



INVITATION TO BID AND INSTRUCTIONS TO BIDDERS

FY2020-093

CENTRAL SERVICES COMPLEX – ROOF REPLACEMENT

NOTE: MANDATORY PRE-BID CONFERENCE JANUARY 8, 2020 AT 10:00 A.M., LOCAL TIME, AT THE CENTRAL SERVICES COMPLEX MULTIPURPOSE ROOM

BID OPENING

**January 23, 2020
2:00 p.m., Local Time
at the**

**Central Services Complex Multipurpose Room
City of Oak Ridge
100 Woodbury Lane
P. O. Box 1
Oak Ridge, Tennessee 37831-0001**

**Telephone: (865) 425-1819
Email: lmajeski@oakridgetn.gov
Attn: Lyn Majeski**

CITY OF OAK RIDGE, TENNESSEE
Invitation to Bid and Instructions to Bidders

FY2020-093

December 10, 2019

Project: Central Services Complex – Roof Replacement

Invitation

Bids will be received by the City of Oak Ridge until 2:00 p.m. local time, January 23, 2020, then publicly opened in the Central Services Complex Multipurpose Room at 100 Woodbury Lane, Oak Ridge, Tennessee 37830, for furnishing all labor, materials, supplies, tools, and equipment necessary to perform all work and services described in the Contract attached hereto, in strict accordance with the terms and provisions of said Contract and any attachments thereto. (See attached Specifications and Drawings)

All bids must be completed and submitted on the Bid Form provided. All options must be bid unless the Bid Form provides otherwise. The bids shall be submitted on or before the time set for the opening of bids. Bids received after the time so set are late bids and will not be considered. Late bids, unmarked envelopes, and incorrectly marked envelopes will not be opened. Electronic bids are not accepted.

Mandatory Pre-Bid Conference

A mandatory pre-bid conference will be held on January 8, 2020, at 10:00 a.m., local time, at the Central Services Complex Multipurpose Room located at 100 Woodbury Lane, Oak Ridge, Tennessee 37830. Prospective Bidders are required to attend in order to submit a bid. Please contact Lyn Majeski at (865) 425-1819 if directions to the pre-bid conference are needed.

General Scope of Work

The scope of work is set forth in the Specifications and Drawings. This is a roof retrofit and replacement project for Central Service Center (located at 100 Woodbury Lane, Oak Ridge, TN 37830) involving retrofitting approximately 169,000 square feet over existing roof with a polyvinyl chloride (PVC) membrane roofing system, prior to retrofit remove and replace wet and damaged insulation of existing roof discovered with infrared scan, removal and replacement after removing wet and damaged insulation found from Infrared Scan and installation of metal roof on office entrance way approximately 1,423 square feet.

Generally speaking, the work will consist of (1) removal of wet and damaged insulation marked by infrared scan down to structural deck on the low-slope roof section; (2) Install new insulation to match existing insulation type and thickness; (3) providing and installing new recovery board over existing insulation and roof membrane; (4) providing and installing new crickets and saddles as show on drawings; (5) providing and installing new 60 mil PVC membrane and flashing; (6) providing and installing new pre-engineered edge metal and coping; (7) providing and installing new gutter and downspouts; and (8) providing and installing new metal roof panels on sloped roof.

Discrepancies

Should the Bidder find any discrepancies in, or omission from, the bid documents, or should the Bidder be in doubt as to their meaning, the Bidder shall at once notify Greg Shahan at gshahan@tds.net and obtain an interpretation or clarification prior to submitting a bid.

Any interpretation or clarification given in accordance with this provision shall be in writing and will be distributed to all known Bidders. Only questions answered in writing will be binding. Oral and other interpretations or clarifications will be without legal effect. All questions must be submitted to Greg Shahan no later than 12:00 noon, local time, on January 15, 2020 in order to give sufficient time for responses to be sent to all bidders who attended the pre-bid by 5:00 p.m., local time, on January 20, 2020.

Prices

The Bidder shall submit lump sum and unit bid prices as specified on Bid Form. It is agreed that this bid document in its entirety is included in and made a part of the Contract between the City and the successful Bidder.

Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

Withdrawal of Bids

Bids may be withdrawn on written or telegraphic request received from Bidders prior to the time fixed for opening the bids. Such written request must be on company letterhead signed by a company official and must indicate the specific bid project and bid price to be withdrawn in order to verify the identity of the bidder.

Rejection of Bids

The City reserves the right to reject any and all bids when such rejection is in the interest of the City of Oak Ridge; to reject the bid of a Bidder who has previously failed to perform properly or complete on time jobs of a similar nature; to reject the bid of a Bidder who is not, in the opinion of the City, in a position to perform the Contract, and to reject the bid of a Bidder not submitted in accordance with this Invitation to Bid.

Examination of Drawings, Specifications, and Site of Work

Before submitting a bid, each Bidder shall carefully examine the Drawings, read the Specifications and all other proposed Contract Documents, and visit the site of the work. Each Bidder shall fully inform themselves prior to bidding as to all existing conditions and limitations under which the work is to be performed, and the Bidder shall include in his or her bid a sum to cover all costs of all items necessary to perform the work as set forth in the proposed Contract Documents. No allowance will be made to any Bidder because of lack of such examination or knowledge. The submission of a bid will be construed as conclusive evidence that the Bidder has made such examinations.

Proof of Competency of Bidder

All Bidders shall be duly licensed roofing contractors in the State of Tennessee and shall have manufacturer's approval for installation of the work described in the Contract Documents. This requirement extends to all subcontractors and others herein as such licensing laws apply.

References

With the bid, each Bidder shall furnish at least three (3) references for whom work similar to that covered by the specifications herein was performed.

Equipment

The Bidder shall have available under Bidder's control, tools and equipment of the type, character and amount required to complete the proposed work within the specified time. Each Bidder shall furnish a list of the tools and equipment proposed for use on the work if requested.

Personnel

Each Bidder shall have available or shall agree to have available under Bidder's control sufficient equipment and personnel to complete the proposed work within the specified time.

Method of Work

Upon request, each Bidder shall describe the method or methods to be used in the performance of the required work.

Bidders Interested in More than One Bid

A party who has quoted prices to a Bidder is not thereby disqualified from quoting prices to other Bidders or from submitting a bid directly for the work; however, more than one bid for the same work from an individual or entity under the same or different name will not be considered.

Insurance

The successful Bidder will be required to maintain Worker's Compensation, Comprehensive General Liability, and Comprehensive Automobile Liability and Property Damage Insurance in accordance with the provisions of the Contract Documents. The City of Oak Ridge, Tennessee shall be named as an additional insured in addition to a certificate holder.

Bid Surety

Each bid shall be accompanied by a bid guarantee payable to the City in the amount of ten percent (10%) of the total bid amount. The form of the bid guarantee shall be a bid bond or other suitable instrument (i.e. cashier's check, certified check, or Letter of Credit). The bid guarantees of unsuccessful Bidders shall be return to them by the City within fifteen (15) consecutive calendar days after execution of the Contract.

Completion and Performance Bond, and Labor and Material Bond

The Contractor agrees to furnish a Completion and Performance Bond in the amount of one hundred percent (100%) of the Contract price with good and sufficient surety or sureties acceptable to the City in connection with the performance of the work under this Contract. The form and conditions of said Completion and Performance Bond shall be as prescribed by the City.

The Contractor agrees to furnish a Labor and Material Bond in the amount of one hundred percent (100%) of the Contract price with good and sufficient surety or sureties acceptable to the City, for the protection of persons furnishing labor and material in connection with the performance of the work under this Contract. The form and conditions of this bond shall be as prescribed by the City.

City Officers and Employees Not To Have Financial Interest

No contract shall be made with any officer or employee of the City or any firm or corporation in which any officer or employee of the City has financial interest.

Compliance with All Laws, Ordinances, Statutes, and Regulations

The Contractor shall comply with all federal, state, county and local laws, ordinances, statutes, and regulations. Pursuant to City Code § 5-413, the City may not accept bids from Bidders in default of any payment of any nature due to the City, including but not limited to taxes, licenses and fees.

Tobacco Products

The selected Bidder and its employees/subcontractors shall comply with all building policies, regulations, schedules and rules as set out and required by the City. Please note smoking (including e-cigarettes) and the use of tobacco products (chewing) is prohibited in City-owned facilities. For any work done at City facilities, any smoking occurring outside of the buildings must occur at least twenty (20) feet away from any entrance, open window or other opening into which smoke could infiltrate into the building. Spent smoking materials are to be properly discarded and not littered on the grounds.

Anti-Discrimination

The selected Bidder, in performing the work or furnishing the services covered by this project, shall not discriminate against any person because of race, creed, color, national origin, age, sex, sexual orientation, disability, religion or other legally protected status. The City of Oak Ridge encourages the utilization of minority and women-owned businesses in its contracting and subcontracting projects.

Competency of Workers / Background Checks

The selected Bidder shall only furnish employees who are competent and skilled for work under this contract. If, in the opinion of the City, an employee of the selected contractor is incompetent or disorderly, refuses to perform in accordance with the terms and conditions of the contract, threatens or uses abusive language while on City property, or is otherwise unsatisfactory, that employee shall be removed from all work under this contract. The selected contractor's employees working on this project may be subject to police background checks at the sole discretion of the City prior to commencement of the work.

Drug-Free Workplace Affidavit Form

A Drug-Free Workplace Affidavit form is included in this bid package and must be submitted with the bid.

Iran Divestment Act

All bidders shall complete and submit with their bid the Compliance with Iran Divestment Act form as set forth in the bid package (Tennessee Code Annotated §12-12-101 et. seq.).

Award of Contract

The City will make the award as soon as practicable to the lowest responsible Bidder, price and other factors considered, provided it is reasonable and in the best interest of the City. The City reserves the right to award the contract to more than one bidder if in the best interest of the City. The successful Bidder(s) shall be required to execute the Contract attached hereto.

The contract is anticipated to go City Council (governing body) for approval in February 2020.

Timeframe for Completion

Time of is the essence for this Contract. The work is scheduled in the Spring of 2020. Work shall not commence until the City's issuance of a Notice to Proceed. Work is targeted to begin on April 1, 2020. Work shall be completed as soon as practical, but in no event later than August 30, 2020 unless an alternate schedule is approved by the parties in writing.

It is possible that the schedule will be adjusted to an earlier start date and an earlier completion date if the Contract is awarded at a special meeting of City Council.

Pre-Construction Meeting

There will be a pre-construction meeting for this project. The pre-construction meeting will be scheduled in February 2020 in the Central Services Complex.

Liquidated Damages

This building is a public building that will be occupied and utilized by many departments of the City during construction. Work shall be completed in such a manner as to minimize disruption to work activities to the extent possible. Damages associated with any delay in the project would be difficult to determine and, therefore, this Contract will have liquidated damages in the amount of \$500.00 for each and every day of delay of the work under the Contract.

Warranty

The required warranties are set forth in the Specifications.

Bid Submittal Instructions

Each bid must be submitted in an opaque sealed envelope marked and addressed on the outside as follows:

From: Bidder's Name
Bidder's Address
*General Contractor's State of Tennessee License Number
*Bidder's License Date of Registration
*Bidder's License Category or Classification
*Bidder's License Expiration Date

*If bid equals or exceeds \$25,000, include this information if a contractor's license is required for this project per the State of Tennessee's Contractors Licensing Board. (The same information must also be provided for major subcontractors.)

To:	<u>In Person or By Overnight Delivery</u>	<u>Regular Mail</u>
	Attn: Lyn Majeski Finance Department City of Oak Ridge 100 Woodbury Lane Oak Ridge, TN 37830	Attn: Lyn Majeski Finance Department City of Oak Ridge P.O. Box 1 Oak Ridge, TN 37831-0001

If the bid is submitted by mail rather than hand-delivery, the sealed envelope containing the bid must be enclosed in another envelope addressed as stated above. Bids submitted by mail should indicate on the outside envelope, lower left corner, the following: "Sealed bid for FY2020-093: Central Services Complex – Roof Replacement to be opened January 23, 2020, at 2:00 p.m., local time" to ensure the bid is delivered to the appropriate person at the City in a timely fashion. Late bids are not accepted and will not be opened.

