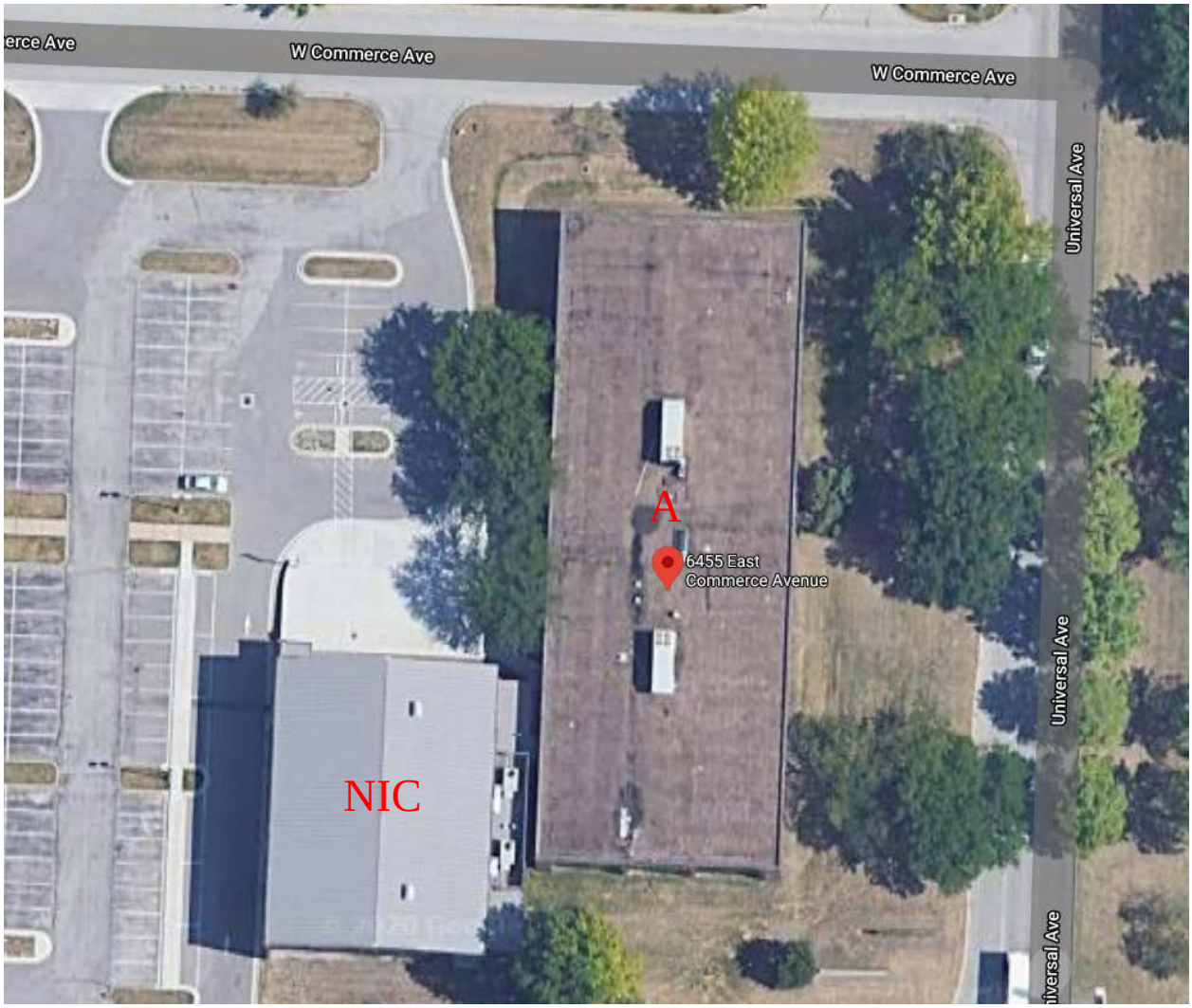
ROOFING PROJECT MANUAL FOR

# Frontier STEM High School
# 6455 E. Commerce Avenue
# Kansas City, MO 64120




Consultant: **ROOFING SOLUTIONS, INC.**
6728 West 153rd Street
Overland Park, KS 66223

Telephone: (913) 897-1840
Facsimile: (913) 897-1499
Email: jburk@roofingsolutionsinc.com

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# SECTION 000100 – INVITATION TO BID

## PART 1 - GENERAL

### 1.1 OWNER

A. The Owner is listed below:

1. Frontier Schools, Inc.
   Attn: Mr. Osman Guneri
   Email: oguneri@frontierschools.org
   30 West Pershing Road, Suite 402
   Kansas City, MO 64108

### 1.2 CONSULTANT

A. The Owner's consultant is listed below:

1. Roofing Solutions, Inc. (RSI)
   Mr. Justin Burk
   6728 W. 153rd Street
   Overland Park, KS 66223
   Telephone: 913-897-1840
   Email: jburk@roofingsolutionsinc.com

### 1.3 PROJECT LOCATION

A. The Project Location is listed below:

1. Frontier STEM High School
   Roofing Project
   6455 E. Commerce Avenue
   Kansas City, MO 64120

### 1.4 BIDDERS

A. A pre-bid meeting will be held on Thursday, May 28, 2020 at 9:30 AM CDT. Please meet outside the main entrance to the project location.

B. Bids are due at Owner's office by no later than 2:00 PM CDT, Thursday, June 11, 2020. **All bids are to be supplied on the Bid Form provided with these project specifications.**

C. For all questions regarding bidding requirements and procedures please contact Mr. Osman Guneri at oguneri@frontierschools.org. For all questions regarding the specifications please contact Mr. Justin Burk at Roofing Solutions, Inc. at the above listed telephone number or by

email at jburk@roofingsolutionsinc.com. **There shall be no verbal changes to project specifications; any changes to the project specifications shall only be issued in writing.**

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 000100

# SECTION 000200 – INSTRUCTIONS TO BIDDERS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following:

1. Bidding Documents.
2. Qualifications of Bidders.
3. Bidder's Representation.
4. Bidding Procedures.
5. Acceptance and Rejection of Bids.

### 1.3 BIDDING DOCUMENTS

A. Bidding documents include the Bidding Requirements and the proposed Contract Documents.

1. The Bidding Requirements consist of the following:

a. Invitation to Bid.
b. Instructions to Bidders.
c. Bid Form.
d. Supplementary Instructions and Conditions.

2. The Contract Documents consist of the following:

a. Form of Agreement between the Owner and Contractor.
b. Conditions of the Contract.
c. Drawings, Specifications, and all Addenda issued prior to execution of the Contract.

### 1.4 QUALIFICATION OF BIDDERS

A. Bidder shall be approved and authorized as a "No Dollar Limit" installer by the manufacturer for the specified products and shall furnish written evidence to that effect. By submission of bid, Contractor certifies receipt of award of membership from the material manufacturer for the specified system proposed.

B. Bidder shall have sufficient resources including capital, tools, equipment, materials, and skilled workforce to perform the specified work immediately and complete the project quickly and skillfully.

C. Bidder must have five (5) years of verifiable experience in installing the roof system specified and must have performed work similar in scope to the work specified in this project.

D. The Owner may make such investigations as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the plans or specifications and to complete the work contemplated therein. Conditional bids shall not be accepted.

## 1.5 BIDDER'S REPRESENTATION

A. By submission of bid, the contractor represents that:

1. They understand and can meet the Owner's schedule for roof replacement.
2. They have read and understand the Bidding and Contract documents and that they are fully qualified to bid the project and act as the contractor for the project.
3. They have visited the site and fully understand the scope and extent of the project.
4. **Their bid conforms to the Missouri Prevailing Wage Law.**
5. The bid is made in compliance with these bidding documents.

## 1.6 BIDDING PROCEDURES

A. **This is a prevailing wage project. The Missouri Prevailing Wage Law will be administered for this project in accordance with the policies and procedures set forth by The State of Missouri.**

B. Refer to Section 000100 Invitation to Bid for additional bidding requirements and for dates and times of pre-bid meeting and bid due date.

C. All bids shall be submitted on the forms included with the Bidding documents with all blanks on the forms legibly executed. No bid may be withdrawn within sixty (60) days from and after the date set for opening bids.

## 1.7 ACCEPTANCE AND REJECTION OF BIDS

A. Owner intends to award the contract to the lowest qualified bidder shortly after the next board meeting following bid due date. The owner reserves the right to reject any or all bids and to waive any informality or irregularity and to accept the bid which is in the owner's best interest.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 000200

# SECTION 000410 – BID FORM

## PART 1 - GENERAL

1.1 TO

A. Owner:

1. Frontier Schools, Inc.
Attn: Mr. Osman Guneri
Email: oguneri@frontierschools.org
30 West Pershing Road, Suite 402
Kansas City, MO 64108

B. Consultant:

1. Roofing Solutions, Inc. (RSI)
Mr. Justin Burk
6728 W. 153rd Street
Overland Park, KS 66223
Telephone: 913-897-1840
Email: jburk@roofingsolutionsinc.com

1.2 FOR

A. Project Location:

1. Frontier STEM High School
Roofing Project
6455 E. Commerce Avenue
Kansas City, MO 64120

1.3 DATE

A. Date Submitted: _____

1.4 SUBMITTED BY

A. Company Name: _____

Address: _____

City, State, Zip: _____

Email: _____

Phone: _____

1.5 BID

A. In conformity with the plans and specifications for the project listed above and having examined the project site and all matters referred to in the Instructions to Bidders and Bidding Documents, we, the undersigned, hereby propose to enter into Contract to perform the Work for the Sum of:

Proposed Manufacturer: _____.

1. Base Bid: $_____.
*(Retrofit, Gravel Mat, MF HD Iso (min. 100 psi) Cover Board, MF 80 mil TPO, 20 Year Warranty)*

2. Unit Prices: The Base Bid and applicable Alternate Bid(s) may be increased or decreased in accordance with the Unit Prices described as follows:

a. Replace Wood Nailer: Add: $_____/Board Foot.

b. Replace Wet Roof System: Add: $_____/Square Foot.

c. Replace Metal Deck: Add: $_____/Square Foot.

d. Repair Metal Deck: Add: $_____/Square Foot.

e. Prime Metal Deck: Add: $_____/Square Foot.

