drawings depict profiles, securement, materials and certain other requirements. Quantities, sizes and dimensions to meet the intent of the Contract are the responsibility of the Contractor.

## 1.7 WARRANTIES

- A. Work of this section is part of the Contractor's Warranty as specified in Section 017700.
- B. Sheet Metal Finish: The manufacturer shall warrant the finish against cracking, peeling, loose of adhesion, excess chalking, and excess color change for a period of twenty (20) years.
- C. Pre-manufacturer sheet metal system: The manufacturer shall provide a finish warranty as stated in Subsection "B" and a Lifetime 120 mph wind warranty for all roof edge systems.

## **PART 2 - PRODUCTS**

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### 2.1 MATERIALS

- A. Aluminum:
  - 1. Conforming to ASTM B209, Type 3003-H14 aluminum.
  - 2. Coefficient of expansion: 0.0000129 in./in./°F
  - 3. Tensile strength: 22000 psi minimum
  - 4. Minimum thickness: .050-inch unless noted otherwise
  - 5. Aluminum components shall be pre-finished aluminum with a twenty-year Kynar 500 finish (color as selected by the Owner from the manufactures' standard list of colors).
- B. Stainless Steel
  - 1. ANSI Type 302/304 conforming to ASTM A167, 2D annealed finish
  - 2. Coefficient of expansion: 0.0000096 in./in./°F
  - 3. Tensile strength: 80,000 psi minimum
  - 4. Minimum thickness: .050-inch unless noted otherwise
- C. Fasteners:
  - 1. Screws, bolts, and other fastenings for exposed sheet metal (unless otherwise noted) shall be AISI Type 300 series stainless steel and of size and type suitable for the intended use or of the same material as the sheet metal components being secured.

2. Rivets shall be of same material type as sheet metal components or stainless steel
  3. Fasteners for attached sheet metal to concrete where not shown shall be 1/4-inch stainless steel concrete screws. Embedment into concrete shall be 1.5-inch minimum.
  4. Provide sealing washer at all exposed fasteners.
- D. Sealant: Sealing and caulking materials shall conform to requirements of Section 079200.
- E. Solder: Shall conform to ASTM Designation B-32, 50-50 percent block tin and pig lead.
- F. Flux: For pre-tinned surfaces on copper, zinc, lead, lead coated copper, use regular rosin-type flux meeting FSO-F-506. For stainless steel use a phosphoric acid type flux.
- G. Shop Fabricated Sections:
1. Downspouts: 0.040-inch prefinished aluminum
  2. Rain Hoods: Shall be minimum .050-inch aluminum or 16 oz. copper as shown on drawings. Rain hoods shall be fabricated with a flat shoulder for band clamping to penetrations and with an integral top lip for receipt/retention of sealant.
  3. Scuppers: Roof membrane manufacturers coated/clad metal and 0.050-inch prefinished aluminum face plate
  4. Collector Heads: 0.050-inch prefinished aluminum
  5. Expansion joint covers: 0.050-inch prefinished aluminum
  6. Drip edge: 0.050-inch prefinished aluminum
  7. Counterflashings: 0.050-inch prefinished aluminum
- H. Premanufactured Systems: All premanufactured components shall be supplied from a single source\*
1. Copings: Type shall be an extruded aluminum anchor bar with a snap-on cover as supplied and/or approved by the roof system manufacturer meeting FM and ANSI/SPRI ES-1 as follows:
    - a. Anchor Bar: The anchor bar shall be extruded .100-inch thick from 6063-T6 alloy aluminum supplied in 12-foot lengths. Anchor bars are pre-slotted 12 inches on-center along primary fastening line. Miters are factory welded watertight. Splice plates shall be included to allow for thermal expansion and contraction of the fascia system. Optional installation tool shall be included.
    - b. Fasteners: Fasteners furnished by the manufacturer are corrosion resistant wood screws #12 x 2 inches with hexagonal heads and 5/8-inch bonded washer with EPDM washer seal. Substitute fasteners of any type are unacceptable.

- c. Coping Cover: Snap-on coping covers shall be formed from 0.050-inch pre-finished aluminum. Panels shall be pre-notched to provide for overlap joint installation. Finish shall be manufacturer's standard Kynar. All corners (inside and outside) shall be mitered and fully welded. Colors shall be chosen from the manufacturer's standard color charts.
- d. Splice Plates: Shall be 8-inch concealed with dual non-curing isocryl-butyl sealant strips.