BID FORM

Project: Central Services Complex – Roof Replacement

In compliance with the Invitation for Bids, dated December 10, 2019, the undersigned Bidder:

* a corporation organized and existing under the laws of the State of: _____

* a partnership consisting of: _____

*an individual trading as: _____

(*fill in as appropriate)

of the City of _____ in the State of _____ agrees that if this bid is accepted as hereinafter provided, it will furnish all labor, materials, supplies, tools, and equipment necessary to perform all work and services described in the Invitation for Bid and Instructions to Bidders, in strict accordance with the terms and provisions of the Contract attached thereto.

If written Notice of Award is received, the Bidder agrees to furnish to the City of Oak Ridge, within ten (10) working days after receipt of said Notice of Award, the required insurance certificates naming the City of Oak Ridge as an additional insured.

Bidder understands that the City reserves the right to reject any or all bids and to waive any informality in the bidding.

Bidder agrees that this bid shall be good for a period of ninety (90) days from the date of opening. The successful bidder shall sign and return the contract for this project within ten (10) days of receipt from the City at which time this Bid Form will be incorporated by reference and said unit prices will be the unit prices used for payment under the contract.

- A. Pursuant to and in compliance with the invitation to bid and the contract documents for the replacement of the roofing systems on the main roof as identified on the Contract Drawings for the Central Services Complex located at 100 Woodbury Lane, Oak Ridge, TN:

Contractor acknowledges the receipt of the following Addenda:

Including Addenda # _____	Dated _____
Including Addenda # _____	Dated _____
Including Addenda # _____	Dated _____

The undersigned, having become thoroughly familiar with the terms and conditions of the proposed contract documents; and with local conditions affecting the performance and cost of the work at the place where the work is to be completed; and having fully inspected the site in all particulars, hereby proposed and agrees to fully perform the work within the time stated in strict accordance with the proposed contract documents, including furnishing any and all labor and materials, and to do all the Work required to construct and complete said work in accordance with the contract documents, for the following sum of money.

Contractor shall provide pricing for Items B, C, D, E, and F. Failure to do so may lead to bid to be considered non-responsive and removed from consideration.

B. BID PRICE #1 (Steel Deck Sections)

Replace approximately 167,500 square feet of existing roofing system with a new adhered PVC roofing system (including wall and penetration flashings). Install new manufacturers approved walkways as required to meet warranty requirements and per Contract Documents.

Provide all labor, materials, service, equipment, including permitting fees necessary for completion of the Work shown on the Contract Drawings and Contract Documents.

_____ Dollars
(written)
\$ _____
(numbers)

C. ALTERNATE PRICE #1 (Insulate and Waterproof Existing Ductwork)

Remove existing insulation from large Ductwork as identified in Contract Drawings. Install new 1-1/2" isocyanurate insulation adhered in 2-part foam insulation adhesive, tape all insulation joints and install adhered 45 mil white EPDM membrane roofing in a watertight manner over the entire Ductwork per Section 07 5323 EPDM Membrane Roofing.

Provide all labor, materials, service, equipment, including permitting fees necessary for completion of the Work shown on the Contract Drawings and Contract Documents.

_____ Dollars
(written)
\$ _____
(numbers)

(continued)

D. ALTERNATE PRICE #2 (Replace Metal Roofing on Entrance Canopy)

Remove existing metal roofing and underlayments to decking from entrance canopy. Install new high temperature self-adhesive underlayment with new standing seam metal roofing system per Section 07 6100 Sheet Metal Roofing.

Provide all labor, materials, service, equipment, including permitting fees necessary for completion of the Work shown on the Contract Drawings and Contract Documents.

Dollars

(written)

\$ _____

(numbers)

E. (Omitted)

F. Unit Pricing

For the specific items noted in Section 01 2200 "Unit Pricing" the following unit prices shall prevail. The unit prices shall include all labor, overhead, profit, materials, equipment, etc. Only a single unit price shall be given, and it shall apply for either more or less than shown and called for in the Contract Documents.

<u>#</u>	<u>Description</u>	<u>Unit Price</u>
1.	Prepare and prime paint steel deck repair per square foot	\$ _____
2.	Overlay steel deck per square foot	\$ _____
3.	Replace deteriorated steel decking per square foot	\$ _____
4.	Replace deteriorated wood nailers per board foot	\$ _____
5.	Install PVC walkways per linear foot	\$ _____
6.	Replace damaged isocyanurate insulation per sq ft of roof area	\$ _____
7.	Replace broken/cracked clamping rings & stainer dome (each)	\$ _____
8.	Replace cracked/broken interior roof drains (each)	\$ _____

(continued)

G. Allowance

The following is a summary table for the specific items noted in Section 01 2100 "Allowances" and is shown here for informational purposes only. If a discrepancy exists between this table and Section 01 2100 "Allowances, the technical section shall take precedence.

#	Work Description	Unit	Allowance Summary
1.	Paint Steel Deck	Square Feet	2,500
2.	Paint / Overlay Steel Deck	Square Feet	500
3.	Replace Steel Deck	Square Feet	500
4.	Replace Deteriorated Wood Nailers	Board Feet	5,000
5.	Install New PVC Walkways	Linear feet	2,500
6.	Replace Isocyanurate Insulation	Square Feet	2,500
7.	Replace Clamping Ring / Strainer	Each	0
8.	Replace Cast Iron Interior Roof Drain	Each	0

H. Additional Information

1. Contractor understands that the Owner reserves the right to reject this bid, but that this bid shall remain open and not be withdrawn for a period of ninety (90) days from the date prescribed for its opening.
2. If written notice of the acceptance of this bid is mailed or delivered to the undersigned within ninety (90) days after the date set for the opening of this bid, the undersigned will execute and deliver the Contract Documents to the Owner in accordance with this bid as accepted, and will also furnish and deliver to the Owner any required documents and proof of insurance coverage within fifteen (15) days after personal delivery or after deposit in the mail of the notification of acceptance of this bid.
3. Notice of acceptance or requests for additional information may be addressed to the undersigned at the address set forth on the following page.
4. The names of all persons interested in the foregoing bid are the principals:

IMPORTANT NOTICE: If the bidder or other interested person is a corporation, give legal name of corporation, state where incorporated, and names of President and Secretary; If a partnership, give name of firm and names of all individual copartners composing the firm; if bidder or other interested person is an individual, give first and last names in full.

Bidder attests that no officers or employees of the City of Oak Ridge are members of, or have financial interest in, the business submitting this bid.

By: _____
Signature

Telephone #: _____

Name: _____

Fax # _____

Title: _____

Email: _____

Business
Name: _____

Date: _____

Mailing
Address: _____

Physical
Address: _____

Tax ID Number: _____

TN Contractors
License Number: _____

NOTE: In accordance with the Invitation to Bid, the following attachments are required: a Bid Bond in the amount of ten percent (10%) of the total bid prices, at least three (3) references, the Drug-Free Workplace Affidavit, and the Compliance with the Iran Divestment Act form.

BID BOND

FY2020-093

KNOW ALL MEN BY THESE PRESENTS,

That we, _____,
(hereinafter called the "Principal"), as Principal, and the _____, of
_____ a

corporation duly organized under the laws of the State of _____

(hereinafter called the "Surety"), as Surety, are held and firmly bound unto the City of Oak Ridge, Tennessee, (hereinafter called the "Obligee"), as Obligee, in the sum of ten percent (10%) of the bid price for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for:

_____.

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

Signed and sealed this _____ day of _____ A.D. 2019.

IN THE PRESENCE OF:

_____(Seal)
Principal

Witness

Title

Witness

_____(Seal)
Surety

Title

DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF _____)
)
COUNTY OF _____)

The undersigned principal officer of _____, an employer of five (5) or more employees, contracting with the City of Oak Ridge, Tennessee, to provide construction services, hereby states under oath as follows:

1. That the undersigned is a principal officer of _____ (hereinafter referred to as the "Company") and is duly authorized to execute this Affidavit on behalf of the Company.
2. The Company submits this Affidavit pursuant to Tennessee Code Annotated § 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services or who is awarded a contract to provide construction services or who provides construction services to the state or local government to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9 of the Tennessee Code.
3. The Company is in compliance with Tennessee Code Annotated § 50-9-113.

Further affiant saith not.

Principal Officer

State of _____)
)ss.
County of _____)

Before me personally appeared _____ with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged that such person executed the foregoing affidavit for the purposes therein contained.

Witness my hand and official seal this _____ day of _____, 2019.

Notary Public

My Commission Expires: _____.

COMPLIANCE WITH IRAN DIVESTMENT ACT

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to Tennessee Code Annotated §12-12-106.

Bidder: _____

By: _____
(Signature)

(Name – Printed)

Title: _____

Date: _____

CONTRACT

This Contract entered into this _____ day of _____, 2019, by and between the City of Oak Ridge, Tennessee, a municipal corporation, hereinafter called the "City," and _____

a _____, hereinafter called the "Contractor."

WITNESSETH

In consideration of the mutual promises of the parties hereto, the parties do hereby agree as follows:

ARTICLE 1 – Scope of This Contract

The work to be done consists of furnishing all labor, materials, supplies, tools, equipment and other incidentals necessary to perform all work and services required for the Central Services Complex – Roof Replacement project, located at 245 Robertsville Road, Oak Ridge, Tennessee 37830, for the City of Oak Ridge, in strict accordance with the terms and provisions of this Contract, the Specifications, the Drawings, and the bid of the Contractor attached hereto.

In performance of this Contract, the Contractor binds himself to the City to comply fully with all provisions, undertakings, and obligations hereinafter set forth.

ARTICLE 2 – Term

This Contract shall become effective upon its execution and shall continue in full force and effect through December 31, 2019. Upon execution of this Contract, the Contractor shall be prepared to begin the work to be performed under the Contract, however work shall not commence until the City's issuance of a Notice to Proceed. Work shall begin on June 4, 2019, or upon the date of the City's issuance of the Notice to Proceed, whichever is later. Work on June 4, 2019 and June 5, 2019 is restricted to set-up and site loading. Demolition and construction work may occur beginning June 6, 2019. Work shall be completed as soon as practical, but in no event later than August 30, 2019, unless an alternate schedule is approved by the parties in writing. Time of is the essence for this Contract.

ARTICLE 3 – Changes

- A. City may, by written order, and without notice to the Sureties, make changes in the specifications of this Contract within the general scope thereof. If any such changes cause an increase or decrease in the scope of this Contract or in the time required for its performance, an equitable adjustment shall be made and this Contract shall be modified in writing accordingly.
- B. Should the Contractor encounter conditions materially different from those shown in the specifications, the City shall be notified in writing immediately of such conditions before they are disturbed. The City shall thereupon promptly investigate the conditions and if it finds that they do so materially differ from those specified, this Contract shall be modified to provide for any increase or decrease of cost and difference in time resulting from the conditions so found.

- C. Except as otherwise herein provided, no charge for any extra work or material will be allotted unless the same has been approved in writing by the City, and the price stated.

ARTICLE 4 – Inspections and Defective Work

All workmanship and services shall be subject to inspections, examinations and tests by the City at any and all times during the performance of this Contract. The City shall have the right to reject defective workmanship and to require correction. Rejected workmanship shall be satisfactorily corrected without charge therefore. If the Contractor fails to proceed at once to correct such defective workmanship, the City may proceed with such corrective work and the Contractor shall be liable for all direct cost occasioned in the performance therefore.

This provision does not negate, modify or replace any warranties contained elsewhere in this Contract. This provision shall survive the termination or suspension of this Contract.

Neither payment nor any provisions in the Contract document shall relieve the Contractor of responsibility for faulty materials or defective workmanship. The City shall give notice of observed defects with reasonable promptness. The deterioration due to ordinary use and normal wear is excepted from this guarantee.

The Contractor shall reimburse the City for the cost of damage, if any, as well as the cost of replacing defective materials or workmanship. If replacements are not made within ten (10) days after notice is given of such defect in workmanship, or thirty (30) days in case of materials, then the City shall have the right to make replacements and charge the cost of same to Contractor or the Contractor's surety.

ARTICLE 5 – Site Investigation

The Contractor represents that it has visited the site and determined the nature of the work and the difficulties and facilities attending execution of the work, and all other matters, which can in any way affect the work under this Contract.