1.6 CONTRACT TIME

A. If this bid is accepted, we agree to start Work within _____ days of acceptance.

B. If this bid is accepted, we agree to complete Work within _____ working days from start.

C. If this bid is accepted, we agree to utilize minimum crew size of _____, including foreman.

1.7 ADDENDA

A. By submission of bid, Contractor acknowledges receipt of the following addenda. List Addenda Numbers and Dates:

1. _____.

2. _____.

COMPANY NAME:_____

1.8 WARRANTY PROTOCOL

A. Should this bid be accepted, Bidder (Contractor) agrees to the following:

1. Pre-installation notice will be provided to and accepted by the roofing manufacturer prior to commencement of Work. Pre-installation notice shall specifically state requirement for inclusion of 72 mph wind speed warranty. (*Note: The 72-mph wind speed specified for manufacturer's warranty is intended solely as a condition of the warranty and does not exempt from or reduce the design standard of the roof system as specified under "Performance Requirements" Article or local building code.)*
2. Project Close-Out:
    a. Contractor agrees to contact the roofing manufacturer to schedule and perform a final inspection, and to provide Consultant with manufacturer's punch list and completion report.
    b. Contractor will provide to Consultant the completed warranty for review and inclusion in the Owner's close-out package.
    c. Owner will not process final payment of retainage until after receipt and acceptance of these close-out documents.

1.9 Bids include all applicable federal, state and local permits and taxes. **This project is sales tax exempt and sales taxes are to be excluded from all bid.**

1.10 It is hereby certified that the undersigned is the only person(s) interested in this proposal as principal and that this proposal is offered without collusion with any person, firm or corporation. The bidder agrees not to assign the bid or any rights or interests thereunder without the written consent of Owner.

1.11 SIGNATURE

A. Company Name: _____.

B. Authorized Signature: _____.

C. Name (Print): _____.

D. Title: _____.

END OF SECTION 000410

# SECTION 000800 - SUPPLEMENTAL CONDITIONS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This project is a roof replacement project at existing buildings which will be open to the public. Owner will occupy the building and site during roofing operations. It is essential that the contractor give special attention and priority to all matters concerning project safety, containment of dust and debris, exhaust of carbon monoxide, and protection of the building from water infiltration.

### 1.3 SPECIAL CONDITIONS AND PROCEDURES

A. General: Special conditions and procedures described in this article supersede any discrepancies that may exist elsewhere in the project specifications.

B. Contractor shall be responsible for verifying all field dimensions, existing construction and conditions which may impact their bid.

C. **This is a prevailing wage project. The Missouri Prevailing Wage Law will be administered for this project in accordance with the policies and procedures set forth by The State of Missouri. By submission of Bid, Contractor acknowledges Bid conforms to Missouri Prevailing Wage Law**.

D. All primary roofing work shall be performed by Contractor employees. Subcontracting of installation labor, free-lance, or otherwise is not allowed. Contractor shall engage licensed subcontractor for any required mechanical and electrical disconnects/reconnects and shall engage qualified subcontractor for erecting and disassembling scaffolding. Subcontracting of coating applications and sheet metal fabrications and installation will only be permitted upon approval by Owner prior to bid. Requests for any other work to be performed by subcontract shall be submitted to Owner for review and approval not less than 48 hours prior to commencement of work to be performed by subcontract.

E. There must be a qualified superintendent on site throughout the project, they must be the same superintendent throughout the project, and they must be able to communicate in English. Superintendent shall maintain complete set of plans and specifications at project site at all times.

F. All applicable OSHA regulations shall be adhered to throughout the project; without exception. Contractor shall provide all necessary safety equipment, including, but not limited to, working fire extinguishers, fall arrest systems, warning lines, etc. in all work areas. Any equipment (rented or owned) not meeting the established safety standards will not be permitted.

Equipment found to be non-conforming will be immediately removed from the job-site by Contractor.

G. All workers and onsite personnel are required to wear orange or yellow reflective lightweight vests.

H. The Contractor is required to protect the building, parking lot, sidewalks, grounds and existing plant life from damage due to operations. Any damage as a result of Contractor's operations shall be repaired at Contractor's expense.

I. New roofing system shall be delivered to Owner in clean condition. All debris and equipment shall be removed from the site. Any stains, asphalt residue or other marks on the roof membrane shall be removed per the manufacturer's instructions. Contractor shall take care to minimize staining and damage to the new membrane during construction and throughout the project. Any roofing which is damaged or cannot be successfully cleaned will be replaced by the Contractor.

J. Offloading of Roofing Debris: Debris is to be offloaded from the roof by means of scaffolding over parapet walls using baskets/buckets or via crane and tarp over parapet walls. Chutes are not permitted for removal of debris.

K. Staging areas, set up areas, etc. will be designated by Owner's representative.

L. Portable toilets shall be provided by Contractor for use by all job-site personnel. Portable toilets shall be properly secured so as not to be tipped over. Any persons observed urinating or otherwise relieving themselves on the roof or elsewhere on the premises, outside of portable toilet, will be expelled from the job site. Use of Owner's restrooms by project personnel is not permitted.

M. All wheeled equipment used on the roof shall be rubber tired; with either air or foam filled tires. Solid wheels or tires are prohibited on this project.

N. All flashing heights shall be a minimum of 8 inches on curbs and walls. Low curb heights shall require removing the equipment and installing additional nailers to achieve minimum flashing heights.

O. All abandoned and obsolete equipment, curbs, supports, pipes, conduits and other penetrations shall be removed and infill decking installed as part of the base bid.

P. All gas lines, mechanical and electrical disconnects and reconnects as required to raise curbs, flash units, and complete the roofing installation shall be the contractor's responsibility.

Q. A list of all equipment shall be maintained onsite and updated regularly.

R. A copy of all submittals and material safety data sheets is required to remain on site.

S. Any inspection reports provided by the roof manufacturer, city inspector, or other inspecting agency shall be provided to Owner at no charge.

T. Contractor shall coordinate daily activities with Owner's representative to ensure uninterrupted Owner operations.

## 1.4 EXAMINATION REQUIREMENTS

A. In order to discover and resolve any problems, conflicts or lack of definition which might create problems with respect to performance of the work, Contractor at its own expense and prior to submitting its quotation, must familiarize itself with all applicable expense, laws, codes, statutes, rules, regulations, ordinances, and orders of all authorities having jurisdiction over the project.

B. Contractor shall visit the site and inspect existing conditions, facilities, site requirements and restrictions which may affect the performance and cost of the Work. This shall include an investigation of subsurface or latent physical conditions as necessary.

C. Contractor shall be responsible for verifying all field dimensions, existing construction and conditions which may impact their bid. Contractor is solely responsible for determining existing construction information and for verifying any existing roof system construction information provided by Consultant prior to submission of bid.

D. Contractor is solely responsible for accuracy of all measurements, estimates of material quantities and sizes; and site conditions that will affect work.

## 1.5 SPECIAL RESTRICTIONS AND USE REQUIREMENTS

A. Site and building space directly under the area of work will be utilized by on-going Owner operations. Do not interrupt Owner operations unless previous written approval is received from Owner.

B. Access to the site and roof is limited to the rear and side of the building without restricting access for public, deliveries and emergency vehicles. In all cases public safety is paramount. No hoisting, tearoff, power brooming, edge metal removal, or any other activity shall be conducted that may be directly above, beside or directed at the public.

C. Access to the roof shall be by external means only except when height conditions do not allow for safe access. Access to the interior of the building shall be limited to times when roofing operations require protection and or safety monitoring of the interior.

D. All work shall be performed during normal work hours unless otherwise required for project safety. In all cases work times shall be in compliance with local codes.

## 1.6 CONTRACTOR’S DUTIES

A. Contractor shall provide all labor, materials, transportation, equipment, supervision, taxes, permits, and all other items and services necessary and reasonably incidental to the performance and proper execution of all of the Work required by the Contract Documents, in compliance with Applicable Laws. After the Contract has been awarded, orally or in writing, no extra amounts will be allowed for any other activities, labor, materials, items, or services necessary to perform and complete all of the Work, whether or not exactly described in these Specifications and the Contract Documents, as long as such activities, labor, materials, items, and services are required to accomplish Owner’s desired effect and results.

B. Contractor shall report to Consultant, prior to submission of Quotation, any discrepancies, inconsistencies, conflicts, errors, or omissions found in these Specifications or other Contract Documents.

C. Contractor shall identify a skilled field foreman for the project prior to the start of the project who shall be fully capable of effectively communicating (reading, speaking, comprehending) and interacting with all project management personnel. This same field foreman shall attend all project meetings including a preinstallation meeting prior to project start. Field foreman shall remain assigned to the project on a full-time basis throughout the entire roofing operation (emergencies and acts of God excepted).

D. Contractor shall provide and maintain effective, after-hours contact lists and make available to all at the preinstallation conference. Such contact information shall provide effective, 24 hour /7 day communication in the event of weather problems or other emergencies related to the roofing operation.

E. Contractor shall respond to after-hours emergency requests from the Owner, Construction Manager and Consultant such that personnel are on the project site, in company vehicles equipped for usual emergency situations in one hour or less from time request call is placed. Contractor shall be responsible for all water removal, clean-up, and the replacement or restoration of any and all building components damaged as the result of in progress roofing operations and failures of same, specifically including but not limited to, tie-offs.

F. Contractor's failure to effectively respond to emergency situations will result in the hiring of others to perform the work. Costs of all such work required, whether by the Owner's staff or by outside contractors shall be borne by the project roof contractor.

G. Contractor is responsible for any fasteners or other components used in the course of their work that penetrate roof decks and/or in any way damage other building components. Insulation fasteners penetrating piping, electrical and special systems conduits, electrical junction boxes, etc., are specifically included in this range of responsibility. All costs of restoring or replacing such components damaged by contractor's operations shall be borne solely by the roofing contractor.

H. Air-conditioning units and other equipment shall be moved as required to install roofing material complete and in accordance with plans and specifications. When units and equipment are to be moved, they shall be carefully disconnected and moved to a protected area so as not to damage any part or component thereof, and shall be reconnected and restored to prior work condition. A mechanical and/or electrical company licensed to perform such work shall perform all disconnection and reconnection.