## 2.2 FABRICATION/INSTALLATION - SHEET METAL

- A. Sheet metal shall be fabricated in a shop equipped with machinery and tools for working sheet metal. Work shall be performed by skilled mechanics. Fabricate all work possible in shop.
- B. Sheet metal shall be formed to profiles, sizes, and dimensions as shown on Drawings and as shown on approved shop drawings. Work shall conform to approved samples. Colors shall be chosen from the manufacturer's standard color charts.
- C. Work shall conform to practices recommended in SMACNA Manual, except as required specifically otherwise.
- D. Sheet metal shall be installed in longest lengths possible up to a maximum of 10 feet to minimize joints; except where required specifically otherwise, and where consideration of control of expansion and contraction require otherwise. Minimum length of section is 3 feet.
- E. Sheet metal shall be formed to true lines and shall be interrupted/closed at sharp arrises. Work shall be installed straight, without bulges or waves, and secured as specified/shown. All sheet metal shall be installed with sufficient slope to shed water.
- F. Exposed edges shall be turned under for stiffness. No exposed, sheared, or raw edges shall be permitted. Rounded, smooth corners are required where sheet metal may puncture or damage any adjacent material. Provide drip edge on all vertical faces of sheet metal to shed water away from underlying materials. Minimum cover over (beyond) wood nailers is 2 inches.
- G. Corners of sheet metal shall be mitered, seamed, riveted or soldered, and sealed. Legs shall be not less than 2 feet long. Form and fabricate corners, closures, terminations and transitions in shop. Only minor trimming shall be allowed in the field.
- H. Work shall have concealed fasteners wherever possible. Cleats or other devices shall allow movement of metal work.



- I. Flat seams shall be butt-jointed with minimum 9 inches wide concealed joint plate. Allow sufficient space between butted joints 1/8-inch to 1/4-inch to accommodate expansion/contraction. Do not butt tightly.
- J. Concealed joint plate shall be same thickness as metal components they are used with. Seal both sides of joint plate under adjoining metal segments with continuous double bead of sealant. Seal on top of both sides of joint plate at intersection with sheet metal butt-joints.

### **PART 3 - EXECUTION**

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#### **3.1 EXAMINATION OF SUBSTRATE**

- A. Substrate shall be suitable to receive work of this section. All conditions shall be field measured and verified prior ordering of materials. Work shall not commence until unsuitable conditions of substrate have been corrected.

#### **3.2 GENERAL REQUIREMENTS FOR INSTALLATION**

- A. Work shall be installed by skilled sheet metal mechanics.
- B. Work shall conform to approved shop drawings, approved samples and requirements herein. Work shall conform to SMACNA Manual except where required otherwise in the Contract Documents.
- C. Work shall allow for thermal movement in relationship to adjacent materials while remaining functional and watertight.
- D. Completely isolate dissimilar metals from each other.
- E. Completely isolate aluminum sections from pressure treated wood.
- F. Seal all joints. Lap sections of sheet metal onto 12-inch-wide concealed joint plates or onto adjacent sections for a minimum 4 inches unless otherwise specified/shown. Allow sufficient space (1/8-inch to 1/4-inch) between butted joints to accommodate expansion/contraction. Do not butt tightly.
- G. Concealed joint plates shall be same thickness as sections to be jointed. Seal both side on top of joint plate at ends of sections. Do not fasten coping though plate.

- H. Sheet metal shall be fabricated/install such that closures, termination and transitions to sheet metal and other surfaces are neat, permanent and functional.
- I. Sheet metal shall be watertight without excessive sealant at joints, closures, terminations and transitions.
- J. Sealant is not acceptable as the primary source of watertight integrity at joints, closures, terminations and transitions.

### 3.3 SHOP FABRICATED SECTIONS

- A. Counterflashings (Surface-Mounted): Install as shown on the drawings and in accordance with approved shop drawings. Remove protective film immediately after installation. Secure into substrate with approved fasteners at rates shown on the drawings. Lap ends of counterflashing 3 inches at joints. Apply a continuous bead of specified sealant in the caulk tray.
- B. Counterflashings (Receiver-Mounted): Install as shown on the drawings and in accordance with approved shop drawings. Remove protective film immediately after installation. Secure into receiver with approved fasteners at rates shown on the drawings. Lap ends of counterflashing 3 inches at joints.
- C. Collector Head: Install as shown on the drawings and in accordance with approved shop drawings. Remove protective film immediately after installation. Secure with gutter brackets secured through the metal panels into the perimeter purlin and with gutter stiffeners at the rates shown on the drawings. Lap and seal all joints.
- D. Downspouts:
  - 1. Downspout Outlet: Install downspout outlet at locations shown on plans. Field cut hole in bottom of collector to receive outlet. Apply a bead of non-curing sealant around outlet hole. Insert outlet and secure with two rivets in each flange.
  - 2. Downspouts: Install downspout onto downspout outlet and secure with two rivets on each side. If multiple sections are required, provide positive laps between sections and secure with two rivets on each side. Secure downspouts to wall with downspout straps/hangers at 5 feet on-center. Transition to existing and new steel tube downspouts at face of wall as shown on the drawings.