ARTICLE 6 – Delays, Damages

If the Contractor refuses or fails to prosecute the work with such diligence as will ensure its completion within the time specified in Article 2, or fails to complete the work within such time, the City may terminate this Contract. In such event, the City may take over the work and prosecute the same to completion by contract or otherwise, and the Contractor shall be liable to the City for any excess cost occasioned thereby. If this Contract is so terminated, the City may take possession of and utilize in completing the work such materials, appliances, tools and equipment as may be on the site of the work and necessary therefore.

ARTICLE 7 – Payment

As consideration for performing all work and services set forth in this Contract, and as full consideration thereof, the City agrees to pay the Contractor \$ _____ in accordance with the bid sheet of the Contractor which is incorporated by reference into this Contract. Payment shall be made in accordance with Section 01 2900 in the Specifications.

ARTICLE 8 – Final Payment

Upon completion of the work and services covered by this Contract and before final payment, the Contractor must furnish evidence to satisfy the City that all suppliers of materials used and all labor and other employees working for the Contractor pursuant to this Contract have been fully paid. Upon final payment, the City is to be released from all liability whatsoever growing out of this Contract.

ARTICLE 9 – Indemnification by Contractor

To the fullest extent permitted by all applicable laws and regulations, the Contractor hereby agrees to protect, indemnify and hold harmless the City and their consultants, agents and employees from and against any and all claims, loss, expense, damage, charges and costs direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professional and court costs), collectively referred to as "claims," for injury to or death of persons and injury to or destruction of property suffered or alleged to have been suffered as a result of any act or omission on the part of the Contractor, any of the Contractor's subcontractors, anyone for whose acts any of them may be liable, or others whose services are engaged by the Contractor or anyone directly or indirectly employed or controlled by either of them in the course of the performance of the work provided for in the Contract, except such injury, destruction or death as may be caused by the sole negligence or fault of the City.

When the City submits notice, the Contractor shall promptly defend any aforementioned action. In any and all claims against the City or any of their consultants, agents or employees by any employee of the Contractor, any of the Contractor's subcontractors, anyone for whose acts any of them may be liable, or others whose services are engaged by the Contractor or anyone directly or indirectly employed or controlled by either of them in the course of the performance of the work provided for in the Contract, the indemnification obligation described herein shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts. The limits of insurance required in this Contract shall not limit the Contractor's obligations under this article.

The terms of this article shall survive the termination or suspension of this Contract.

ARTICLE 10 – Completion and Performance Bond and Labor and Material Bond

A. Completion and Performance Bond

Prior to commencing work under this Contract, the Contractor agrees to furnish and to maintain during the term of this Contract a Completion and Performance Bond in the amount of one hundred percent (100%) of the Contract price with good and sufficient surety or sureties acceptable to the City in connection with the performance of the work under this Contract, including any amendments or extensions hereof. The form and conditions of said Performance Bond shall be as prescribed by the City. The bond will be required at the beginning of each contract term and will be in an amount equal to the contract price for that year.

In lieu of a Performance Bond, the City will accept other suitable Securities agreed upon by both parties. At all times during the term of this Contract, the Contractor shall provide the City with evidence that the Contractor has obtained such Performance Bond or Securities. A certificate from the surety showing that the bond premiums have been paid by the Contractor shall accompany the bond.

B. Labor and Material Bond

Prior to commencing work under this Contract, the Contractor agrees to furnish and to maintain during the term of this Contract a Labor and Material Bond in the amount of one hundred percent (100%) of the Contract price with good and sufficient surety or sureties acceptable to the City, conditioned that the Contractor shall promptly make payments to the persons supplying labor, material, or supplies to the Contractor or subcontractors in the performance of the work under this Contract and any amendment or extension thereof. The form and conditions of this bond shall be as prescribed by the City. The bond will be required at the beginning of each contract term and will be in an amount equal to the contract price for that year.

ARTICLE 11 – Rate of Progress

Notwithstanding any other provisions in this Contract, the Contractor shall furnish sufficient labor, materials, supplies, tools, and equipment, and shall work such hours, including overtime, Sundays, and/or Holidays, as may be necessary to carry out the work in accordance with the approved schedules for its completion not later than the respective times allowed for completion set forth in these Contract Documents. Should the Contractor refuse or fail to comply with its obligations set forth in the preceding sentence after receipt of any written directive or request by the City that the Contractor furnish additional labor, materials, supplies, tools, and equipment, and/or work additional hours, including overtime, Sundays, and/or Holidays, the City may terminate the Contractor's right to proceed with the whole or any part of the work under this Contract.

ARTICLE 12 – Compliance with All Laws, Ordinances, Statutes, and Regulations

The Contractor shall comply with all federal, state, county and local laws, ordinances, statutes, and regulations.

ARTICLE 13 – Insurance

The Contractor shall at all times during the Contract maintain in full force and effect Comprehensive General Liability, Workers' Compensation and Property Damage Insurance in the amounts set forth below and naming the City of Oak Ridge, Tennessee as an *additional insured*.

The Contractor shall maintain policies providing the following insurance protection, each policy containing a requirement that, in the event of change or cancellation, thirty (30) days' prior written notice be sent by mail to the City. Certificates of Insurance describing the coverage shall be furnished by the Contractor and shall contain the following express obligation:

"This is to certify that the policies of insurance described herein have been issued to the insured for whom this certificate is issued and are in force at this time. In the event of cancellation or material change in a policy affecting the certificate holder, thirty (30) days' prior written notice will be given the certificate holder."

1. Comprehensive General Liability:

Bodily Injury	\$300,000	each occurrence
	\$700,000	aggregate
Property Damage	\$100,000	each occurrence
Or Combined Single Limit of	\$1,000,000	

2. Workers' Compensation and Employer's Liability as provided for in applicable statutes.
3. Comprehensive Automobile Liability (Including all owned, non-owned and hired vehicles)

Bodily Injury	\$300,000	each person
	\$700,000	each occurrence
Property Damage	\$100,000	each occurrence
Or Combined Single Limit of	\$1,000,000	

The Contractor may purchase at its own expense such additional or other insurance protection as it may deem necessary. Maintenance of the required minimum insurance protection does not relieve the Contractor of responsibility for any losses not covered by the above-required policies.

Before commencement of work hereunder, the Contractor agrees to furnish to the City of Oak Ridge (Legal Department, P.O. Box 1, Oak Ridge, Tennessee 37831-0001) a Certificate of Insurance or other evidence satisfactory to the City to the effect that such insurance has been procured and is in force.

ARTICLE 14 – Permits and Licenses

The Contractor shall obtain, at the Contractor's expense, all permits, licenses and bonds required by law or ordinance and maintain the same in full force and effect.

ARTICLE 15 – Subcontracting and Assignment

- A. The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.
- B. The Contractor shall not award, assign, transfer or pledge any work to any subcontractor without prior written approval of the City, which approval will not be given until the Contractor submits to the city a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the City may require.
- C. The Contractor shall be as fully responsible to the City for the acts and omissions of subcontractors, and of persons either directly or indirectly employed by said subcontractors, as the Contractor is for the acts and omissions of persons directly employed by the Contractor.
- D. The Contractor shall make a condition of all subcontracts and/or cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and other Contract Documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the City may exercise over the Contractor under any provision of the Contract Documents.
- E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and the City.

ARTICLE 16 – Superintendence by the Contractor

The Contractor shall give its personal superintendence to the work or have a competent foreman or superintendent satisfactory to the City on the site at all times during the progress of the work, with authority to act on behalf of the Contractor.

ARTICLE 17 – Termination

Notwithstanding any other provisions in this Contract, the Contractor shall furnish all labor, materials, supplies, tools and equipment necessary to perform the work and services within allowed times for completion as set forth in these Contract Documents. Should the Contractor refuse or fail to comply with its obligations, or in the event the Contractor shall violate any of the provisions of this Contract, or the quality or quantity of the work performed is, in the judgment of the City, below standard and therefore unsatisfactory, the City shall have the right to cancel this Contract upon thirty (30) days written notice to the Contractor and to complete the work undertaken by the Contractor without incurring any liability to the Contractor except to pay the Contractor the fair value to the City of the work satisfactorily performed by the Contractor.

ARTICLE 18 – Termination of Contract for Cause

If, through any cause, the Contractor shall fail to fulfill in timely and proper manner the obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least five (5) days before the effective date of such termination. In such event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports prepared by the Contractor under this Contract shall, at the option of the City, become the City's property and the Contractor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder.

Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of the Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of set-off until such time as the exact amount of damages due the City from the Contractor is determined.

ARTICLE 19 – Anti-Discrimination

The Contractor, in performing the work or furnishing the services covered by this Contract, shall not discriminate against any person because of race, creed, color, national origin, age, sex, sexual orientation, disability, religion or other legally protected status. The City of Oak Ridge encourages the utilization of minority and women-owned businesses in its contracting and subcontracting projects and the Contractor is encouraged to actively solicit the participation of these businesses. The Contractor shall inform all of its subcontractors and vendors providing work or services under this Contract of this requirement and shall ensure compliance therewith.

ARTICLE 20 – Personnel

- A. The Contractor represents that it has, or will, secure at the Contractor's expense, all personnel required to perform the work and services outlined in this Contract. Such personnel shall not be employees of or have any contractual relationship with the City.
- B. All of the services required hereunder will be performed by the Contractor or under the Contractor's supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state and local laws to perform such services.

ARTICLE 21 – Reports and Information

At such times and in such forms as the City may require, the Contractor shall furnish to the City such periodic reports as are requested by the City pertaining to the work and services covered by this Contract, the costs and obligations incurred or to be incurred in connection herewith, and any other matters covered by this Contract. The City can audit the Contractor's and the Contractor's subcontractors' financial records pertaining to this project.

ARTICLE 22 – Liquidated Damages

The City and the Contractor hereby agree that any actual damage amount for delay in the completion of the work under this Contract is unknown and would be difficult if not impossible to estimate; therefore, the parties agree that the Contractor shall pay to the City as liquidated damages and not as penalty the amount of \$500.00 for each and every day of delay of the work under the Contract beyond the term specified for completion of the work.

ARTICLE 23 – Independent Contractor

The parties acknowledge that the relationship created under this Contract is that of independent contracting parties and this Contract does not create a general agency, joint venture, partnership, employment relationship or franchise between the parties. Neither party shall represent itself to be an agent of the other, nor shall it execute any documents or make any commitments to any contractual or other obligations with third parties.

ARTICLE 24 – Governing Law

This Contract is governed by the laws of the State of Tennessee.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written, the City of Oak Ridge, by its Mayor, by authority duly given.

APPROVED AS TO FORM AND LEGALITY:

CITY OF OAK RIDGE, TENNESSEE

City Attorney

Mayor

(CONTRACTOR)

Signature

(Printed or Typed Name and Title)

Attachments: Specifications/Scope of Work
Bid Documents
Contractor's Bid

Approved by Resolution _____

LABOR AND MATERIAL BOND

FY2020-093

Know all men by these presents

That We _____

AS PRINCIPAL, and

_____ AS SURETY are held firmly bound unto the

_____ hereinafter called the Obligee, in the penal sum of

_____ Dollars (\$ _____)

lawful money of the United States, for payment of which sum well and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS: Said Principal has entered into a certain Contract with said Obligee dated _____ 20_____ (hereinafter called the Contract) for the full and complete performance of

_____ , which Contract and the specifications for said work shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, the condition of this obligation is such that if said Principal and all contractors to whom any portion of the work provided for in said Contract is sublet and all assignees of said Principal and of such contractors shall promptly make payments to the persons supplying him, or them, with labor, material, fuel or supplies, for or in the prosecution of the work provided for in said Contract, or in any amendment or extension of or addition to said Contract, and for payment of reasonable attorney's fees, incurred by the Claimant or Claimants in suits on said Bond, then the above obligation shall be void; otherwise to remain in full force and effect. Provided, however, that this Bond is subject to the following conditions and limitations:

- (a) Any person, firm or corporation that has furnished labor, materials, fuel or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right of action against the Principal and Surety of this Bond which right of action shall be asserted in a proceeding, instituted in the county in which the Principal does business. Such right of action shall be asserted in a proceeding instituted in the name of the Claimant or Claimants for his or their use and benefit against said Principal and Surety or either of them, (but not later than one year after the final

Labor and Material Bond
(continued)

settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

- (b) The Principal and Surety hereby designate and appoint the City Manager of the City of Oak Ridge, Tennessee, as the agent of each of them to receive and accept service of process or other pleading issued or filed in any proceeding instituted on this Bond and hereby consent that such service shall be the same as personal service on the Principal and/or Surety.
- (c) The Surety shall not be liable hereunder for any damages or compensation recoverable under any worker's compensation or employers' liability statute.
- (d) This bond is furnished in compliance with Tennessee Code Annotated Section 12-4-201 et seq.