## 1.7 MEASUREMENTS AND DRAWINGS

A. Drawings and/or measurements included with the Contract Documents are only for the general convenience of Contractor. Complete responsibility for detailed dimensions lies with Contractor. Contractor shall verify all dimensions with the actual on-site conditions. Where the Work of Contractor is to join the work of another trade, Contractor’s Shop Drawings shall show the actual dimensions and the proposed method whereby its Work will join the work of those trades.

1.8 APPLICABLE LAWS

A. All Work covered by the Contract Documents, and all activities performed in connection with the Work, shall be performed in full compliance with all applicable laws, codes (including, without limitation, building codes), statutes, rules, regulations, ordinances and orders of all national, state, county, and municipal public authorities, and quasi-public authorities, having or claiming to have jurisdiction over the Project.

B. ***Governing Law:*** This Agreement is governed by and constructed in accordance with the laws of the State of Missouri without regard to any conflict of laws provision. The parties' consent to personal and subject matter jurisdiction in Jackson County, Missouri. The Independent Contractor waives any objection to the venue of any action arising under this Agreement, which is brought in the state or federal courts located in the State of Missouri.

1.9 PERMITS

A. Contractor shall obtain and pay for any permits, licenses, approvals, and inspection fees required by Applicable Laws in effect as of the Quotation due date for Contractor to perform and complete all of the Work required by the Contract Documents. In addition, Contractor shall arrange, schedule, and pay for, all required final inspections by state, local, or independent certified inspecting authorities necessary for the issuance of all certificates, licenses, or other approvals relating to the completed Work.

B. Owner shall secure, or arrange for the issuance of, any necessary permits required for related work to be performed by other trades.

1.10 PROTECTION OF WORK AND PROPERTY

A. Contractor shall continuously maintain adequate protection of all of the Work from damage or loss and shall protect Owner, its tenant, its or their employees, and its or their property from personal injury, property damage, or loss arising out of the execution of the Work. Contractor shall make good any such injury, damage, or loss except such as may be directly and wholly caused by agents, separate contractors, or employees of Owner or its tenant.

B. Contractor shall comply with requirements of Applicable Laws for erecting structurally-adequate barricades, painted with appropriate graphics and warning signs to inform Project personnel and the public of possible hazards. Contractor shall also provide, in conformance with OSHA regulations and other Applicable Laws, all barricades and warning lines required to identify roof openings and other fall hazards.

C. Contractor shall confine demolition and Kettle Equipment to suitable locations as directed by owner away from building air intake louvers.

D. Contractor shall provide and install a suitable protective covering (plastic sheeting, padding, plywood sheeting, etc.) to fully protect existing floor finishes, and the areas around the storage, staging and hoisting operations.

E. Contractor shall provide portable fire extinguishers throughout the areas in which the Work is being performed, with such extinguishers placed so as to be accessible at all times.

F. Contractor shall at all times maintain the Work areas so that all portions are accessible to fire department personnel and apparatus. Fire hydrants and fire department connections to buildings' sprinkler systems must be kept free from obstruction at all times.

G. Contractor shall strictly supervise any metal cutting or other operations that may result in sparks or flame. All cutting equipment shall be safely arranged, and all combustibles in the vicinity of any Work being performed shall either be removed or protected by a noncombustible cover. Cutting shall be attended by an assistant or fire watchman who is equipped with at least one multi-purpose dry chemical fire extinguisher. The assistant or fire watchman shall maintain strict surveillance during the entire cutting operation and shall extinguish flying sparks or burning slag. After completion of the cutting operation, the assistant or fire watchman shall thoroughly search the entire area for remnants of smoldering materials before being released from duty. Any operations as described above shall be scheduled with and receive the prior written approval of Owner.

H. The Contractor is required to protect the building from the possibility of exhaust fumes, dust, dirt or other latent material created, as a result of construction operation, from entering the air intake system. These coverings are to be removed immediately at the completion of these operations and activities throughout the project. Coordinate these activities with the tenant's maintenance staff.

I. Contractor shall protect the grounds and existing plant life from damage due to operations. Protect trees, shrubs, lawns, and other existing plant growth by means of breathable tarps, plastic sheeting, and plywood protection boards. Exercise care to avoid damage to adjacent or underlying landscaping elements including sprinkler systems.

1. Replace existing plant life which has been damaged immediately upon completion of construction operations. All landscaping shall be replaced with like kind and size. All damaged grass areas shall be replaced with matching sod. Proper soil preparation shall be performed prior to plant and sod installation to ensure adequate root growth and to ensure a level finished surface at sod replacement.
2. Watering of sod and plant life shall be the Contractor's responsibility for a period of two (2) weeks after replacement.

## 1.11 WORK SCHEDULING

A. All onsite work is to be completed by no later than Friday, July 31, 2020. All punch list items are to be completed, with Contractor demobilized and all site clean-up and turf restoration completed no later than 5:00 PM on Friday, July 31, 2020. If all work as described above is not complete by 8:00 AM on Monday, August 3, 2020, liquidated damages will be assessed on each calendar day past this date, for which the work remains unfinished. Liquidated damages will be assessed regardless of weather conditions and no extension to the contract will be allowed for any weather days or material delays.

## 1.12 LIQUIDATED DAMAGES

A. **Liquidated damages in the amount of $750 per calendar day will be assessed** for work not completed by dates stated in article 1.11 above.

1.13 STORAGE OF MATERIALS

A. Contractor shall confine the storage of its materials on the Project site to those areas approved by Owner. Contractor shall not unnecessarily encumber the premises or overload any portion of any of the buildings with materials to a greater extent than permissible under the structural design load.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 000800

# SECTION 010000 - GENERAL REQUIREMENTS AND CONDITIONS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes the following:

1. Definition of Contract Documents
2. Taxes
3. Insurance
4. Bonds
5. Indemnification
6. Safety and Protection
7. Termination or Suspension of Contract

### 1.3 DEFINITION OF CONTRACT DOCUMENTS

A. The Contract Documents shall consist of the specific written agreement between the Owner and the Contractor, these General Conditions, the Drawings and Specifications, any other documents enumerated in the Agreement, any amendments to any of the foregoing made prior to the execution of the Agreement (the "Addenda") and all Change Orders issued after the execution of the Agreement.

### 1.4 TAXES

A. Contractor shall be solely responsible for all payment of, and shall pay promptly when due, all sales, consumer, use and similar excise taxes arising from, related to or in any way connected with the Work provided by Contractor. ***This project is sales tax exempt and sales taxes are not be included in bid(s).***

### 1.5 INSURANCE

A. General

1. Unless otherwise provided, Owner shall be responsible for purchasing and maintaining property insurance, also known as builder's risk insurance, coverage with limits equal to the value of the completed Work for the risks of fire and extended coverage, vandalism and malicious mischief and all risk coverage. The policy or policies shall be written in

the name of Owner and extend to the Contractor and other contractors as their interests may appear.

2. Contractor shall purchase and maintain insurance to protect Contractor and Owner against all hazards herein enumerated throughout duration of contract. Said insurance shall be issued by companies listed in the current A.M. Best Company's "Key Rating Guide (Property-Casualty)" as having a minimum rating of A-VII and be accepted by the insurance commissioner of state the work is to be performed in. All policies shall be in form and amounts and with companies satisfactory to the Owner. Sample of certificate of insurance can be found in Attachment 1 at the end of this section.
3. "Insurance," "insurance policy," or "insurance contract" when used in these specifications shall have same meaning as "insurance policy" provided, however, that when "insurance" as demonstrated by an "insurance policy" or "insurance contract" is required to be posted, presented, or demonstrated to exist by any person or other entity by virtue of any contract, bid request, specification, rule, or other action or request of Owner, said "insurance policy" or "contract of insurance" shall provide coverage on an occurrence basis and not on a claims-made basis and person or other entity shall provide evidence of such coverage through an "insurance policy," "contract of insurance," or "certificate of insurance" which clearly discloses on its face coverage on an occurrence basis, except as to insurance coverage required for hazardous materials abatement including removal of lead, asbestos, PCBs, mold or the like, which may be provided on a claims-made basis when it is demonstrated to satisfaction of Owner that occurrence coverage is not reasonably available.

B. Insurance Requirements

1. Contractor shall purchase and maintain such insurance as will protect Contractor from claims set forth below which may arise out of or result from Contractor's operations under contract, whether such operations be by Contractor or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.
    a. Claims under workers' compensation, disability benefit, and other similar employee benefit acts.
    b. Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employee.
    c. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employee.
    d. Claims for damages insured by usual personal injury liability coverage.
    e. Claims for damages other than to work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom.
    f. Claims for damages because of bodily injury or death of any person or property damage arising out of ownership, maintenance, or use of any motor vehicle.
    g. Wherever term "ISO" appears in these specifications, an equivalent form or better may be substituted
2. The insurance coverage specified below, represents the minimum limits required by the Owner. The successful bidder shall be required to provide Proof of Insurance meeting or exceeding these limits.

C. Limits Of Liability insurance shall be written as follows:

1. Workers' Compensation and Employers' Liability Insurance, as prescribed by State law with minimum limits shown below covering Employers' Liability Limits.

| | | |
|---|---|---|
| a. | Bodily injury by accident | $1,000,000 each accident |
| b. | Bodily injury by disease | $1,000,000 each employee |
| c. | Bodily injury by disease | $1,000,000 policy limit |

2. Commercial General Liability Insurance, which shall be no less comprehensive and no more restrictive than coverage provided by a standard form Commercial General Liability Policy with minimum limits shown below covering bodily injury, property damage and personal injury. Any additional exclusions shall be identified on certificate of insurance and shall be subject to review and approval of Owner.

| | | |
|---|---|---|
| a. | General Aggregate Limit | $2,000,000 |
| b. | Products Completed Operations Aggregate Limit | $2,000,000 |
| c. | Personal and Advertising Injury Limit | $1,000,000 |
| d. | Each Occurrence Limit | $1,000,000 |
| e. | Fire Damage Limit (any one fire) | $ 50,000 |
| f. | Medical Damage Limit (any one person) | $ 5,000 |

   1) This insurance must include the following features:
      a) Coverage for all premises and operations. Policy shall be endorsed to provide the general aggregate per project endorsement.
      b) Personal and advertising injury.
      c) Operations by independent contractors.
      d) Any fellow employee exclusions shall be deleted.
      e) Policy shall not contain a total or absolute pollution exclusion. Coverage shall be provided for pollution exposures arising from products and completed operations.
      f) Products and completed operations shall be maintained for duration of work, and shall be further maintained for a minimum period of three years after final acceptance and payment, unless modified in the Special Provisions.
      g) Owner and Consultant shall be named as "additional insured including completed operations" with respect to work performed for the Owner.
      h) Contractual liability coverage including completed operations will also include contractually assumed defense costs in addition to policy limits.