- E. Drip Edge: Install as shown on the drawings and in accordance with approved shop drawings. Remove protective film immediately after installation. Secure into substrate with approved fasteners at rates shown on the drawings. Provide concealed splice plates between sections with 1/4-inch gap for expansion. Apply continuous beads of specified sealant between sections of drip edge and splice plate
- F. Expansion Joint Slip Covers: Verify cover is fabricated with correct dimensions to allow for movement. Install as shown on the drawings and in accordance with approved shop drawings. Remove protective film immediately after installation. Secure into substrate with approved fasteners at rates shown on the drawings. Lap ends of counterflashing 3 inches at joints.
- G. Scuppers: Install as shown on the drawings and in accordance with approved shop drawings. Remove protective film immediately after installation. Secure into substrate with approved fasteners at rates shown on the drawings. Prime all surfaces to receive roof flashing materials. Install exterior scupper face plate as shown on the drawings. Applied bead of sealant between face plate and substrate and around the perimeter on top and sides.
- H. Pre-Manufactured Systems
  - 1. Fascia:
    - a. Anchor Bar Miters: Anchor bar miters are to be installed prior to balance of system. Be sure anchor bars are clean and free of dirt or dust. Apply a heavy bead (1/4-inch to 3/8-inch wide) of non-curing sealant to the tight angle intersection of the deck flange and back of anchor bar. Also, apply non-curing sealant to two splice plates and position one splice plate under each end of anchor bar corner. Fasten with #12 x 2-inch stainless steel fasteners provided.
    - b. Anchor Bar Sections: Lay anchor bar on deck with outside face down. Be sure anchor bar is clean and free of dirt or dust. Apply a heavy bead (1/4-inch to 3/8-inch-wide) of non-curing sealant to the right-angle intersection of the deck flange and back of anchor bar. Application of sealant is required along the full length of each anchor bar. Next, apply non-curing sealant under splice plate. Position a 12-foot section of anchor bar next to miter overlapping splice plate and butting snugly to sponge gasket. Allow 1/2-inch space between the end of the bars. The ends of the bars may be aligned using the installation tool provided. Fasten anchor bar with #12 x 2-inch stainless steel fasteners provided. All fastening slots must be used. Use hacksaw to field cut bar as required and file smooth burrs.

- c. Fascia Corner Covers: Install two-piece “snap-on” fascia corner covers first by snapping on fascia corner cover with 90-degree tab, followed by corner cover without tab. Position cover atop bar and with palm of hand apply slight pressure downward until engaged to the anchor-bar.
- d. Fascia Panels: Position 12-foot fascia panels on top of the anchor-bar and overlap preceding panel approximately 3/4-inch at notches provided. Fascia covers shall be installed from right to left as viewed from the rooftop. With fascia panels in correct position atop anchor-bar, snap each section onto anchor-bar by applying downward pressure with palm of hand until the fascia cover is fully engaged along the entire length. Continue to install fascia covers, field cutting where necessary using a fine-tooth hacksaw.

### 3.4 SOLDERING

- A. When specified, solder all joints watertight using proper flux and solder for base metal. When soldering stainless steel and aluminum, clean surfaces to be soldered free from all of the oxide coating with a stainless-steel brush. The oxide coating re-forms quickly; therefore, flux and soldering must occur in a rapid sequence. Pre-tin sections when possible. Clean sections free from all flux materials after soldering.

### 3.5 SEALING

- A. Seal all joints between sheet metal work and adjacent work to maintain resilient, watertight condition.
- B. Sealant includes weather/insect/thermal stops, membrane closures and sealants as specified in Section 079200.
- C. Sealant shall not be the sole means of waterproofing. Fabricate and install proper metal slip plates, closures, etc., at sheet metal joints, terminations, plane changes, etc. This item applies to both new and existing/reused sheet metal shapes.

### 3.6 CLEANING

- A. After completion of work of this section, exposed work shall be cleaned thoroughly of all scraps, stains, flux, oil and other materials that would damage/detract from appearance.

### 3.7 WORKMANSHIP

- A. Work of this section shall provide leak-free protection for the roof system and interior.

- B. Work of this section that does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager at the Contractor's expense, without extension of time. The Contractor shall also be responsible for any and all costs resulting from correction to work of this section.

**END OF SECTION**

## **SECTION 079200 - SEALANTS FOR ROOFING**

### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

- A. Provision and installation of all caulking and sealing to complete the roofing work and as required to prevent moisture intrusion

#### **1.2 RELATED SECTIONS**

- A. Polyvinyl-Chloride (PVC) Roofing (Section 075419)
- B. Metal Flashing and Trim (Section 079200)

#### **1.2 QUALITY ASSURANCE**

- A. Some products and execution are specified in this section by reference to published specifications or standards of the following (with respective abbreviations used).
  - 1. American Society for Testing and Materials (ASTM)
  - 2. American National Standards Institute (ANSI)
  - 3. Federal Specifications (FS)

#### **1.4 SUBMITTALS**

- A. Samples:
  - 1. Submit (in duplicate) samples of sealant to show color and quality of adhesion.
  - 2. Submit (in duplicate) samples of joint filler and expansible filler rod if used (minimum 6 inches long).
- B. Product Data: Submit (in .pdf format) the manufacturer's printed performance installation and technical data.