In Witness whereof the parties hereto have executed this agreement on the day and date first above written in two counterparts, each of which shall without proof or accounting for the other counterpart, be deemed an original contract.

SIGNED, SEALED AND DELIVERED this _____ day of _____, 20_____.

Attest: _____

By: _____ (Seal)
Principal

Attest: _____

By: _____ (Seal)

COMPLETION AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

FY2020-093

THAT _____
(Name and address of legal title of Contractor)

as Principal, hereinafter called Contractor, and _____
SURETY, hereinafter called Surety, and held and firmly bound unto the City of Oak Ridge, as Obligee, in
the amount of _____ Dollars (\$ _____)

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators,
successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, 20_____
entered into a Contract with the City of Oak Ridge for

_____ in accordance with the specifications and
approved amendments, which Contract is by reference made a part hereof, including all the obligations
thereunder, and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that, if Contractor shall promptly and faithfully
perform said Contract, including all the obligations thereunder, then this obligation shall be null and void,
otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by City to be, in default under the Contract or any part
thereof, the City having performed the City's obligation thereunder, the Surety may promptly remedy the
default, or shall promptly at the City's option:

- (1) Complete the Contract in accordance with its terms and conditions; OR
- (2) Obtain a bid or bids for submission to the City for completing the Contract in accordance with
the terms and conditions, and upon determination by Owner and Surety of lowest responsible
bidder, arrange for a contract between such bidder and the City and make available as work
progresses (even though there shall be a default or a succession of defaults under the
Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the
cost of completion or any obligations thereunder.

Any suit under this bond must be instituted before the expiration of two years from the date on which final
payment under the Contract falls due.

SIGNED AND SEALED THIS _____ DAY OF _____ A.D., 20_____
IN THE PRESENCE OF:

Witness

By _____
Principal (Seal)

Witness

By _____
Surety (Seal)

SPECIFICATIONS

A Project Specification Manual prepared by RoofConnect Inc. is attached and made a part of this bid package.

PROJECT SPECIFICATION MANUAL



City of Oak Ridge Central Service Center
Roof Replacement
100 Woodbury Lane
Oak Ridge, TN

Prepared by

RoofConnect Inc.

45 Grant 65
Sheridan, Arkansas 72150

Date: November 12, 2019

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00 0620	Performance Bonds and Labor and Material Bonds
00 0630	Contractors Payment Debits and Claims
00 0640	Contractors Affidavit of Release of Liens
00 0650	Consent of Surety Company to Final Payment
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Construction Drawings

SECTION 00 0600 – CONTRACT FORM

PART 1 - GENERAL

- 1.1 The Standard Form of Agreement Between owner and Contractor is to be “The Standard Form of Agreement between Owner and Contractor, “AIA Document A101, issued by the American Institute of Architects.”
- A. The copy of the Form of Agreement is incorporated in these General Conditions by reference and is made a part hereof to the same extent as though fully set forth herein.

END OF SECTION 00 0600

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SECTION 00 0610 – GENERAL CONDITIONS

PART 1 - GENERAL

- 1.1 The GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, A232, 2009, issued by the American Institute of Architects are a part of the Contract and shall be read in their entirety by each Bidder before submitting a proposal.

END OF SECTION 00 0610

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SECTION 00 0620 – PERFORMANCE BOND AND LABOR AND MATERIAL BONDS

PART 1 - GENERAL

- 1.1 The Form to be used for Performance Bond and Labor and Material Payment Bond, “AIA Document A312, 2010 Edition, issued by the American Institute of Architects.”
 - A. The copy of Performance Bond referred to above is incorporated in these General Conditions by reference and is made a part hereof to the same extent as though fully set forth herein.

END OF SECTION 00 0620

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SECTION 00 0630 – CONTRACTORS PAYMENT DEBITS AND CLAIMS

PART 1 - GENERAL

- 1.1 The Form to be used is to be Contactor's Affidavit of Payment of Debts and Claims, AIA Document G706, 1994, issued by the American Institute of Architects.
 - A. The copy of the Form of Agreement is incorporated in these General Conditions by reference and is made a part hereof to the same extent as though fully set forth herein.

END OF SECTION 00 0630

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SECTION 00 0640 – CONTRACTOR’S AFFIDAVIT OF RELEASE OF LIENS

PART 1 - GENERAL

- 1.1 The Form to be used for “Contractor’s Affidavit of Release of Liens”, AIA Document G706A, 1994, issued by the American Institute of Architects.
 - A. The copy of the Form of Agreement is incorporated in these General Conditions by reference and is made a part hereof to the same extent as though fully set forth herein.

END OF SECTION 00 0640

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CONSENT OF SURETY COMPANY TO FINAL PAYMENT

City of Oak Ridge
Central Service Center

SECTION 00 0650

SECTION 00 0650 – CONSENT OF SURETY COMPANY OF FINAL PAYMENT

PART 1 - GENERAL

- 1.1 The Form to be used for Consent of Surety Company to Final Payment, AIA Document G707, 1994, issued by the American Institute of Architects.
 - A. The copy of the Form of Agreement is incorporated in these General Conditions by reference and is made a part hereof to the same extent as though fully set forth herein.

END OF SECTION 00 0650

City of Oak Ridge
Central Service Center

CONSENT OF SURETY COMPANY TO FINAL PAYMENT
SECTION 00 0650

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SECTION 01 1000 - 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. Section Includes:
 - 1. Project Information
 - 2. Work Covered by Contract Documents
 - 3. Work by Owner
 - 4. Access to Site
 - 5. Coordination with Occupants
 - 6. Work Restrictions
 - 7. Specification and Drawing Conventions

1.3 PROJECT INFORMATION

- A. Project Identification: Central Service Center, City of Oak Ridge, TN
 - 1. Project Location: 100 Woodbury Lane, Oak Ridge, TN
- B. Owner: City of Oak Ridge
 - 1. Owner's Representative: Mr. Michael Smith
- C. Consultant: RoofConnect prepared portions the Contract Documents:
 - 1. Roof Consultant: RoofConnect, 45 Grant 65, Sheridan, AR 72145

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Prepare approximately 167,500 square feet of existing EPDM membrane roofing the Central Service Center Facility as identified on Contract Drawings and Section 02 4119 "Selective Demolition." Remove identified wet existing roofing materials and properly dispose of offsite.
 - 2. Remove and replace in like kind all identified wet / damaged Isocyanurate insulation per in Section 07 5419 "Polyvinyl-Chloride (PVC) Roofing." The removal and replacement of the wet / damaged insulation shall be included as an allowance in the contractor bid. Replacement of additional wet / damaged insulation shall be performed on a Unit Price Basis.

3. Remove and replace deteriorated wood components scheduled to remain. Provide and install new wood nailers or blocking as shown on Contract Drawings and identified in Section 06 1053 "Miscellaneous Rough Carpentry." Replacement Work shall be performed on a Unit Price Basis.
4. Repair corroded or damaged steel decking as required to complete Work as identified in Section 05 3100 "Steel Decking". Work shall be performed on a Unit Price Basis.
5. Provide and install new Gypsum Fiber Coverboard per Section 07 5419 "Polyvinyl-Chloride (PVC) Roofing" as shown on Contract Drawings, and per manufacturer's requirements.
6. Provide and install new PVC thermoplastic roof system per Section 07 5419 " Polyvinyl-Chloride (PVC) Roofing" as shown on Contract Drawings, and per manufacturer's requirements.
7. Provide and install new sheet metal flashings and counter flashings as shown on Contract Drawings and identified in Section 07 6200 "Sheet Metal Flashing and Trim."
8. Install new Safety Rails, Skylight Rails, and RoofHatch Rails in Section 05 5200 "Safety Rail and Handrails."
9. Provide Owner with Roofing Manufacturer's twenty (20) year warranty and Contractor's two (2) year warranty.

B. Type of Contract:

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

1.5 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Preceding Work: None
- C. Concurrent Work: None
- D. Subsequent Work: None

1.6 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Limits: Confine construction operations to subject roof area and ground level around building as identified by Owner during pre-bid meeting.
 2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

-
- a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- 1.7 COORDINATION WITH OCCUPANTS
- A. Full Owner Occupancy: Owner will occupy site and existing 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 approval of authorities having jurisdiction.
 - 2. Notify Owner not less than **72** hours in advance of activities that will affect Owner's operations.
- 1.8 WORK RESTRICTIONS
- A. Work Restrictions, General: Comply with restrictions on construction operations.
- 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to the following times shown below unless otherwise indicated.
- 1. Weekday Work Hours: Work shall be performed during the hours of 7am to 5pm unless otherwise agreed to with Owner.
 - 2. Hours for Utility Shutdowns: As agreed to by Owner with specified advanced notice
 - 3. Hours for Core Drilling: As agreed to by Owner with specified advanced notice
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
- 1. Notify Consultant and Owner not less than 3 days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

-
1. Notify Consultant and Owner not less than 3 days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 30 feet of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
- G. Employee Screening: Contractor shall maintain a list of onsite personnel for Owner. Contractor personnel will need to check in at security each time they enter the building.
1. Maintain list of approved screened personnel with Owner's representative.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections or in some cases specifically on the Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1000

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SECTION 01 2100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements to address work items that may be required to complete Work without Change Orders.

- B. Types of allowances include the following:

- 1. Quantity allowances

- C. Related Requirements:

- 1. Section 01 2200 "Unit Prices" for procedures for using unit prices

1.3 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.4 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials under allowance shall be included as part of the Contract Sum.

1.5 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment (Overage; above contract amount): For amounts greater than allowance amounts, prepare a Change Order proposal based on the difference between installed amount and the allowance, multiplied by final measurement of work-in-place where applicable at the Unit Rate identified in Section 01 2200 "Unit Prices".

1. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
 2. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Allowance Adjustment (Underage; less than contract amount): For amounts less than allowance amounts, adjust final application for payment based on the difference between installed amount and the allowance, multiplied by final measurement of work-in-place where applicable at the Unit Rate identified in Section 01 2200 "Unit Prices."
1. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Quantity Allowance: Include 5,000 square feet of cleaning and prime painting areas of surface corrosion of metal deck as identified in Section 05 3100 "Steel Decking."
 1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."
- B. Allowance No. 2: Quantity Allowance: Include 500 square feet of cleaning and prime painting areas of surface corrosion of metal deck; and overlaying area with new flat stock galvanized plating as identified in Section 05 3100 "Steel Decking."
 1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."
- C. Allowance No. 3: Quantity Allowance: Include 300 square feet of removal and replacement of deteriorated metal deck as identified in Section 05 3100 "Steel Decking."
 1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."

-
- D. Allowance No. 4: Quantity Allowance: Include replacement of 500 board feet of deteriorated wood nailers scheduled to remain as specified in Section 06 1053 "Miscellaneous Rough Carpentry. "
1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."
- E. Allowance No. 5: Quantity Allowance: Include installation of 2,500 linear feet of PVC walkways at locations to be determined as specified in Section 07 5419 "Polyvinyl Chloride (PVC) Roofing."
1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."
- F. Allowance No. 6: Quantity Allowance: Include removal and replacement of approximately 5,000 square feet of wet or damaged Isocyanurate insulation as specified in Section 07 5419 "Polyvinyl Chloride (PVC) Roofing".
1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."
- G. Allowance No. 7: Quantity Allowance: Include replacement of 0 cast iron drain clamping rings, strainer domes, and related hardware as specified in Section 22 4123 "Storm Drainage Piping Specialties."
1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."
- H. Allowance No. 8: Quantity Allowance: Include replacement of 0 cast iron interior roof drains and related hardware as specified in Section 22 4123 "Storm Drainage Piping Specialties."
1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01 2200 "Unit Prices."