3. Automobile liability insurance, covering all owned, non-owned, hired and leased vehicles with a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident. Insurance must include contractual liability coverage. Any fellow employee exclusion shall be deleted. Policy shall provide auto cargo pollution endorsement (ISO CA 99 48), if requested in special provisions.

4. Umbrella/excess insurance: Limits of $2,000,000 each occurrence and aggregate.

5. Additional insured endorsements: except for Workers' Compensation insurance specified shall:

a. Include the Owner and Consultant. as an "additional insured" with respect to work performed for the Owner, with such additional insured endorsements providing coverage for Owner with respect to liability arising out of Contractor's work performed for Owner (including, but not limited to, liability caused or contributed by negligence of Contractor, its subcontractors, Owner, third parties, or agents, employees, or officers of any of them). Additional Insured status to include Products, Completed Operations.

b. Be primary to and not in excess of or contributory with any other insurance available to Owner. It is understood the Umbrella/excess policy may not be able to provide the primary/non-contributory provision.

D. Notification in Event of Liability or Damage

1. Upon occurrence of any event, liability for which is herein assumed by Contractor, Contractor agrees to forthwith notify Roofing Solutions and the Owner in writing of such happening, which notice shall give details as to happening, cause as far as can be ascertained, estimate of loss or damage done, name of witnesses, if any, and stating amount of any claim.

E. Release

1. To the extent permitted by applicable law, Contractor agrees to look solely to its insurers and does hereby release and waive any and all rights it has now, or may have in the future, to recover against Owner and its present and former partners, affiliates, principals, member, trustees, beneficiaries, shareholders, directors, offices, employees, agents, and servants and the successors and assigns thereof (collectively the "Releasees") for loss of damage to property or personal injury or death of employees of Contractor and claims for contribution or indemnity (or for reimbursement of worker's compensation benefits) in any way relating to or resulting from the Services performed or to be performed under or in connection with this Agreement. Contractor hereby waives all rights of subrogation of its insurers with respect to claims against Releasees.

2. Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub subcontractors, agents and employees, each of the other, and (2) Owner's consultants, separate contractors, if any, and any of their subcontractors, sub subcontractors, agents and employees, for damages caused by fire or other perils to extent covered by property insurance obtained, or other property insurance applicable to work, except such rights as they have to proceeds of such insurance held by Owner as fiduciary. Owner or Contractor, as appropriate, shall require of Owner's consultants, separate contractors, if any, and subcontractors, sub subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. Policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay insurance premium directly or indirectly and whether or not person or entity had an insurable interest in property damaged.

## 1.6 PERFORMANCE AND PAYMENT BONDS

A. Bonds shall be required for this project in the amount of one hundred percent (100%) of the total contract amount.

## 1.7 INDEMNIFICATION

A. To the fullest extent permitted by law, the Contractor agrees to protect, defend, hold harmless and indemnify Owner and its affiliates, partners, employees, directors, officers, shareholders, employees, agents and servants and the successors and assigns of each (all of the foregoing parties hereinafter collectively referred to as “indemnities”) from and against all claims, actions, liabilities, damages, losses, costs and expenses, including attorney’s fees, arising out of or resulting from the performance of Services at the Property by Contractor or Contractor’s subcontractors, agents or employees. In addition, Contractor agrees to protect, defend, hold harmless and indemnify the Indemnities from and against all claims, actions, liabilities, damages, losses, costs and expenses arising out of or resulting from Contractor’s failure to purchase all insurance coverage required in this Agreement.

## 1.8 SAFETY AND PROTECTION

A. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, including, without limitation, giving all notices and complying with all laws, regulations and orders, including, without limitation, the Federal Occupational Safety and Health Act. In particular, and without limitation, Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety and structural integrity.

## 1.9 SUSPENSION OR TERMINATION OF CONTRACT

A. Owner may at any time, without cause, suspend, delay or interrupt the Work in whole or in part, for such period of time as Owner may determine by giving notice to Contractor, specifying the part of the Work to be suspended, delayed or interrupted, in which case all other portions of the Work shall proceed as scheduled.

B. In case of such termination for the Owner's convenience, Contractor shall be entitled to recover from Owner (without duplication of any items);

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination.
2. for expenses sustained prior to the effective date of termination.

C. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

1.10 DISPUTE RESOLUTION

A. The parties will attempt in good faith to resolve any controversy and claim arising out of or relating to this agreement promptly by negotiations between authorized representatives of the parties.

B. If any Claim has not been resolved within ninety days of the date made and accompanied by all necessary substantiating data, either party may initiate mediation of the controversy or Claim in accordance with American Arbitration Association construction Industry Mediation Rules.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 010000

# SECTION 011000 - SUMMARY

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work under other contracts.
4. Use of premises.
5. Owner's occupancy requirements.
6. Work restrictions.

### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: RSI Project No. 20-9517

B. Project Location:

1. Frontier STEM High School
   Roofing Project
   6455 E. Commerce Avenue
   Kansas City, MO 64120

C. Owner:

1. Frontier Schools, Inc.
   Attn: Mr. Osman Guneri
   Email: oguneri@frontierschools.org
   30 West Pershing Road, Suite 402
   Kansas City, MO 64108

D. Consultant:

1. Roofing Solutions, Inc. (RSI)
   Mr. Justin Burk
   6728 W. 153rd Street
   Overland Park, KS 66223
   Telephone: 913-897-1840
   Email: jburk@roofingsolutionsinc.com

E. The area of Work covered under these specifications includes Roof Section A at the above referenced project location per the attached roof plan. The summary of Work consists of the following:

***General:***

- ***RSI will perform an infrared scan of the roof and mark any areas of identified existing wet roof system on the roof surface prior to commencement of work.***

1. Base Bid:

   *(Retrofit, Gravel Mat, MF HD Iso (min. 100 psi) Cover Board, MF 80 mil TPO, 20 Year Warranty)*

   a. Vacuum, sweep and remove all loose gravel, cut out and repair membrane blisters, ridges, splits and anomalies, and properly prepare the existing roof surface for installation of specified retrofit roof system.
   b. Tear off, remove and properly dispose of the existing base flashings, drain bowl flashings, counterflashings, coping cap metal, scuppers, perimeter, projection, and ancillary metal down to the substrate.
   c. **Foam-seal any gap between existing insulation and walls, curbs, perimeters and penetrations to provide internal building pressure air seal.**
   d. **Install .5-inch CDX plywood on all walls and curbs as suitable flashing substrate.**
   e. Inspect all existing drain components including the drain bowl, clamping ring, strainer basket and attachment bolts and replace as necessary any existing broken or missing clamping ring, strainer basket and attachment bolts. Only cast-iron drain components are approved for use on this project. Any existing plastic drain components or plastic drain strainer baskets are to be replaced with new cast iron components. This requirement excludes replacement of drain bowls or drain piping.
   f. Remove and properly dispose of all unused or obsolete equipment, curbs, supports or penetrations, install specified infill decking material over openings, and install polyisocyanurate infill insulation of required thickness to match existing roofing to remain.
   g. Raise all equipment, curbs, fans, pipes, penetrations, etc., and install additional blocking or nailer as required to obtain minimum 8-inch flashing height above the completed roof surface. Raise gas lines and downpipes as required to accommodate thickness of completed roof system. *(Any variance to the 8-inch flashing height allowed by the manufacturer must be approved in writing by manufacturer for specific inclusion in manufacturer's warranty. There shall be no warranty exclusion permitted for inadequate flashing heights.)*
   h. Install additional wood nailer or blocking as required.
   i. Remove and replace any existing deteriorated wood nailer. (Unit Price Item). This item excludes installation of additional wood nailer or blocking as required in performance of specified work.
   j. Remove and replace any existing wet existing wet roof system with infill insulation of required thickness to match existing and to provide a smooth transition to surrounding dry existing roofing to remain. (Unit Price Item).
   k. In areas where existing roof system removed, sweep the roof deck clean and inspect for corrosion or damage. Replace any metal deck which is damaged or has scaling corrosion with new mechanically attached decking of same type, gauge,

and profile if the damaged or corroded area covers an area larger than 24 inches square. Repair any metal deck which is damaged or has scaling corrosion with mechanically attached 22-gauge galvanized plating if the damaged or corroded area covers an area 24 inches square or smaller. Wire brush clean and apply rust inhibiting primer to any metal deck with surface corrosion. (Unit Price Items).

l. Install specified gravel mat over the entire prepared existing roof surface, overlapping all side and end laps a minimum of 6 inches. Provide periodic securement of perimeters of gravel mat to prevent displacement prior to cover board installation. *(Loose gravel is to be removed from the existing roof surface. The purpose of the gravel mat is to prevent any gravel that may become dislodged from the flood coat from gaining access to the underside of the membrane through joints in cover board.)*

m. Mechanically fasten 1 layer of specified high-density (min. 100 psi) polyisocyanurate cover board.

n. Mechanically fasten specified **80 mil TPO** membrane and fully adhere specified 60 mil TPO flashings.

o. Install new counterflashings, parapet coping cap metal, scuppers, perimeter, projection, and ancillary metal per SMACNA Architectural Sheet Metal Manual. All flashings shall have counterflashing installed.

1) At Parapet Walls: Remove and discard existing flashings and coping cap metal. Install .5-inch plywood on inside face of wall as suitable flashing substrate and foam-seal any gap between existing insulation and wall to provide proper internal building pressure air seal**.** Adhere specified flashing up and over the wall and terminate beyond outside face of wood nailer with cap nails. Install new 24-gauge prefinished metal coping cap with continuous cleat receiver on outside face of wood nailer and mechanically fastened to the inside face of wood nailer with screw with butyl washer spaced maximum 18 inches on center.