## 1.5 ENVIRONMENT CONDITIONS

- A. Do not proceed with installation of sealants under adverse weather conditions or when temperatures are below or above the manufacturer's recommended limitations for installation.
- B. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength.

## **PART 2 - PRODUCTS**

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### 2.1 MATERIALS

- A. Sealants shall be silicone unless specified otherwise by the roof membrane manufacturer. Silicone sealant shall meet the following:

- 1. Compound shall be a single-component, silicone-base sealant.
- 2. Cured sealant shall meet or exceed the following physical properties values:

Property	Test Method/Standard	Value
Tensile Strength	ASTM D412	170 psi minimum
Tear Strength	ASTM D624	27 lb/in. minimum
Shore A Hardness	ASTM D642	30 minimum
Peel Strength	MIL-S-8802D	32 lb/in minimum

- 3. Sealant shall meet or exceed all requirements of MIL-S 8802 and FS-TT-S-001543A.
- 4. Shall be one of the following:
  - a. "Dow Corning 795" as manufactured by Dow Corning
  - b. "SilPruf" as manufactured by General Electric Construction Products
  - c. "Speltrum" as manufactured by Tremco
- 5. Color shall be as chosen by the Owner.
- B. Primer: Shall be provided as recommended by the sealant manufacturer to aid adhesion.

C. Joint Filler/Compressible Filler Rod:

1. Shall be expanded, closed-cell polyethylene foam designed for use with cold-applied joint sealants.
2. Shall be sized and shaped to control depth of sealant and to provide a minimum of 25 percent compression upon insertion. Where used as a compressible filler rod, size and shape slightly larger than width of opening to allow for expansion/contraction and membrane support.
3. Shall be one of the following:
  - a. "Sonolastic" as manufactured by Sonneborn Building Products Division, Contect Inc.
  - b. "Expand-O-Foam" as manufactured by Williams Products, Inc.
  - c. "Hercules Backer Rod" as manufactured by Hercules, Inc., Middletown, Delaware 19709

### **PART 3 - EXECUTION**

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#### **3.1 EXAMINATION**

- A. Prior to application of any sealant compound, the Contractor shall examine all surfaces to be sealed for construction defects that would adversely affect execution of work.
- B. The Contractor shall examine joints, surfaces, backing and anchorage of units where sealant work is to be performed. Notify the Project Manager of conditions detrimental to the proper and timely completion of the work or to performance of the sealants.
- C. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Project Manager.
- D. Coordinate work of this section with other trades.

#### **3.2 PREPARATION**

- A. Clean surfaces and spaces using a manufacturer's approved cleaner as necessary. Joints are to be free of dust, dirt, oil, grease, rust, lacquers, laitance, release agents, moisture or any material affecting adhesion of sealant.
- B. Surfaces shall be dry.



- C. Prime surfaces as required by the manufacturer of sealant.
- D. Joint filler shall be installed in joints where depth or width of opening exceeds the manufacturer's limitations for sealant.
  - 1. Do not twist filler while installing.
  - 2. Install filler so that joint depth is 50 percent of joint width but a minimum of 1/4-inch deep.
  - 3. Filler shall be compressed a minimum of 25 percent.

### 3.3 APPLICATION

- A. All sealant work shall be accomplished as specified herein and in accordance with accepted roofing practice.
- B. Seal joints between any surfaces where moisture intrusion may occur.
- C. Seal all sheet metal flashing in order to provide a weather tight installation.
- D. Apply sealants using proper size nozzle. Use sufficient pressure to fill all voids and joint solid and to engage compound with sides of joints. A superficial skin or fillet-bead will not be acceptable.
- E. Sealant shall be deposited in uniform, continuous beads without gaps or air pockets.
- F. Remove excess sealant and leave surfaces neat, smooth and clean.
- G. Joints shall be even and uniform in appearance. Joints shall be watertight. Tool surface to provide good contact, to increase density, to shed moisture and to improve appearance.

### 3.4 CURE AND PROTECTION

- A. Cure sealants and caulking compounds in compliance with the manufacturer's printed instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.

3.5 WORKMANSHIP

- A. Work that does not conform to specified requirements shall be corrected and/or replaced as directed by the Project Manager at Contractor's expense without extension of time. The Contractor shall also be responsible for cost of corrections to any work affected by or resulting from correction to sealant work.

**END OF SECTION**