END OF SECTION 01 2100

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SECTION 01 2200 - 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. Section includes administrative and procedural requirements for unit prices.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or 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. List of Unit Prices: A schedule 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 SCHEDULE OF UNIT PRICES

- A. Unit Price 1: Clean and prime paint metal deck
 - 1. Description: Areas of surface corrosion of structural metal deck shall be repaired as identified per Section 05 3100 "Steel Decking".
 - 2. Unit of Measurement: Square feet of repair area
 - 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 2100 "Allowances."

- B. Unit Price No. 2: Overlay isolated areas of deteriorated (surface corrosion) metal decking
1. Description: Clean and prime paint isolated areas of deteriorated metal decking and install metal plating as identified per Section 05 3100 "Steel Decking".
 2. Unit of Measurement: Square feet of repair area
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 2100 "Allowances."
- C. Unit Price No. 3: Remove and replace deteriorated metal decking
1. Description: Remove and replace areas of deteriorated metal decking as identified per Section 05 3100 "Steel Decking".
 2. Unit of Measurement: Square feet of repair area
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 2100 "Allowance".
- D. Unit Price No. 4: Replace deteriorated wood nailers
1. Description: Remove and replace deteriorated wood nailers scheduled to remain as specified in Section 06 1053 "Miscellaneous Rough Carpentry".
 2. Unit of Measurement: Board feet of replaced boards
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 2100 "Allowance".
- E. Unit Price No. 5: Install walkways
1. Description: Install manufacturer's approved walkways as identified in Section 07 5419 "Polyvinyl Chloride (PVC) Roofing".
 2. Unit of Measurement: Linear feet of walkway
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 2100 "Allowance".
- F. Unit Price No. 6: Remove and replace wet or damaged Isocyanurate insulation
1. Description: Remove and replace wet or damaged Isocyanurate insulation scheduled to remain as identified in Section 07 5419 "Polyvinyl Chloride (PVC) Roofing".
 2. Unit of Measurement: Square feet of Isocyanurate insulation
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 2100 "Allowance" and as noted in Bid Form.
- G. Unit Price No. 7: Replace cracked or broken cast iron drain clamping rings and strainer domes
1. Description: Replace all cracked, broken or otherwise damaged drain clamping rings with new cast iron drain clamping rings of like type and size as specified in Section 22 1423 "Storm Drain Piping Specialties." Include new strainer dome with clamping ring.
 2. Unit of Measurement: Each replaced

H. Unit Price No. 8: Replace broken drain strainers with new cast iron strainers

1. Description: Replace all broken or otherwise damaged cast iron interior roof drains with new cast iron interior roof drains of proper type and size as specified in Section 22 1423 "Storm Drain Piping Specialties."
2. Unit of Measurement: Each replaced

END OF SECTION 01 2200

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SECTION 01 2300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements if Owner decides to accept a corresponding change in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

- 1. No alternates shall be accepted for this Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2300

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SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 2100 "Allowances" for products selected under an allowance.
 - 2. Section 01 2300 "Alternates" for products selected under an alternate.

1.3 DEFINITIONS

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

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit one copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use Contractor letterhead with the specified supporting documentation and signature of authorized representative of Contractor.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section.

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Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - i. Cost information, including a proposal of change, if any, in the Contract Sum.
 - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Consultant's Action: If necessary, Consultant will request additional information or documentation for evaluation within three (3) working days of receipt of a request for substitution. Consultant will notify Contractor of acceptance or rejection of proposed substitution within five (5) days of receipt of request or five (5) working days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order or Consultant's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Consultant does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers (if required).

1.6 PROCEDURES

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

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PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than five (5) working days prior to time required for preparation and review of related submittals.
1. Conditions: Consultant will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Consultant will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2500

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SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 01 3200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Consultant's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Consultant's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit all product submittals arranged in chronological order by dates required by construction schedule. Include additional time required for making corrections or revisions to submittals noted by Consultant and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittals with list of subcontracts (if applicable), the schedule of values, and Contractor's construction schedule.

2. Initial Submittal: Submit prior to pre-construction conference. Include all submittals required to complete all roof replacement activities. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Consultant will accept either paper (color) copies or PDF files for submittal documentation. Include with each submittal package a "Letter of Transmittal" listing all products included in submission.
 - a. Paper Copies: Provide one (1) copy of each product data sheet (single-sided) for all products listed in this specification.
 - b. PDF Files; Provide one (1) filed copy of each product data sheet for all products listed in this specification. File name shall include the product name. To reduce file sizes, product data sheets should not be scanned from paper copies.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Submit all action and informational submittals for all of the products required to complete all roof replacement activities included but not limited to insulations, cover boards, fasteners, adhesives, roofing components, and miscellaneous items.
 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Consultant reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Consultant's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow seven (7) business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow three (3) days for review of each resubmittal.

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- C. Distribution: Consultant shall furnish electronic copies of final submittals to Contractor, Owner, and others as necessary for performance of construction activities.
 - D. Use for Construction: Contractor shall retain complete copies of submittals on Project site at all times. Use only final action submittals that are marked with "Reviewed" or "Reviewed as Noted" notations from Consultant's stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Electronic Action Submittals; Submit Action Submittals electronically via email as PDF files.
 - a. Consultant will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Paper Action Submittals: Submit one (1) paper copy of each submittal unless otherwise indicated. Consultant will return PDF files.
 - 3. Paper Informational Submittals: Submit two (2) paper copies of each submittal unless otherwise indicated. Consultant will not return copies. Contractor shall maintain one (1) copy of Informational Submittals on site at all times during construction.
- B. Certificates and Certifications Submittals: Provide statements that includes signature of entity responsible for preparing certifications. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a letter from the manufacturer of the submitted roofing system stating that Contractor has been an approved applicator of their system for no less than three (3) years.
 - b. Provide a letter on Contractor's letterhead with approved signature stating that Contractor shall perform all Work per the project specification requirements, manufacturer's requirements, and applicable codes whether stated in the Contract Documents or not.
 - c. Provide a Certificate of Insurance with Contractor's insurance amounts, listing Owner as Certificate Holder, and Owner and Consultant as additional insureds.
- C. Product Data:
 - 1. Mark each copy of each submittal to show which products and options are applicable.
 - 2. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts
 - b. Manufacturer's product specifications

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- c. Standard color charts
 - d. Statement of compliance with specified referenced standards
 - e. Testing by recognized testing agency
 - f. Application of testing agency labels and seals
3. Submit Product Data in the format discussed in this section
- D. Shop Drawings: Provide Project-specific drawings including all information noted on the Contract Drawings. Manufacturer's standard detail drawings shall be rejected without review. Contractor shall provide Project-specific drawings in one of the following formats:
1. Consultant Provided Contract Drawings: Contractor may submit for approval construction details (without alteration) from the Contract Documents. Contractor shall provide a letter on Contractor's letterhead stating that Contractor shall utilize construction details from Contract Documents for installation of roofing components.
 2. Contractor Generated Drawings: Contractor may submit for approval new AutoCAD generated construction details for approved. Contractor generated drawings shall include at a minimum:
 - a. Callout for each component on the drawing with same level of information as comparable drawing in Contract Documents
 - b. Dimensions as required to match information on Contract Drawings
 - c. Relationship and attachment to adjoining construction clearly indicated
 - d. Contractor's Company Logo or approved signature of Contractor
 - e. Seal and signature of professional engineer (if specified)
 3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm)
- E. Samples: Submit Samples as noted in each Specification Section for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Disposition: Samples shall remain the possession of the Owner or Consultant.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 01 3100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 01 3200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 2900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 4000 "Quality Requirements."

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- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 7700 "Closeout Procedures."

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Consultant.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 7700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 CONSULTANT'S ACTION

- A. Action Submittals: Consultant will review each submittal, make marks to indicate corrections or revisions required, and return it. Consultant will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
1. "Reviewed": No Contractor action required
 2. "Reviewed as Noted": No Contractor action required
 3. "Information Only": No Contractor action required
 4. "Revise & Resubmit": Contractor shall provide additional submittal information for review
 5. "Rejected": Contractor shall provide additional submittal information for review

END OF SECTION 01 3300

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SECTION 01 7700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 ACTION SUBMITTALS

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

1.4 CLOSEOUT SUBMITTALS

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

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of **[10]** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

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SECTION 01 7700

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1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
 5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of **[10]** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
 2. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 3. Complete final cleaning requirements, including touchup painting.
 4. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of [10] days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Owner, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

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1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Owner's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. [**Use CSI Form 14.1A.**]
1. Organize list of spaces in sequential order.
 2. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Owner.
 - d. Name of Contractor.
 - e. Page number.
 3. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Owner will return annotated file.
 - b. **[Three]** paper copies. Owner will return **[two]** copies.

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1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Owner for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

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

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- 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. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

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3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 01 7700

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SECTION 02 4119 - SELECTIVE DEMOLITION

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. Removal and disposal of existing roofing components

- B. Related Requirements:

- 1. Section 01 1000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- C. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

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

1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Pre-construction meeting as noted in Sections 07 5419

1.6 INFORMATIONAL SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate the following:

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1. Detailed sequence of selective demolition and removal work outlining roof area where construction shall begin and phasing through end of construction. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

1.7 FIELD CONDITIONS

- A. Owner will occupy the building below selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Consultant of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials:
 1. Testing for the presence of asbestos was not conducted at this facility.
 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Consultant and Owner. Removal of hazardous materials shall be performed under a separate contract with Owner.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

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- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 1000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Contractor access to the Work area shall be by OSHA approved exterior access.
- B. Temporary Facilities: Provide temporary interior protection against dirt and debris entering interior spaces, barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls and other existing finish work that are to remain or that are exposed during selective demolition operations.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated on Contract Drawings. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically from areas farthest to closest to the ground level staging access point, whenever possible.
 2. Do not use cutting torches to complete any Work.
 3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site and immediately notify Owner.
 4. Locate demolition equipment and remove debris and materials so as not to impose excessive loads on roof deck.
 5. Properly dispose of demolished items and materials off the roofs each day.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.
1. Existing insulation scheduled to remain shall be protected by a minimum of 1-inch insulation and 3/4-inch plywood. Plywood and insulation shall be sufficiently ballasted to prevent blow off. Contractor personnel shall travel to and from ground level staging access point on walkways whenever possible.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Roofing: Remove no more existing roofing than can be covered in one day by new roofing materials so that building interior remains watertight and weathertight. See Section 07 5419 "Polyvinyl Chloride (PVC) Roofing" for new roofing requirements.
1. Remove existing EPDM roofing and wet or damaged roof insulation down to the existing steel decking
 2. Remove existing metal copings, penetration flashings, and perimeter flashings down to the existing vertical substrates as required to install new components

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by means that prevents staining of the building exterior or parking areas, and prevents debris from blowing across the property.

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- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

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

END OF SECTION 02 4119

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SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Roof deck

- B. Related Requirements:

- 1. Section 07 5419 "Polyvinyl Chloride (PVC) Roofing" for installation on new insulation and membrane over decking

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated

- B. Shop Drawings:

- 1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each product identified

1.5 QUALITY ASSURANCE

- A. FM Global Listing: Provide steel roof deck evaluated by FM Global and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

- 1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- C. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ROOF DECK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. ASC Profiles, Inc.; a Blue Scope Steel company
 - 2. Canam United States; Canam Group Inc.
 - 3. Cordeck
 - 4. Nucor Corp.; Vulcraft Group
 - 5. Roof Deck, Inc.
 - 6. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation
- B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
 - 1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 33 (230) minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Manufacturer's standard
 - 2. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33 (230) zinc coating

2.3 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 (4.8-mm) minimum diameter.
- D. Repair Paint: Manufacturer's standard rust-inhibitive primer

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
 - 1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Mechanical fasteners shall be used in lieu of welding. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 ROOF-DECK INSTALLATION

- A. Fasten deck to structural supports and at side-lap and perimeter edge fastening: Fasten deck panels to structural supports in every other flute but not less than 12 inches. Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 36 inches (914 mm), and as follows:

-
1. Mechanically fasten with self-drilling, No. 10 (4.8-mm-) diameter or larger, carbon-steel screws.
 2. Mechanically clinch or button punch

B. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm), with end joints as follows:

1. End Joints: Lapped 2 inches (51 mm) minimum

3.4 DECK PLATING

A. Wire brush and clean localized areas of surface corrosion where corrosion is greater than 3mils but deck is still able to provide uplift resistance required for new roof system.