2) At HVAC Unit Curbs: Remove and discard existing flashings. Install .5-inch plywood as suitable flashing substrate and foam-seal any gap between existing insulation and wall to provide proper internal building pressure air seal. Adhere specified flashing up the curb and terminate and seal top of flashing immediately beneath the curb extension metal with termination bar and sealant. Install new galvanized skirt-metal counterflashing to extend up behind the face of curb extension metal and minimum 4 inches down over top of base flashing termination; secure counterflashing with screws with butyl washers.

p. Replace any existing wood pipe supports and provide required additional supports, spaced maximum 10 foot on center, and according to local building code.

q. Install sacrificial membrane sheet adhered to the field membrane sheet minimum five feet out from and around any grease exhaust unit and install sacrificial membrane sheet as membrane protection beneath equipment and pipe supports.

r. Install walkway material as membrane protection at roof access location(s) and along all 4 sides of any roof top unit according to roofing system manufacturer's written instructions.

s. Provide manufacturer’s twenty (20) year, **72-mph**, non-prorated roof system guaranty, without monetary limitation, against leaks and defects in material and workmanship. Warranty shall cover the cost of repair labor and material.

t. Provide two (2) year Roofing Installer's Warranty in which roofing Installer agrees to repair leaks and repair or replace components of roofing system that fail in materials or workmanship.

2. Unit Prices: The Base Bid and applicable Alternate Bid(s) may be increased or decreased in accordance with the Unit Prices described as follows:

    a. Replace Wood Nailer: Remove and replace any existing deteriorated wood nailer. (This item excludes installation of any additional wood nailer as required in performance of specified work.)
    b. Replace Wet Roof System: Replace any existing wet roof system with polyisocyanurate infill insulation of required thickness to match existing roof system thickness and to provide a smooth transition to surrounding dry existing roofing to remain.
    c. Replace Metal Deck: Replace any metal deck which is damaged or has scaling corrosion with new, mechanically attached decking of the same type, gauge, and profile to match existing if damaged or corroded area covers an area larger than 24 inches square.
    d. Repair Metal Deck: Repair any metal deck which is damaged or has scaling corrosion with mechanically attached 22-gauge galvanized plating if the damaged or corroded area covers an area 24 inches square or smaller.
    e. Prime Metal Deck: Wire brush clean and apply rust inhibiting primer to any metal deck with surface corrosion.

## 1.4 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

## 1.5 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

## 1.6 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations.

B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.
2. Driveways and Entrances: Keep driveways, parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

## 1.7 OWNER'S OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner will occupy site building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
2. Provide not less than 48 hours' notice to Owner of activities that will affect Owner's operations.

## 1.8 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than two (2) days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner’s written permission.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

# SECTION 012200 - UNIT PRICES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:

1. Division 01 Section "Photographic Documentation" for photographs taken before reroofing preparation and for photographic documentation required for adjusting the Contract Sum according to unit prices included in the Contract Documents.

### 1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

### 1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Owner.

D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. 2.a. – Replace Wood Nailer:

1. Description: Replace existing wood nailer according to Division 07 Section “Preparation for Re-Roofing" and Division 06 Section “Miscellaneous Rough Carpentry”.
2. Unit of Measurement: Board Foot.

B. Unit Price No. 2.b. – Replace Wet Roof System:

1. Description: Replace existing wet roof system according to Division 07 Section “Preparation for Re-Roofing".
2. Unit of Measurement: Square Foot.

C. Unit Price No. 2.c. – Replace Metal Deck:

1. Description: Replace metal deck according to Division 07 Section “Preparation for Re-Roofing".
2. Unit of Measurement: Square Foot.

D. Unit Price No. 2.d. – Repair Metal Deck:

1. Description: Repair metal deck according to Division 07 Section “Preparation for Re-Roofing".
2. Unit of Measurement: Square Foot.

E. Unit Price No. 2.e. – Prime Metal Deck:

1. Description: Prime metal deck according to Division 07 Section “Preparation for Re-Roofing".
2. Unit of Measurement: Square Foot.

END OF SECTION 012200

# SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

### 1.2 RELATED DOCUMENTS

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

### 1.3 MINOR CHANGES IN THE WORK

A. Consultant will issue in writing supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

### 1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Owner will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Owner are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within 3 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Owner.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Owner will issue a Change Order for signatures of Owner and Contractor.

B. Documentation: Maintain detailed records of work required by the Change Directive including photographic documentation of all existing and finished conditions.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

# SECTION 012900 - PAYMENT PROCEDURES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 01 Section "Unit Prices" for administrative requirements governing the use of unit prices.
2. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
3. Division 01 Section "Photographic Documentation" for administrative requirements governing documentation of unit prices and change orders.

### 1.3 DEFINITIONS

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

### 1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with Continuation Sheets.
b. Submittals Schedule.
c. Contractor's Construction Schedule.

2. Submit the Schedule of Values to Owner at earliest possible date but no later than seven (7) days before the date scheduled for submittal of 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. Name of Consultant.
    c. Consultant's project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
4. Do not round amounts; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the Schedule of Values for each allowance, if applicable. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

## 1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified and paid for by Owner.

    1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Owner will return incomplete applications without action.

    1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Materials previously stored and included in previous Applications for Payment.
    b. Work completed for this Application utilizing previously stored materials.
    c. Additional materials stored with this Application.
    d. Total materials remaining stored, including materials with this Application.

F. Transmittal: Submit three signed and notarized original copies of each Application for Payment by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Submit original copies of each Application for Payment to Owner.
2. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Schedule of unit prices.
6. Submittal schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.

I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

K. Retainage:

1. Upon project completion and final inspection, and acceptances by material manufacturer, Owner’s Representative and Owner, Owner shall pay balance of contract amount, less 10% retainage pending receipt of warranty document.
2. Final payment of retainage amount shall be paid by Owner upon receipt and acceptance of warranty document.

L. Photographic Documentation:

1. Contractor shall provide ample digital photographs to document any unit price items or change orders required during this project. Lack of photographic documentation may result in denial of payment requests under the unit price schedule or any change orders.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

# SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Unit prices construction photographs.
3. Changes in work construction photographs.
4. Final completion construction photographs.

### 1.3 SUBMITTALS

A. Construction Photographs:

1. Format: JPEG Digital Images: Submit a complete set of digital image electronic files on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.
2. Identification: With each submittal, provide a transmittal sheet with corresponding photograph identifier(s) containing the following:

    a. Name of Project.
    b. Name of Contractor.
    c. Unique sequential identifier.
    d. Date photograph was taken if not date stamped by camera.
    e. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

### 1.4 USAGE RIGHTS

A. Owner and Consultant shall assume full copyright usage rights of all media from Contractor for unlimited reproduction of photographic documentation.

## PART 2 - PRODUCTS

### 2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in uncompressed JPEG format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1024 by 768 pixels.

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Contractor shall provide ample digital photographs to document any unit price items or change orders required during this project. Lack of photographic documentation may result in denial of payment requests under the unit price schedule or any change orders.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.

C. Preconstruction Photographs: Before commencement of demolition, take digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Take sufficient photographs as required to document all existing leak conditions and property damages.
2. Take sufficient photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Final Completion Construction Photographs: Take a minimum of twelve (12) photographs after date of Substantial Completion for submission as Project Record Documents. Select vantage points to show the entire area of completed work and close up view of membrane and flashing details.

E. Unit Prices Construction Photographs: Take digital photographs to document all unit price items. Select vantage points to show status of existing conditions and unit price work.

F. Changes in Work Construction Photographs: Take digital photographs to document all latent conditions and other changes to the work. Select vantage points to show status of existing conditions and replaced work.

END OF SECTION 013233

# SECTION 013300 - SUBMITTAL PROCEDURES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 01 Section "Photographic Documentation" for submitting construction photographs.
3. Division 01 Section "Closeout Procedures" for submitting warranties.

### 1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Consultant’s responsive action.

B. Informational Submittals: Written information that does not require Consultant’s responsive action. Submittals may be rejected for not complying with requirements.

### 1.4 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

B. Processing Time: Submittals shall be delivered to Consultant’s office within 24 hours of contract award. Allow enough time for submittal review, including time for resubmittals.

C. Additional Copies: Unless additional copies are required for final submittal, and unless Consultant observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

D. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant will discard submittals received from sources other than Contractor.

E. Use for Construction: Use only final submittals with mark indicating "Approved" by Consultant.

## 1.5 CONTRACTOR'S USE OF CONSULTANT'S CAD FILES AND DRAWINGS

A. General: Copies of Consultant's CAD files and drawings may be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:

1. Consultant makes no ascertain as to the accuracy of provided CAD files and drawings. Contractor is solely responsible for the accuracy of all measurements, estimates of material quantities and sizes; and site conditions that will affect work.

# PART 2 - PRODUCTS

## 2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's product specifications.
b. Manufacturer's installation instructions.
c. Standard color charts.
d. Manufacturer's catalog cuts.
e. Compliance with specified referenced standards.

4. Submittal Format: Electronically submit single copy of each submittal in PDF format.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Shopwork manufacturing instructions.
e. Schedules.

f. Compliance with specified standards.
g. Notation of coordination requirements.
h. Notation of dimensions established by field measurement.
i. Relationship to adjoining construction clearly indicated.

2. Submittal Format: Electronically submit single copy of each submittal in PDF format.

## 2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Submittal Format: Electronically submit single copy of each submittal in PDF format.
2. Certificates and Certifications: Provide a notarized 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.
3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section "Quality Requirements."
4. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
5. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of consultants and owners, and other information specified.

C. Installer Certificates: Prepare 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.

D. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

E. Material Test Reports: Prepare 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.

F. Product Test Reports: Prepare written reports indicating 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.

G. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

H. Construction Photographs: Comply with requirements specified in Division 01 Section "Photographic Documentation."

I. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Consultant.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

A. 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 Consultant.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 3.2 CONSULTANT’S ACTION

A. General: Consultant will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Consultant will review each submittal, make marks to indicate corrections or modifications required, and return it. Consultant will stamp each submittal with a self-explanatory electronic stamp to indicate action taken.

C. Informational Submittals: Consultant will review each submittal and will not return it, or will return it if it does not comply with requirements. Consultant will forward each submittal to appropriate party.

D. Partial submittals are not acceptable. Any incomplete or partial submittals will be considered non-responsive, and will be returned without review.

END OF SECTION 013300

# SECTION 017329 - CUTTING AND PATCHING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

### 1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

### 1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Consultant's opinion, reduce the building's

aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

B. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, all work shall be performed by licensed professional for type of work required. Bypass such services/systems before cutting to prevent interruption to occupied areas.