B. Apply rust inhibitive primer as required by manufacturer of primer.

C. Overlay localized area with flat stock repair material and secure to existing metal deck.

1. Secure flat stock repair material with corrosion resistant hex head fasteners no more than 6 inches on center.

3.5 WIRE BRUSH AND PAINT DECKING

A. Repair Painting: Wire brush and clean areas of surface corrosion where corrosion is less than 3mils.

1. Apply rust inhibitive primer as required by manufacturer of primer.

END OF SECTION 053100

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SECTION 05 52 00

HANDRAILS AND RAILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Roof edge protection. (Non-Penetrating Safety Rail)

B. Roof hatch/skylight systems.

1.2 RELATED SECTIONS

A. Section 07 54 19 – PVC Membrane Roofing.

1.3 REFERENCES

A. Occupational Safety and Health Administration (OSHA):

1.29 CFR 1910.23 - Fixed Ladders.

2.29 CFR 1910.28 - Duty to have fall protection & falling object protection.

3.29 CFR 1910.29 - Fall protection systems / criteria & practices.

4.29 CFR 1926.500 - Scope, Application, and Definitions Applicable to this Subpart.

5.29 CFR 1926.501 - Duty to Have Fall Protection.

6.29 CFR 1926.502 - Fall Protection Systems Criteria and Practices.

7.29 CFR 1926.503 - Training Requirements.

8. Warning Line Interpretations dated January 3, 2005, Part 1926 Subpart M

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 00 – SUBMITTAL PROCEDURES.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation methods.

C. Shop Drawings: Drawings showing plans, elevations, sections and details of components.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches

(150 mm) square, representing actual product, color, and patterns.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in good condition and adequately protected against damage as handrails are a finished product.

B. Inspect rail sections for damage before signing the receipt from the trucking company. Truck driver must note damaged goods on the bill of lading if damaged product is found.

C. Store products in manufacturer's unopened packaging until ready for installation.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication.

1.7 WARRANTY

A. Warranty: Provide manufacture's two (2) year warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

BlueWater Mfg. Inc., 4064 Peavey Rd.; Chaska, MN 55318
Attn: Kent Rupp, 517-523-2200, kent@ruppsafety.comcastbiz.com

Kee Safety., 100 Stadtman St, Buffalo, NY 14206
Attn: Anthony Brouwer, 205-623-8061, abrouwer@keesafety.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 – SUBSTITUTION PROCEDURES

2.2 SYSTEMS

A. Safety Rail Roof Edge Protection: Provide non-penetrating guard rail system.

1. Approved Product:

SafetyRail 2000.
Kee Guard or Kee Guard Contractor

2. Standards: System shall have top and mid rail in accordance with OSHA Standards - 29 CFR 1910.29 (b)(1)(2).

3. Structural Load: 200 lb (90.7 kg), minimum, in any direction to all components in accordance with OSHA Regulation 29 CFR 1926.502.
4. Height: 42 inches (1067 mm), minimum.
5. Railings: 1-5/8 inch (41 mm) O.D. hot rolled pickled electric weld tubing, free of sharp edges and snag points.

B. Safety Rail Roof Hatch/Skylight Systems: Provide non-penetrating railing system with top rail, mid rail, and OSHA approved swinging gate, with the hatch curb acting as toe plate.

1. Approved Product:

SR2K. /With Gate
KeeHatch/With Gate and Kee Dome

2. Standards: System shall meet or exceed the requirements in OSHA Standards - 29 CFR 1910.29, including 1910.29 (b)(13)(i).
3. Structural Load: 200 lb (90.7 kg), minimum, in any direction to all components in accordance with OSHA Regulation 29 CFR 1910.29 (b)(3)(4)(5).
4. Height: 42 inches (1067 mm), minimum.
5. Width: As indicated on Drawings.
6. Side Rail Length: As indicated on Drawings.
7. Railings: 1-5/8 inch (41 mm) O.D. hot rolled pickled electric weld tubing, free of sharp edges and snag points.
8. Installation: Locate within 6 inches of open roof hatch or roof opening.

C. Self-Closing Safety Gate: Fully assembled gate shall be capable of swinging in either direction by inverting installation position. Gate size shall be laterally adjusted from minus 1-1/4 inch (32 mm) to plus 2-1/2 inch (64 mm).

1. Approved Product: Self-Closing Safety Gate.

2. Standards: System shall have top and mid rail in accordance with OSHA Standards - 29 CFR 1910.29 (b)(1)(2).

3. Width: As indicated on Drawings.

4. Height:

a. Top Rail: 42 inches (1067 mm), minimum.

b. Bottom Rail: 21 inches (533 mm).

5. Hardware: Provide the following:

a. Gate Hardware: U-Bolts.

b. Universal Hinge Assembly: Fits railing types up to 2 inches (51 mm) O.D. or flat surface mounting.

c. Railing adapter kit.

d. Self-Closing Springs: Two stainless steel torsion springs.

6. Material: Mild steel, powder coated.

7. Material: Mild steel, hot-dip galvanized.

8. Material: Mild steel, hot-dip galvanized with powder-coated finish.

9. Material: Stainless steel.

2.3 ACCESSORIES

A.Roof Pads: Provide the following pad under each base to protect roof membrane.

- 1.Approved Product: PVC Membrane Pad.

2.4 FINISHES

A.Finish: Factory finished powder coat paint.

B.Color: Safety yellow.

2.5 FABRICATION

A.Assemble components with joints tightly fitted and secured. Accurately form components to suit installation.

PART 3 EXECUTION

3.1 EXAMINATION

A.Do not begin installation until substrates have been properly prepared.

B.If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A.Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A.Install in accordance with manufacturer's instructions.

3.4 PROTECTION

A.Protect installed products until completion of project.

B.Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 06 1053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Rooftop equipment bases and support curbs
 - 2. Wood blocking and nailers
- B. Related Requirements:
 - 1. 07 5419 "Polyvinyl Chloride (PVC) Roofing" for installation of roofing components
 - 2. 07 6200 "Sheet Metal Flashing and Trim"

1.3 DEFINITIONS

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

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

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3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated. Factory mark each piece of lumber with grade stamp of grading agency.
- B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.2 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 1. Blocking
 2. Nailers
 3. Rooftop equipment bases and support curbs
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of 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

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- C. 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.
- D. 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.

2.3 PLYWOOD PANELS

- A. Panels: DOC PS 1, Exterior, AC, in thickness indicated on Contract Drawings

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture. All fasteners must be approved for use with wood-preservative-treated treated lumber.
- B. Nails, Brads, and Staples: ASTM F 1667
- C. Power-Driven Fasteners: NES NER-272
- D. Wood Screws: ASME B18.6.1
- E. 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. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

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

3.2 WOOD BLOCKING AND NAILER INSTALLATION

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

3.3 PROTECTION

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

END OF SECTION 06 1053

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. Adhered ethylene-propylene-diene-monomer (EPDM) roofing system
- 2. Roof insulation
- 3. **(For installation on vent stack only.)**

- B. Related Requirements:

- 1. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
- 2. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

- 1. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

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

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

- 1. Base flashings and membrane terminations

- C. Samples for Verification: For the following products:

- 1. Sheet roofing of color required.

1.5 CLOSEOUT SUBMITTALS

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

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Global listed.

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

1.7 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. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.
- C. Do not expose materials to moisture in any form, before, during or after delivery to work site. Reject delivery of materials that show evidence of contact with moisture.
- D. 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
- E. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- F. Slice manufacturer supplied plastic covers from materials to allow moisture movement. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from water and moisture.
- G. Cover and protect materials at the end of each work day. Do not remove any protective tarpaulins until immediately before the material is to be installed.
- H. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.
- I. Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, and will require removal and replacement at Contractor's expense.

1.8 FIELD CONDITIONS

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

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- B. Protection: Schedule installation sequence to limit access and utilization of the newly installed roofing surfaces for material storage, construction staging, mechanical and/or excessive foot traffic.
- C. Safety: Take all necessary precautions regarding worker and general public health and safety when using solvents, adhesives or bitumens. Store flammable liquids away from open sparks or flames. Take necessary precautions when using solvents, adhesives or bitumens near fresh air intakes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain components including fasteners, flashings, termination bars, and other pre-fabricated materials for roofing system from same manufacturer as membrane roofing whenever available. All products shall be manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing system and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.
 - 1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 - 2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D 3746, ASTM D 4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- C. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- D. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

- A. EPDM Sheet: ASTM D 4637/D 4637M, Type I, nonreinforced, EPDM sheet

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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated
2. Thickness: 45 mils
3. Exposed Face Color: White

2.4 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
 1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: 60-mil thick EPDM, partially cured or cured, according to application.
- C. Bonding Adhesive: Manufacturer's standard.
- D. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch wide minimum, butyl splice tape with release film.
- E. Lap Sealant: Manufacturer's standard, single-component sealant
- F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- G. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1" width x 1/8" thick; with anchors.
- H. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.5 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM roof membrane manufacturer, selected from manufacturer's standard sizes suitable for application, of thickness' indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 1. Manufacturers: Subject to compliance with requirements, provide products by:

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- a. Atlas Roofing Corporation
- b. Carlisle Syn Tec Incorporated
- c. Firestone Building Products
- d. Johns Manville
- e. Hunter Panels

C. Insulation:

- 1. Material: Polyisocyanurate Board Stock
- 2. Minimum Thickness: 1-1/2 inch.

2.6 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
- B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that the surfaces and site conditions are ready to receive work.
- 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 system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

3.3 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions.
- B. Daily production schedules of new roofing shall be limited to that which can be made 100% watertight at the end of each day.

- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Install roof membrane and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

3.4 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Do not install wet or warped insulation boards. Warped insulation boards shall be considered damaged and shall be promptly removed from site at Contractor's expense.
- C. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections and penetrations.
 - 2. Tape all insulation joints with Tyvek tape or equal.
- D. Adhered insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Set each layer of insulation in ribbons of bead applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 ADHERED ROOFING INSTALLATION

- A. Adhere roof membrane over insulation to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll membrane roof membrane and allow to relax before installing.
- C. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply to substrate according to roofing system manufacturer's written instructions.
- E. Do not apply to splice area of roof membrane.
- F. Apply roof membrane with side laps shingled over the slope of drainage where possible.
- G. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.
 - 1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.

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2. Apply lap sealant to membrane seams per membrane manufacturer's requirements.

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

3.6 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system 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 roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

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

END OF SECTION 075323

SECTION 07 5419 - POLYVINYL-CHLORIDE (PVC) 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. Adhered 60 mil polyvinyl-chloride (PVC) roofing system
 - 2. Roof insulation
- B. Related Requirements:
 - 1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
 - 2. Section 07 6200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings
 - 3. Section 07 9200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation
 - 4. Section 22 1423 "Storm Drainage Piping Specialties" for roof drains

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

- A. Pre installation Roofing Conference: Conduct conference at Project site a minimum of seven working days prior to the first day of on-site work.
 - 1. Meet with Owner, Consultant, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing.
 - 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. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
 - 5. Review governing regulations and requirements for insurance and certificates if applicable.
 - 6. Review temporary protection requirements for roofing system during and after installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product
- B. Shop Drawings: For roofing system; Include plans, details, and attachments to other work including:
 - 1. Base flashings and membrane terminations
 - 2. Crickets, saddles, and tapered edge strips, including slopes
 - 3. Insulation fastening pattern for corner, perimeter, and field-of-roof
- C. Samples for Verification: For the following products:
 - 1. Walkway pads or rolls, of color required

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For 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: For components of roofing system, tests performed by manufacturer and witnessed by a qualified testing agency.
- D. Sample Warranties: For manufacturer's 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 and FM Global approved for roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

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.

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- B. Handle all materials in such a manner as to prevent damage and contamination with moisture or foreign matter. Handle rolled goods in a manner to prevent damage to edges or ends.
- C. Do not expose materials to moisture in any form, before, during or after delivery to work site. Reject delivery of materials that show evidence of contact with moisture.
- D. 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.
- E. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location.
- F. Slice manufacturer supplied plastic covers from materials to allow moisture movement. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from weather and moisture.
- G. Cover and protect materials at the end of each work day. Do not remove any protective tarpaulins until immediately before the material is to be installed.
- H. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.
- I. Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, and will require removal and replacement at Contractor's expense.

1.10 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Protection: Schedule installation sequence to limit access and utilization of the newly installed roofing surfaces for material storage, construction staging, mechanical and/or excessive foot traffic.
- C. Safety: Take all necessary precautions regarding worker and general public health and safety when using solvents, adhesives or bitumens. Store flammable liquids away from open sparks or flames. Take necessary precautions when using solvents, adhesives or bitumens near fresh air intakes.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

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1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of roofing system.
 2. Warranty Period: **Twenty (20) years** from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:
1. Warranty Period: **Five (5) years** from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain components including roof insulation, fasteners, pre-fabricated corners and boot flashings, and all other miscellaneous products for roofing system from same manufacturer as membrane roofing whenever available. All products shall be approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a built-up roofing system, and shall be listed in **FM Global's "RoofNav" for Class 1** or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Fire/Windstorm Classification: Class 1A-90
 2. Hail-Resistance Rating: SH
 3. **Provide FM Global RoofNav Numbers for systems utilized**
- D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

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- E. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 PVC ROOFING

- A. PVC Sheet: ASTM D 4434, Type II, fiberglass reinforced PVC membrane
 - 1. Manufacturers: Subject to compliance with requirements, provide following products by one of the manufacturers offering products that may be incorporated into the Work:
 - a. Sarnafil PVC
 - b. Seaman Corporation Fibertite
 - c. Siplast Parasolo PVC
 - 2. Thickness: 60 mils
 - 3. Exposed Face Color: White

2.4 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Asphalt resistant sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.
- C. Bonding Adhesive: Manufacturers's approved PVC adhesive.
- 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. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.
- F. Base Sheet: Manufacturer approved base sheet complying with specific FM Global RoofNav for use over gypsum decking.
- 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.

2.5 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.

-
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Atlas Roofing Corporation
 - b. Sarnafil
 - c. Hunter Panels
 - d. Johns Manville
 2. Thickness: Match existing

2.6 TAPERED INSULATION CRICKETS AND SADDLES

- A. Tapered Insulation: Molded (Expanded) Polystyrene Board Insulation: ASTM C578, Type VIII, 1.50-lb/cu. ft. minimum density, factory-tapered insulation boards fabricated to slope of 1 inch per 12 inches unless otherwise indicated.

2.7 COVER BOARD

- A. Cover Board: ASTM C 1278/C 1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. USG Corporation; Securock gypsum-fiber roof board
 - b. Approved equal
 2. Thickness: 1/4"

INSULATION ACCESSORIES

- B. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- C. Provide factory preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and furnished by roofing system manufacturer.

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2.8 WALKWAYS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:
 - 1. Verify that the surfaces and site conditions are ready to receive work.
 - 2. Verify that structural deck is anchored and secure.
 - 3. Verify that roof openings and penetrations are in place, curbs are set and braced and roof drain bodies are securely clamped in place.
 - 4. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 5. Verify that the deck surfaces are dry.
 - 6. Verify that surface plane of the roof deck is clean and smooth, free of depressions, waves or projections and properly sloped to drains, valleys, eaves, scuppers or gutters.
 - 7. Verify that the surface plane of the deck is suitable to allow for adhesion of base layer of insulation when adhesives are used.
- 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.

3.3 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions.
- B. Daily production schedules of new roofing shall be limited to that which can be made 100% watertight at the end of each day.
- 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.
- D. Install roofing and auxiliary materials to tie in to existing roofing to maintain weather tightness of transition.

3.4 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Do not install wet or warped insulation boards. Warped insulation boards shall be considered damaged and shall be promptly removed from site at Contractor's expense.
- C. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
- D. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joints or crushing of the insulation at the corners.
- E. Damaged insulation board corners shall be cut out and replaced with an insulation piece a minimum 12" x 12". Pieces that are cut from larger panels that are smaller than one (1) square foot are not acceptable.
- F. Install insulation on area of roofing to achieve required thickness. Stagger joints of each succeeding layer staggered from joints of previous layer a minimum of 12 inches in each direction.
- G. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- H. Taper roof insulation to create drain sumps. All taper boards or pieces must be securely adhered or mechanically fastened with a minimum of two (2) fasteners per piece.
- I. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- J. Fasteners and adhesives shall be installed in accordance with manufacturer's recommendations, fasteners shall comply with minimum fastener penetration for specific deck types when applicable.
- K. Additional adhesive and fasteners shall be installed in accordance with manufacturer specifications and/or specified uplift requirements to provide perimeter and corner wind uplift enhancements.

3.5 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 12 inches in each direction. Mechanically fasten insulation with manufacturer's approved fasteners per installation requirements.

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1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm resistance Classification.

3.6 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before installing.
- B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- C. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- A. Membrane Adhesive: Apply to substrates according to roofing system manufacturer's written instructions.
- B. Do not apply to splice area of roofing.
- C. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing according to roofing system manufacturer's written instructions.
- D. Apply roofing with side laps shingled with slope of roof deck where possible.
- E. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of 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.
 2. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.
- F. Drains: Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.7 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply 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 and mechanically anchor to substrate through termination bars.

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3.8 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. 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 inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Owner.
- 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 roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does 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 roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

3.11 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: **<Insert name of Owner>**.
2. Address: **<Insert address>**.
3. Building Name/Type: **<Insert information>**.
4. Address: **<Insert address>**.
5. Area of Work: **<Insert information>**.
6. Acceptance Date: _____.
7. Warranty Period: **<Insert time>**.
8. Expiration Date: _____.

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- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. lightning;
 - b. peak gust wind speed exceeding <Insert mph (m/sec)>;
 - c. fire;
 - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. vapor condensation on bottom of roofing; and
 - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
 2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
 3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
 4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
 5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

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6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 07 5419

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SECTION 07 6100 SHEET METAL 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. Custom-fabricated, standing seam sheet metal roofing.
- B. Related Requirements:

1.3 COORDINATION

- A. Coordinate sheet metal roofing layout and seams with sizes and locations of roof curbs, equipment supports, equipment provided, and roof penetrations.
- B. Coordinate sheet metal roofing installation with rain drainage work, flashing, trim, and construction of roofing substrate, parapets, walls, and other adjoining work to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at City of Oak Ridge Central Service Center located at 100 Woodbury Lane, Oak Ridge, TN.
 - 1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review structural loading limitations of substrates during and after roofing installation.
 - 3. Review insulation, air barrier, vapor retarder, and underlayment requirements.
 - 4. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affect sheet metal roofing.
 - 5. Review requirements for insurance and certificates if applicable.
 - 6. Review roof observation and repair procedures after sheet metal roofing installation.
 - 7.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following:

1. Roofing sheet metal.
2. Underlayment materials.
3. Fasteners.
4. Sealant tape.
5. Elastomeric sealant.
6. Butyl sealant.

B. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and panel installation layouts, expansion joint locations, points of fixity, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include details for forming, including seams and dimensions.
4. Include details for joining and securing, including layout and spacing of fasteners, cleats, and other attachments. Include pattern of seams.
5. Include details of expansion joints, including showing direction of expansion and contraction from points of fixity.
6. Include details of roof penetrations.
7. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, corners, flashings, and counterflashings.
8. Include details of special conditions.
9. Include details of connections to adjoining work.

C. Samples for Initial Selection: For each type of sheet metal with factory-applied finishes.

1. Include Samples of trim and accessories involving finish or color selection.

D. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Roofing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, and other attachments.
2. Trim and Metal Closures: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Other Accessories: 12 inch long Samples for each type of other accessory.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Sheet metal roofing, seam locations, and attachments.
2. Roof hatches.
3. Equipment supports, pipe supports, and penetrations.
4. Lighting fixtures and cable runs.

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5. Snow guards.
6. Items mounted on roof curbs.
7. Details for penetrations.

- B. Evaluation Reports: For self-adhering, high-temperature sheet underlayment, from ICC-ES.
- C. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing sheet metals and accessories to include in maintenance manuals.
- B. Special warranties.

1.8 QUALITY ASSURANCE

- A. Sheet Metal Roofing Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal roofing similar to that required for this Project and whose products have a record of successful in-service performance.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal roofing materials in contact with other materials that might cause staining, denting, or other surface damage.
 1. Store sheet metal roofing materials away from uncured concrete and masonry.
 2. Protect stored sheet metal roofing materials from contact with water.
- B. Protect strippable protective covering on sheet metal roofing from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal roofing installation.

1.10 WARRANTY

- A. Special Warranty: Warranty form at end of this Section in which Installer agrees to repair or replace components of sheet metal roofing that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including, but not limited to, rupturing, cracking, or puncturing.
 - b. Wrinkling or buckling.
 - c. Loose parts.
 - d. Failure to remain weathertight, including uncontrolled water leakage.

-
- e. Deterioration of metals, metal finishes, and other materials beyond normal weathering, including nonuniformity of color or finish.
 - f. Galvanic action between sheet metal roofing and dissimilar materials.
- 2. Warranty Period: Five (5) years from date of Substantial Completion.
- B. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal roofing that shows evidence of deterioration of factory-applied finishes within specified warranty period.
- 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: Twenty (20) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Sheet metal roofing system, including, but not limited to, metal roof panels, cleats, anchors and fasteners, sheet metal flashing integral with sheet metal roofing, fascia panels, trim underlayment, and accessories, shall comply with requirements without failure due to defective manufacture, fabrication, or installation, or due to other defects in construction. Sheet metal roofing shall remain watertight.
- B. Sheet Metal Roofing Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or indicated on Drawings.
- C. Copper Roofing Standard: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are specified or indicated on Drawings.
- D. Energy Performance: Provide sheet metal roofing according to one of the following when tested according to CRRC-1:
 - 1. Three-year, aged, solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
 - 2. Three-year, aged, Solar Reflectance Index of not less than 64 when calculated according to ASTM E1980.

2.2 ROOFING SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A653/A653M, G90 (Z275) coating designation; with smooth, flat] surface; prepainted by coil-coating process to comply with ASTM A755/A755M.
 - 1. Thickness: Nominal 24 gauge 0.024 inch (mm) unless otherwise indicated.
 - 2. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions for seacoast and severe environments.
 - 3. Color: As selected by Owner from manufacturer's full range.
 - 4. Concealed Finish (backside): Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mils.

2.3 UNDERLAYMENTS

- A. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
 - 1. Grace Ice and Watershield HT or equal
 - 2. Thermal Stability: ASTM D1970/D1970M; stable after testing at 240 deg F (116 deg C) or higher.
 - 3. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F (29 deg C) or lower.

2.4 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete roofing system and as recommended by primary sheet metal manufacturer unless otherwise indicated.
- B. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
 - 1. General:

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- a. Exposed Fasteners: Heads matching color of sheet metal roofing, using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of roofing.
 - b. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed; with hex-washer head.
 - c. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - D. Elastomeric Sealant: ASTM C920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal roofing and remain watertight.
 - E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

2.5 ACCESSORIES

- A. Sheet Metal Accessories: Provide components required for complete sheet metal roofing assembly, including trim, fasciae, corner units, clips, flashings, sealants, gaskets, fillers, metal closures, closure strips, and similar items. Match material and finish of sheet metal roofing unless otherwise indicated.
 1. Cleats: Intermittent and continuous attachment devices for mechanically seaming into joints and formed from the following materials and thicknesses unless otherwise indicated:
 - a. Steel Roofing: 22 gauge (0.28) inch- thick stainless steel.
 2. Expansion-Type Cleats: Cleats of a design that allows longitudinal movement of roof panels without stressing panel seams; of same material as other cleats.
 3. Flashing and Trim: Formed from same material and with same finish as sheet metal roofing.

2.6 FABRICATION

- A. Custom fabricate sheet metal roofing to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions (panel width and seam height), geometry, metal thickness, and other characteristics of installation. Fabricate sheet metal roofing and accessories in shop to greatest extent possible.