## 3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials. Clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 017329

# SECTION 017700 - CLOSEOUT PROCEDURES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 01 Section "Photographic Documentation" for submitting Final Completion construction photographs and negatives.

### 1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Prepare and submit Final Completion construction photographs documenting any changes to the contract, and similar final record information.
4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
5. Complete final cleaning requirements, including touchup painting.
6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection:

1. Submit a written request for inspection for Substantial Completion. On receipt of request, Owner/Owner’s Representative will either proceed with inspection or notify Contractor of unfulfilled requirements.

a. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
b. Results of completed inspection will form the basis of requirements for Final Completion.

2. Submit a written request for final inspection by manufacturer for final acceptance and issuance of warranty document.

## 1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Owner/Owner's Representative's Substantial Completion inspection list of items to be completed or corrected (punch list). The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner/Owner's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner/Owner's Representative will accept construction after inspection or will notify Contractor of construction that must be completed or corrected before acceptance.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

## 1.5 WARRANTIES

A. Submit properly executed warranties to the Consultant within fifteen (15) days of completion of Work.

B. Upon project completion and final inspection, and acceptances by Consultant, Owner, and material manufacturer, Contractor shall provide a standard 2-year contractor supplied labor and material warranty against leaks and defects in material and workmanship.

C. Organize warranty documents into an orderly sequence and include manufacturer's instructions to Owner on maintenance and emergency repair.

# PART 2 - PRODUCTS

## 2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

A. General: Provide 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 soiled as a result of the Work to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Clean construction debris, stains or markings from exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    g. Sweep construction debris from concrete floors broom clean in unoccupied spaces.
    h. Vacuum carpet and similar soft surfaces, removing construction debris and excess nap; shampoo if visible soil or stains remain.
    i. Clean construction markings and stains from transparent materials, including mirrors and glass in doors and windows. Replace chipped or broken glass damaged as a result of the Work.
    j. Remove labels that are not permanent.
    k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    l. Leave Project clean of construction debris and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

# SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following:

1. Rooftop equipment bases and support curbs.
2. Wood blocking and nailers.
3. Plywood backing panels.

### 1.3 DEFINITIONS

A. Boards: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

C. Timber: Lumber of 5 inches nominal size or greater in least dimension.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NHLA: National Hardwood Lumber Association.
3. NLGA: National Lumber Grades Authority.
4. SPIB: The Southern Pine Inspection Bureau.
5. WCLIB: West Coast Lumber Inspection Bureau.
6. WWPA: Western Wood Products Association.

### 1.4 SUBMITTALS

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

### 1.5 QUALITY ASSURANCE

A. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria":

1. Dimension lumber framing.
2. Miscellaneous lumber.

## 1.6 DELIVERY, STORAGE, AND HANDLING

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

B. Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

# PART 2 - PRODUCTS

## 2.1 WOOD PRODUCTS, GENERAL

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

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

## 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat all miscellaneous carpentry, unless otherwise indicated.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
3. Wood framing members that are less than 18 inches (460 mm) above the ground in crawl spaces or unexcavated areas.

## 2.3 MISCELLANEOUS LUMBER

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

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

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content and any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB, or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Western woods; WCLIB or WWPA.
7. Northern species; NLGA.
8. Eastern softwoods; NeLMA.

C. For exposed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:

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

D. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

## 2.4 PLYWOOD BACKING PANELS

A. Plywood Backing Panels: DOC PS 1, Exposure 1, C-D Plugged in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

## 2.5 FASTENERS

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

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

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

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

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1.

G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

## 2.6 MISCELLANEOUS MATERIALS

A. Adhesives for Gluing to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

# PART 3 - EXECUTION

## 3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.

D. Do not splice structural members between supports, unless otherwise indicated.

E. Provide blocking, framing, and spacing as indicated and as required.

F. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

G. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with FM Global Loss Prevention Data Sheet 1-49.

H. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

## 3.2 WOOD BLOCKING AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess screws, bolts and nuts flush with surfaces, unless otherwise indicated.

C. Replace any existing wood pipe supports and provide required additional supports, spaced maximum 10 foot on center, and according to local building code.

## 3.3 PLYWOOD BACKER PANEL INSTALLATION

A. Install where indicated and where required for separating new single ply membrane flashing from substrates contaminated with asphalt or other foreign materials. Install flush and tight to substrate, leaving no gaps exceeding 1/4 inch.

B. Attach plywood securely with screws or anchors suitable for substrate. Recess screws flush with surface unless otherwise indicated.

END OF SECTION 061053

# SECTION 070150.19 - PREPARATION FOR RE-ROOFING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following:

1. Roof re-cover preparation.
2. Removal of base flashings.
3. Removal of metal flashings.
4. Roofing preparation.

B. Related Sections include the following:

1. Division 01 Section "Summary" for summary of work.
2. Division 01 Section "Photographic Documentation" for photographs taken before reroofing preparation and for photographic documentation required for adjusting the Contract Sum according to unit prices included in the Contract Documents.
3. Division 01 Section "Cutting and Patching" for cutting and patching procedures for reroofing preparation.
4. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, cants, curbs, and blocking.
5. Division 07 Section "Thermoplastic Polyolefin (TPO) Roofing” for roofing membrane system and accessories.
6. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

### 1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

### 1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Membrane Roofing System: Existing roofing membrane, surfacing, and components and accessories between deck and roofing membrane.

C. Roof Re-Cover Preparation: Existing roofing membrane that is to remain and be prepared for reuse.

D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

E. Existing to Remain: Existing items of construction that are not indicated to be removed.

## 1.5 SUBMITTALS

A. Product Data: For each product indicated.

B. Photographs:

1. Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
2. Provide ample digital photographs to document any unit price items or change orders required during this project. Lack of photographic documentation may result in denial of payment requests under the unit price schedule or any change orders.

C. Qualification Data: For Installer.

## 1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Reroofing Conference: Conduct conference at Project site.

1. Meet with Owner; Consultant; Owner's insurer if applicable; roofing system manufacturer's representative if applicable; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:

    a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.
    b. Temporary protection requirements for existing roofing system that is to remain during and after installation.
    c. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
    d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
    e. Existing deck removal procedures and Owner notifications.
    f. Structural loading limitations of deck during reroofing.

g. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
h. HVAC shutdown and sealing of air intakes.
i. Governing regulations and requirements for insurance and certificates if applicable.
j. Existing conditions that may require notification of Consultant before proceeding.

## 1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner and place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.

B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

1. Construction Drawings and Project Manual for existing roofing system are provided for Contractor's reference. Contractor is responsible for conclusions derived from existing documents.

E. Limit construction loads on roof and rooftop equipment wheel loads and uniformly distribute loads.

F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

# PART 2 - PRODUCTS

## 2.1 INFILL MATERIALS

A. General: Use infill materials matching existing membrane roofing system materials unless otherwise indicated.

B. Steel deck materials:

1. Steel deck replacement materials shall be of same type, gauge and profile as existing and shall conform to all structural requirements for type of deck used.
2. 22-gauge galvanized metal plating for repairing metal deck.
3. Manufacturer's approved rust inhibiting primer for priming corroded metal deck.

C. Insulation materials:

1. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces.

a. Thickness as required to match existing roof system and to provide a smooth transition to surrounding dry existing roofing to remain.

## 2.2 AUXILIARY REROOFING MATERIALS

A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.

# PART 3 - EXECUTION

## 3.1 PREPARATION

A. Provide for safe public access at all times and prohibit public traffic while performing any overhead demolition work.

B. Coordinate with Owner to shut down air intake equipment in the vicinity of the Work. Cover air intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

C. Investigate attachment of ceilings and other building components prior to proceeding with work. Take necessary precautions to prevent fasteners from penetrating any electrical conduit on underside of deck or detachment of any building components during roof removal or deck replacement processes.

D. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

E. Maintain roof drainage systems in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains will be temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

F. Inspect all existing drain components including the drain bowl, clamping ring, strainer basket and attachment bolts and replace as necessary any existing broken or missing clamping ring, strainer basket and attachment bolts. Only cast-iron drain components are approved for use on this project. Any existing plastic drain components or plastic drain strainer baskets are to be replaced with new cast iron components. This requirement excludes replacement of drain bowls or drain piping.

G. Remove and properly dispose of all unused or obsolete equipment, curbs, supports or penetrations and install infill decking and roofing material at deck openings.

H. Raise all equipment, curbs, fans, pipes, penetrations, etc., and install additional blocking or nailer as required to obtain minimum 8-inch flashing height above the completed roof surface. Raise gas lines and downpipes as required to accommodate thickness of completed roof system. *(Any variance to the 8-inch flashing height allowed by the manufacturer must be approved in writing by manufacturer for specific inclusion in manufacturer's warranty. There shall be no warranty exclusion permitted for inadequate flashing heights.)*

I. Replace any existing wood pipe supports and provide required additional supports, spaced maximum 10 foot on center, and according to local building code.

J. Provide all disconnects and reconnects of electrical and mechanical systems by a licensed contractor as needed for installation of the new roof system.

K. Exercise care so as not to damage existing conditions within or below the deck including but not limited to the electrical, mechanical, safety, security, and thermal systems in operation at the time.

## 3.2 ROOF RE-COVER PREPARATION

A. Roof Re-cover Preparation: Remove blisters, ridges, buckles, and other substrate irregularities from existing roofing membrane that inhibit new roofing membrane system from conforming to substrate.

1. Remove all loose aggregate from aggregate-surfaced built-up bituminous roofing with a power vacuum.
2. Verify soundness of decking and that existing substrate is dry before proceeding with installation of insulation or cover board.
3. Remove or repair substrate irregularities from existing roofing insulation that inhibit new membrane system, insulation, or recover boards from conforming to substrate.
4. Remove materials that are wet or damp with specified polyisocyanurate infill insulation of required thickness to match existing roof system thickness and to provide smooth transition to surrounding dry existing roofing to remain. Removal and replacement of existing wet roof system will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.

## 3.3 EXISTING BASE FLASHINGS

A. Existing Base Flashings: Remove all existing base flashings and counterflashings around parapets, curbs, walls, and penetrations to substrate and remove and dispose of parapet coping metal, scuppers, and pitch pans.

1. **Foam-seal any gap between existing insulation and walls, curbs, perimeters and penetrations to provide internal building pressure air seal.**
2. Inspect existing wood nailers and curbs for damage, excessive warping or dry rot and replace as necessary. Removal and replacement of existing wood nailer will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
3. Install additional wood nailer or blocking as required.
4. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.
5. **Install .5-inch CDX plywood on all walls and curbs as suitable flashing substrate.**

## 3.4 DECK PREPARATION

A. General:

1. If deck surface is not suitable for receiving new roofing, or if structural integrity of deck is suspect, immediately notify Engineer. Do not proceed with installation until directed by Consultant.
2. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Consultant. Do not proceed with installation until directed by Consultant.
3. Provide additional deck securement as required.
4. Verify that substrate is clean and dry and conforms to manufacturer’s requirements before proceeding with installation of membrane system.

B. Inspect deck after removal of existing wet roofing.

1. Replace any metal deck which is damaged or has scaling corrosion with new, mechanically attached decking of the same type, gauge, and profile to match existing if damaged or corroded area covers an area larger than 24 inches square.
2. Repair any metal deck which is damaged or has scaling corrosion with mechanically attached 22-gauge galvanized plating if the damaged or corroded area covers an area 24 inches square or smaller.
3. Wire brush clean and apply rust inhibiting primer to any metal deck with surface corrosion.

C. Cover openings in the deck where unused or obsolete equipment, curbs, supports, or penetrations have been removed.

1. Cover openings in the deck where unused or obsolete equipment, curbs, supports, or penetrations have been removed with infill decking material mechanically fastened to purlins. Install infill insulation of required thickness to provide a smooth transition to surrounding existing roofing to remain.

3.5 DISPOSAL

A. Collect and place demolished materials in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Storage or sale of demolished items or materials on-site will not be permitted.

B. Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 070150.19

# SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section Includes:

1. Mechanically fastened TPO membrane roofing system.
2. Gravel mat.

B. Related Sections:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Division 07 Section "Preparation for Re-Roofing" for roofing preparation prior to installation of new membrane roofing.
3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
4. Division 07 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

### 1.3 DEFINITIONS

A. TPO: Thermoplastic polyolefin.

B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

### 1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane 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. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

D. Energy Performance: Provide roofing system that is listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

## 1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.
2. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing.
3. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

## 1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and manufacturer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

D. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.

E. Warranties: Sample of special warranties.

## 1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

## 1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

C. Source Limitations: Obtain components including roof insulation, fasteners and accessories for membrane roofing system from same manufacturer as membrane roofing.

D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Consultant, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

## 1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation. **Manufacturer’s wrap does not constitute material protection and all stored materials must be properly tarped and protected from the elements.**

D. Handle and store roofing materials and place equipment in a manner to prevent overloading or permanent deflection of deck.

1.10 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard or customized form, non-prorated, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes membrane roofing, base flashings, fasteners, cover boards, roofing accessories, and other components of membrane roofing system.
2. Wind Speed: **72**-mph.

a. Note: The 72-mph wind speed specified for manufacturer’s warranty is intended solely as a condition of the warranty and does not exempt from or reduce the design standard of the roof system as specified under “Performance Requirements” Article or local building code.

3. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, fasteners, cover boards, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TPO MEMBRANE ROOFING

A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, internally fabric or scrim reinforced, uniform, flexible TPO sheet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Carlisle SynTec Incorporated.
b. Firestone Building Products.
c. GAF Materials Corporation.
d. Johns Manville.

2. Thickness: Base Bid: 80 mils (2.0 mm), nominal.
3. Exposed Face Color: White.

## 2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: Manufacturer's standard thermoplastic polyolefin sheet flashing, 60 mils (1.5 mm) thick, minimum, of same color as sheet membrane.

C. Bonding Adhesive: Manufacturer's standard.

D. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

E. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05-inch thick (25 mm wide by 1.3 mm thick), prepunched.

F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

## 2.3 GRAVEL MAT

A. Gravel Mat: Min. 6.0-oz/yd² (140 gm/m²), needle-punched polypropylene fabric, water and vapor permeable and resistant to UV degradation.

1. Carlisle Sure-Seal HP Protective Mat.
2. Firestone Protection Mat.
3. JM EPDM Protective Stone Mat.
4. GAF EverGuard Polymat Cushioning Layer.

## 2.4 COVER BOARD

A. Cover Board: ASTM C 1289, Type II, Class 4, high-density, closed-cell, polyisocyanurate foam core with factory installed coated glass-fiber mat facer; 100 psi (690kPa) minimum compressive strength.

1. Products: Subject to compliance with requirements, provide the following:

a. Carlisle SecurShield HD Polyiso; 1/2 inch (12.7 mm) thick.
b. Firestone ISOGARD HD Cover Board, Grade 2; 1/2 inch (12.7 mm) thick.
c. GAF EnergyGuard HD Plus; 1/2 inch (12.7 mm) thick.
d. Johns Manville Invinsa Roof Board; 1/4 inch (6.35 mm) thick.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

## 2.5 MEMBRANE PROTECTION

A. Membrane protection: Same material, type, reinforcement, thickness, and color as TPO sheet membrane.

## 2.6 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway rolls, approximately 3/16 inch (5 mm) thick and acceptable to membrane roofing system manufacturer. **Same color as sheet membrane**.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. 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.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

## 3.3 GRAVEL MAT INSTALLATION

A. Install gravel mat over properly prepared substrate, completely covering the entire roof surface and overlapping all side and end laps a minimum of 6 inches (150 mm). Provide periodic

securement of perimeters of gravel mat to prevent displacement prior to cover board installation.

## 3.4 COVER BOARD INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing cover board.

C. Trim surface of cover board where necessary at roof drains and scuppers so completed surface is flush and does not restrict flow of water.

D. Installation Over Metal Decking:

1. Install cover boards with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction (Section B). Loosely butt cover boards together and fasten to roof deck.

    a. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    b. Cut and fit cover board tight to nailers, projections, and penetrations.
    c. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

## 3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION

A. Mechanically fasten membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions.

1. For in-splice attachment, install membranes roofing with long dimension perpendicular to steel roof deck flutes.

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. In-Seam Attachment: Secure one edge of TPO sheet using fastening plates or metal battens centered within membrane seam and mechanically fasten TPO sheet to roof deck.

G. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

H. Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

## 3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. 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.

E. Terminate and seal top of sheet flashings, mechanically anchor to substrate through termination bars set in sealant, and install counterflashing. All flashings shall have counterflashing installed.

F. At Parapet Walls: Remove and discard existing flashings and coping cap metal. Install .5-inch plywood on inside face of wall as suitable flashing substrate and foam-seal any gap between existing insulation and wall to provide proper internal building pressure air seal**.** Adhere specified flashing up and over the wall and terminate beyond outside face of wood nailer with cap nails. Install new 24-gauge prefinished metal coping cap with continuous cleat receiver on outside face of wood nailer and mechanically fastened to the inside face of wood nailer with screw with butyl washer spaced maximum 18 inches on center.

G. At HVAC Unit Curbs: Remove and discard existing flashings. Install .5-inch plywood as suitable flashing substrate and foam-seal any gap between existing insulation and wall to provide proper internal building pressure air seal. Adhere specified flashing up the curb and terminate and seal top of flashing immediately beneath the curb extension metal with termination bar and sealant. Install new galvanized skirt-metal counterflashing to extend up behind the face of curb extension metal and minimum 4 inches down over top of base flashing termination; secure counterflashing with screws with butyl washers.

## 3.7 MEMBRANE PROTECTION INSTALLATION

A. Membrane Protection: Install sacrificial membrane sheet adhered to the field membrane sheet minimum five feet out from and around any grease exhaust unit and install sacrificial membrane sheet as membrane protection beneath equipment and pipe supports according to roofing system manufacturer's written instructions.

## 3.8 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products as membrane protection at roof access location(s) and along all 4 sides of any roof top unit. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

## 3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

## 3.10 PROTECTING AND CLEANING

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

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423

# SECTION 076200 - SHEET METAL FLASHING AND TRIM

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following sheet metal flashing and trim:

1. Formed low-slope roof flashing and trim.
2. Formed equipment support flashing.

B. Related Sections include the following:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Division 07 Section "Thermoplastic Polyolefin (TPO) Roofing” for installing sheet metal flashing and trim integral with roofing.
3. Division 07 Section "Joint Sealants" for field-applied sheet metal flashing and trim sealants.

### 1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Fabricate and install roof edge flashing and copings capable of resisting the forces according to ASCE 7-10 for specific wind zone.

C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

## 1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.

C. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

## 1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

## 1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

# PART 2 - PRODUCTS

## 2.1 SHEET METALS

A. General:

1. Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
2. Minimum thickness 24 gauge, Kynar 500 coated on all metal visible from the exterior of the building. Continuous cleat installed on outside face and mechanically attached to the inside face of the wood nailer. No fasteners are to penetrate the horizontal surface or visible from the exterior of the building.

B. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.

C. Prepainted, Metallic-Coated Steel Sheet: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
2. Exposed Finishes: Apply the following coil coating:
   a. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      1) Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with physical properties and coating performance requirements of AAMA 2605, except as modified below:
         a) Humidity Resistance: 2000 hours.
         b) Salt-Spray Resistance: 2000 hours.
      2) Color: Match existing or as selected by Owner from manufacturer's full range of standard colors.
      3) Thickness: As required by SMACNA, but in all cases no less than 24 gauge.

## 2.2 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General:

   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
   b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
   c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for continuous cleats: As required by manufacturer for prefabricated systems, minimum annular threaded nails.
3. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, EPDM gasketed, with hex washer head.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

D. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

## 2.3 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

D. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

E. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal, and in accordance with SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

## 2.4 ROOF DRAINAGE SHEET METAL FABRICATIONS

A. Parapet Scuppers: Fabricate scuppers of dimensions required with closure flange trim to exterior, 4-inch wide wall flanges to interior, and base extending 4 inches into field of roof.

1. Fabricate parapet scuppers from the following material: Heat-Weldable Coated Steel; 24 gauge.
2. Fabricate exterior face plates from the following material: Prepainted, Metallic-Coated Steel; 24 gauge.

## 2.5 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 10-foot- (3-m-) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal watertight. Fabricate copings from the following material:

1. Anchor Cleats: Extruded aluminum or galvanized steel; 22 gauge minimum.
2. Coping: Prepainted, Metallic-Coated Steel; 24 gauge minimum or as required per SMACNA.
3. Joint Style: Butt, with drive-cleats. SMACNA designation J9.
4. Metal Color: Match existing or as selected by Owner from Manufacturer’s full range.

B. Counterflashing: Fabricate from the following material:

1. Galvanized Steel, 0.022 inch (0.56 mm) thick.

## 2.6 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Pourable Sealer/Pitch Pans: Fabricate from the following material:

1. TPO Coated steel.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrates, areas, and conditions to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. All metal shall be installed per SMACNA Architectural Sheet Metal Manual.
2. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
3. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
5. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
6. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
7. Torch cutting of sheet metal flashing and trim is not permitted.
8. All flashings shall have counterflashing installed.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA, fabricator or manufacturers of dissimilar metals.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.

D. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.

E. Seal joints as required for watertight construction.

1. Seal Metallic-Coated Steel joints with elastomeric sealant as required for watertight construction.
2. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).

3. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

F. Seal TPO Coated steel with TPO membrane flashings as required for watertight construction.

## 3.3 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

B. Parapet Scuppers: Install scuppers where indicated through parapet. Fabricate and install scupper with a minimum ½" slope to edge. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Solder or seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.
2. Anchor overflow scupper closure trim flange to exterior wall and seal or solder to scupper.

## 3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

B. Copings: Anchor to resist uplift and outward forces according to recommendations in SMACNA's "Architectural Sheet Metal Manual" and ASCE 7-10 for specific wind zone and as indicated.

1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 12-inch centers.
2. Anchor interior leg of coping with screw fasteners and rubber washers at 18-inch centers.
3. Install joints per SMACNA requirements for sizes indicated.
4. Joint Style: Butt, with drive-cleats. SMACNA designation J9.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing and termination bars. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing minimum 4 inches (100 mm) over base flashing. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with elastomeric sealant. Secure in a waterproof manner by means of anchor and washer at maximum 18-inch (450-mm) centers or minimum two (2) per side of curb.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 3" over base flashing. Install stainless-steel draw band and tighten.

## 3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

## 3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering. Clean and neutralize flux materials. Clean off excess solder and sealants.

B. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

C. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

# SECTION 079200 - JOINT SEALANTS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes joint sealants for exterior joints between metal surfaces and at other joints indicated.

B. Related Sections include the following:

1. Division 07 Section "Sheet Metal Flashing and Trim" for specific joint sealant requirements for installing sheet metal flashing and trim.

### 1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

### 1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in Part 2 articles.

### 2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

## 2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Single-Component Nonsag Urethane Sealant:

1. Products:

a. BASF; NP 1.
b. Tremco; Vulkem 116.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: NT (nontraffic).

# PART 3 - EXECUTION

## 3.1 GENERAL:

A. Do not proceed with installation of joint sealants When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer, when joint substrates are wet, or when contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## 3.2 PREPARATION

A. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

B. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact.

## 3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of type indicated to support sealants during application and at position required to allow optimum sealant movement capability.

C. Install sealants so they directly contact and fully wet joint substrates, completely fill recesses in each joint configuration, and produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealant from surfaces adjacent to joints.

## 3.4 CLEANING

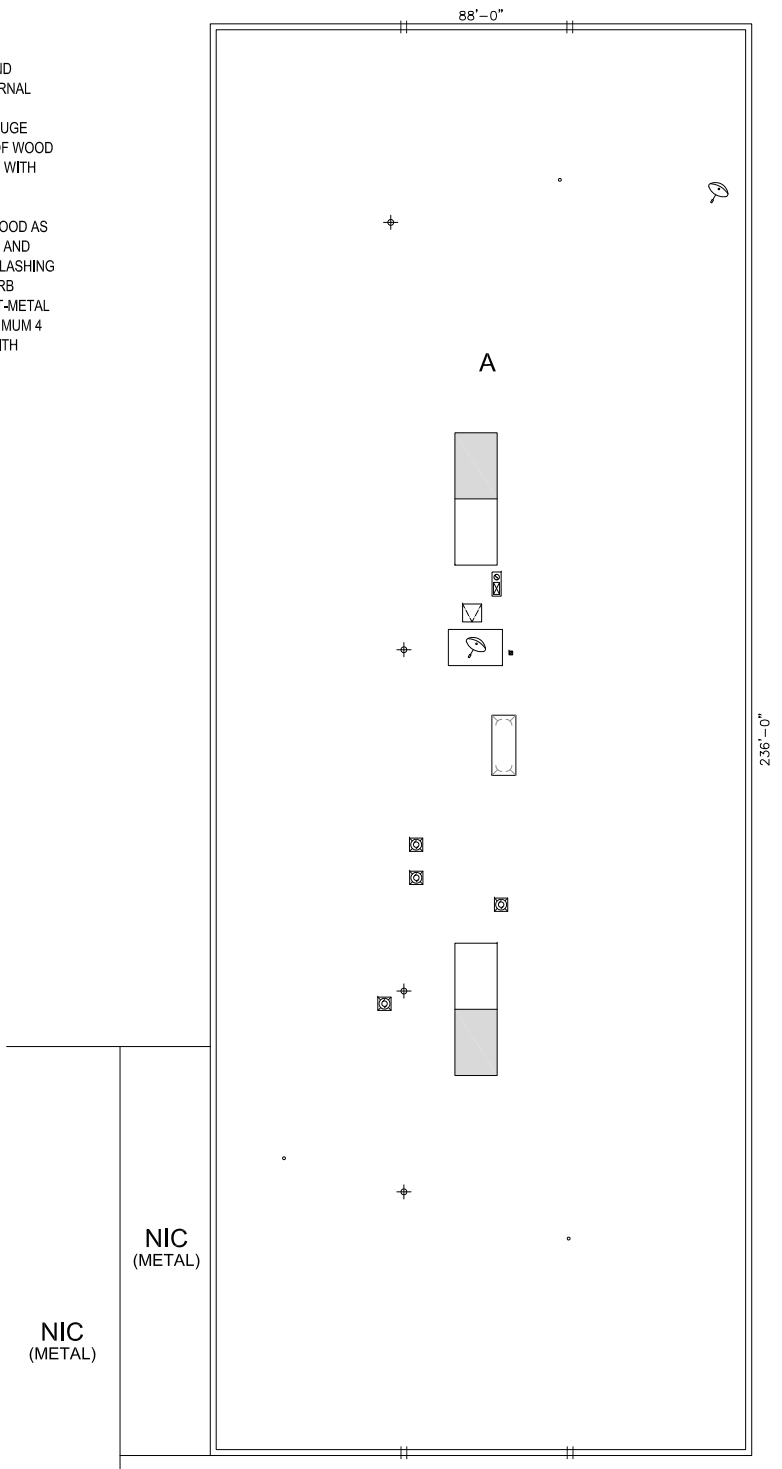
A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 079200

DETAIL DESCRIPTIONS

AT PARAPET WALLS: REMOVE AND DISCARD EXISTING FLASHINGS AND COPING CAP METAL. INSTALL .5-INCH PLYWOOD ON INSIDE FACE OF WALL AS SUITABLE FLASHING SUBSTRATE AND FOAM-SEAL ANY GAP BETWEEN EXISTING INSULATION AND WALL TO PROVIDE PROPER INTERNAL BUILDING PRESSURE AIR SEAL. ADHERE SPECIFIED FLASHING UP AND OVER THE WALL AND TERMINATE BEYOND OUTSIDE FACE OF WOOD NAILER WITH CAP NAILS. INSTALL NEW 24-GAUGE PREFINISHED METAL COPING CAP WITH CONTINUOUS CLEAT RECEIVER ON OUTSIDE FACE OF WOOD NAILER AND MECHANICALLY FASTENED TO THE INSIDE FACE OF WOOD NAILER WITH SCREW WITH BUTYL WASHER SPACED MAXIMUM 18 INCHES ON CENTER.

AT HVAC UNIT CURBS: REMOVE AND DISCARD EXISTING FLASHINGS. INSTALL .5-INCH PLYWOOD AS SUITABLE FLASHING SUBSTRATE AND FOAM-SEAL ANY GAP BETWEEN EXISTING INSULATION AND WALL TO PROVIDE PROPER INTERNAL BUILDING PRESSURE AIR SEAL. ADHERE SPECIFIED FLASHING UP THE CURB AND TERMINATE AND SEAL TOP OF FLASHING IMMEDIATELY BENEATH THE CURB EXTENSION METAL WITH TERMINATION BAR AND SEALANT. INSTALL NEW GALVANIZED SKIRT-METAL COUNTERFLASHING TO EXTEND UP BEHIND THE FACE OF CURB EXTENSION METAL AND MINIMUM 4 INCHES DOWN OVER TOP OF BASE FLASHING TERMINATION; SECURE COUNTERFLASHING WITH SCREWS WITH BUTYL WASHERS.




# ROOF PLAN
SCALE: NTS

Revisions:

## GENERAL NOTES

- Dimensions are approximate. Contractor is solely responsible for the accuracy of all measurements, estimates of material quantities and sizes; and site conditions that may affect work.
- Contractor shall remove all unused or obsolete penetrations, equipment and associated curbs and install infill decking at openings.
- Contractor is responsible for obtaining all building permits, street closure permits, licenses, etc., and paying all required fees.
- Contractor is responsible for all gas, electrical and mechanical disconnects / reconnects and raising of all lines necessary to complete Work.
- Contractor shall complete all metal work per SMACNA.
- Contractor shall protect parking lot, driveways, buildings and grounds from damages.
- Contractor shall exercise care not to damage existing conditions within or below the deck including but not limited to the electrical and mechanical systems.

Project Name: FRONTIER STEM HIGH SCHOOL ROOFING PROJECT

Project Address: 6455 E. COMMERCE AVENUE KANSAS CITY, MO 64120

Project Number: 20-9517

Sheet Title: 7.0 - ROOF PLAN

Roofing Solutions, Inc.
6728 W. 153rd Street
Overland Park, KS 66223
Office: (913)-897-1840
Fax: (913)-897-1499
RSI@roofingsolutionsinc.com

RSI

Drawn By: J.BURK

Date: 2020/05/12

Sheet Number: 01 of 01