1. Standing-Seam Roofing: Form standing-seam panels with interlocking finished seam height of 1 inch.
- B. Fabrication Tolerances: Fabricate sheet metal roofing that is capable of installation to tolerances specified in MCA's "Metal Roof Installation Manual."
- C. Form exposed sheet metal work to fit substrates with little oil canning; free of buckling and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 1. Lay out sheet metal roofing, so transverse seams, if required, are made in direction of flow, with higher panels overlapping lower panels.
 2. Offset transverse seams from each other 12 inches minimum.
 3. Fold and cleat eaves and transverse seams in shop.
 4. Form and fabricate sheets, seams, strips, cleats, valleys, ridges, edge treatments, integral flashings, and other components of metal roofing to profiles, patterns, and drainage arrangements indicated on Drawings and as required for leakproof construction.
- D. Sheet Metal Accessories: Custom fabricate flashings and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item required. Obtain field measurements for accurate fit before shop fabrication.
 1. Form exposed sheet metal accessories without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 2. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces of accessories exposed to view.
 3. Fabricate cleats and attachment devices of sizes recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.
- E. Do not use graphite pencils to mark metal surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
 1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking, that tops of fasteners are flush with surface, and that installation is within flatness tolerances required for finished roofing installation.

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2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored, and that provision has been made for drainage, flashings, and penetrations through sheet metal roofing.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

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

3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering High-Temperature Sheet Underlayment:

1. Install self-adhering high-temperature sheet underlayment, wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses.
5. Overlap side edges not less than 3-1/2 inches (90 mm).
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days of installation.
8. Install self-adhering high-temperature underlayment at the following locations:
 - a. Over entire roof.

3.3 INSTALLATION, GENERAL

A. Install sheet metal roofing to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that applies to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required for complete roofing system.
2. Install sheet metal roofing true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal roofing and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Do not field cut sheet metal roofing by torch.
5. Provide metal closures at peaks, rake edges, rake walls, eaves and each side of ridge and hip caps.
6. Flash and seal sheet metal roofing with closure strips at eaves, rakes, and perimeter of all openings. Fasten with self-tapping screws.
7. Locate and space fastenings in uniform vertical and horizontal alignment. Pre-drill panels for fasteners.
8. Install ridge and hip caps as sheet metal roofing work proceeds.

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9. Lap metal flashing over sheet metal roofing to direct moisture to run over and off roofing.
 10. Do not use graphite pencils to mark metal surfaces.
- B. Thermal Movement: Rigidly fasten metal roof panels to structure at only one location for each panel.
1. Allow remainder of panel to move freely for thermal expansion and contraction.
- C. Fasteners: Use fasteners that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- D. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- E. Fasciae:
1. Align bottom of sheet metal roofing and fasten with blind rivets, bolts, or self-tapping screws.
 2. Flash and seal sheet metal roofing with closure strips where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.4 INSTALLATION OF CUSTOM-FABRICATED SHEET METAL ROOFING

- A. Standing-Seam Roofing:
1. Attach standing-seam metal panels to substrate with double-fastened cleats spaced at 12 inches (mm) o.c.
 2. Install panels reaching from eave to ridge before moving to adjacent panels.
 - a. Where transverse joints are required, stagger joints in adjacent panels not less than 48 inches.
 3. Before panels are interlocked, apply continuous bead of sealant to top of flange of lower panel.
 4. Lock standing seams by folding over twice, so cleat and panel edges are completely engaged.
 5. Lock each panel to panel below with sealed transverse seam.
 6. Loose-lock panels at eave edges to continuous cleats and flanges at roof edge at gutters.
 7. Loose-lock panels at eave edges to continuous edge flashing exposed 24 inches from roof edge.
 - a. Attach edge flashing to face of roof edge with continuous cleat fastened to roof substrate at 12 inch o.c. spacing.
 - b. Lock panels to edge flashing.
 8. Leave seams upright after locking at ridges and hips.

3.5 INSTALLATION OF ACCESSORIES

- A. Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion.
 - 1. Coordinate installation with flashings and other components.
 - 2. Install components required for complete sheet metal roofing assembly, including trim, seam covers, flashings, sealants, gaskets, fillers, metal closures, closure strips, and similar items.
 - 3. Install accessories integral to sheet metal roofing that are specified in Section 076200 "Sheet Metal Flashing and Trim" to comply with that Section's requirements.

- B. Flashing and Trim: Comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual."
 - 1. Provide concealed fasteners where possible, and install units true to line, levels, and slopes.
 - 2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
 - 3. Install flashing and trim as required to seal against weather and to provide finished appearance, including, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
 - 4. SMACNA's "Architectural Sheet Metal Manual" and on Drawings.
 - 5. Install exposed flashing and trim without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 6. Install sheet metal flashing and trim to fit substrates, and to result in waterproof and weather-resistant performance.

3.6 INSTALLATION TOLERANCES

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

- B. Installation Tolerances: Shim and align sheet metal roofing within installed tolerances specified in MCA's "Metal Roof Installation Manual."

3.7 CLEANING

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

- B. On completion of sheet metal roofing installation, clean finished surfaces as recommended by sheet metal roofing manufacturer.

- C. Clean and neutralize flux materials. Clean off excess solder.

- D. Clean off excess sealants.

3.8 PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal roofing is installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Prohibit traffic of any kind on installed sheet metal roofing.
- C. Maintain sheet metal roofing in clean condition during construction.
- D. Replace sheet metal roofing components that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

3.9 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS **<Insert name>** of **<Insert address>**, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
 - 1. Owner: **<Insert name>**.
 - 2. Owner's Address: **<Insert address>**.
 - 3. Building Name/Type: **<Insert information>**.
 - 4. Building's Address: **<Insert address>**.
 - 5. Area of Work: **<Insert information>**.
 - 6. Acceptance Date: **<Insert date>**.
 - 7. Warranty Period: **<Insert time>**.
 - 8. Expiration Date: **<Insert date>**.
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
 - 1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. Lightning;
 - b. Peak gust wind speed exceeding **<Insert mph (m/s)>**;
 - c. Fire;

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- d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. Faulty construction of parapet walls, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. Vapor condensation on bottom of roofing; and
 - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
 3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
 4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
 5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
 6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
 7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this **<Insert day>** day of **<Insert month>**, **<Insert year>**.

1. Authorized Signature: **<Insert signature>**.
2. Name: **<Insert name>**.
3. Title: **<Insert title>**.

END OF SECTION 07 6100

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SECTION 07 6200 - 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. Section Includes:

- 1. Formed low-slope roof sheet metal fabrications

B. Related Requirements:

- 1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking
- 2. Section 07 5419 "Polyvinyl Chloride (PVC) Roofing" for installation of sheet metal flashing and trim integral with roofing

1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak proof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: As noted in Section 07 5419 "Polyvinyl Chloride (PVC) Roofing"

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim

- 1. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
- 2. Include identification of material, thickness, weight, and finish for each item and location in Project.

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

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
 - 1. High performance roof edge system shall be CERTIFIED by the manufacturer to comply with ANSI/SPRI/FM 4435 ES-1 Standard. Roof edge shall meet performance design criteria according to the following test standards: 1. ANSI/SPRI/FM 4435/ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1 Test Method RE-2. Use the current edition of ANSI/SPRI/FM 4435/ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.
- C. Handle all materials in such a manner as to prevent damage and contamination with moisture or foreign matter. Handle rolled goods in a manner to prevent damage to edges or ends.
- D. Do not expose materials to moisture in any form, before, during or after delivery to work site. Reject delivery of materials that show evidence of contact with moisture.
- E. Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, and will require removal and replacement at Contractor's expense.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

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- B. SPRI Wind Design Standard: Pursuant to 1504.5 Edge securement for low-slope roofs. Low-slope built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except Vult wind speed shall be determined from Figure 1609A, 1609B, or 1609C as applicable.

2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- A. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 (Z275) coating designation; pre-painted by coil-coating process to comply with ASTM A755/A755M.
 - 1. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; with smooth, flat surface.

- 1. Finish: 2D (dull, cold rolled)

2.3 ENGINEERED COPING SYSTEMS

- A. Coping; Manufactured, coping cover consisting of snap-on metal section lengths not exceeding 12 feet (3.6 m) and a engineered cleat system as shown on Contract Drawing.
 - 1. Manufacturers: Provide the following:
 - a. Metal-Era, Inc. as manufactured for specified manufacturers
 - 2. Coping: Fabricated from the following exposed metal:
 - a. Kynar Finish Galvanized Steel: 24 gauge
 - b. Color: match existing as approved by Owner
 - 3. Splice Plates: Concealed, of same material, finish, and shape as coping cover

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

SHEET METAL FLASHING AND TRIM

SECTION 076200

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- 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. Fasteners installed in wood-preservative-treated lumber shall be coated appropriate coatings to resist corrosion from wood-preservative treatment.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened
 - 2. Fasteners for Steel Sheet: Series 300 stainless steel
 - 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel
- C. Solder:
 - 1. For Stainless Steel: ASTM B 32, Grade Sn60 or Grade Sn96, with acid flux of type recommended by stainless-steel sheet manufacturer.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, 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.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 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 to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

SHEET METAL FLASHING AND TRIM
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- 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 indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."
- D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Do not use graphite pencils to mark metal surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the 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. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. 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, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

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2. 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.
 3. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks
 4. Torch cutting of sheet metal flashing and trim is not permitted
 5. Do not use graphite pencils to mark metal surfaces
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
- C. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inch for nails and not less than 3/4 inch for wood screws but not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- D. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- E. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder aluminum sheet.
 2. Do not use torches for soldering.
 3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
 4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.3 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate as shown on Drawings.
- C. Roof Edge Flashing: Ensure all fascia extend a minimum of 2" lower than the bottom of the wood nailers.

SHEET METAL FLASHING AND TRIM
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- D. Roof Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof.

3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. 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

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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. Section Includes:

1. Silicone joint sealants
2. Urethane joint sealants
3. Polysulfide joint sealants
4. Latex joint sealants
5. Solvent-release-curing joint sealants
6. Preformed joint sealants
7. Acoustical joint sealants

B. Related Sections:

1. Section 07 5419 "Polyvinyl Chloride (PVC) Roofing" for roofing components
2. Section 07 6200 "Sheet Metal Flashing and Trim " for sheet metal flashing and trim

1.3 ACTION SUBMITTALS

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

1.4 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 degrees F
2. When joint substrates are wet
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates

1.5 WARRANTY

When warranties are required, verify with Owner's counsel that special warranties stated in this article are not less than remedies available to Owner under prevailing local laws.

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: 2 years from date of Substantial Completion

PART 2 - PRODUCTS

2.1 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 joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L

2.2 URETHANE JOINT SEALANTS

- A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT
 - 1. Products: Subject to compliance with requirements, provide the following provide one of the following available products that may be incorporated into the Work:
 - a. Sika Corporation, Construction Products Division; Sikaflex - 1a

2.3 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete
 - b. Masonry
 - c. Exterior Insulation and Finish Systems
 - 3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal

-
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
 - C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 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. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces

3.4 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.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

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SECTION 22 1423 - STORM DRAINAGE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Roof drains
 - 2. Miscellaneous storm drainage piping specialties
 - 3. Flashing materials

1.3 ACTION SUBMITTALS

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

1.4 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

PART 2 - PRODUCTS

2.1 EXTENSION COLLARS

- A. Cast-Iron, 3" height Overflow Extension Collars
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company
 - b. Smith, Jay R. Mfg. Co.
 - c. Zurn Plumbing Products Group; Specification Drainage Operation
 - d. Wade Company

2.2 METAL ROOF DRAINS

- A. Cast-Iron, Large-Sump, General-Purpose Roof Drains:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company

STORM DRAINAGE PIPING SPECIALTIES

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- b. Smith, Jay R. Mfg. Co.
 - c. Zurn Plumbing Products Group; Specification Drainage Operation
 - d. Wade Company
-
- 2. Standard: ASME A112.6.4, for general-purpose roof drains
 - 3. Body Material: Cast iron
 - 4. Dimension of Body: Match existing
 - 5. Outlet: Bottom
 - 6. Underdeck Clamp: Required
 - 7. Dome Material: Cast iron
 - 8. Description: Manufactured, gray-iron casting, for attaching to existing piping
 - 9. Outlet Size to match existing piping

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Replace existing drain clamping rings with overflow extension rings on secondary overflow roof drains.
- B. Install roof drains at low points of roof areas according to roof membrane manufacturer's written installation instructions.
 - 1. Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
 - 2. Position roof drains for easy access and maintenance

3.2 CONNECTIONS

- A. Comply with requirements for piping specified in Section 22 1413 "Facility Storm Drainage Piping."

3.3 PROTECTION

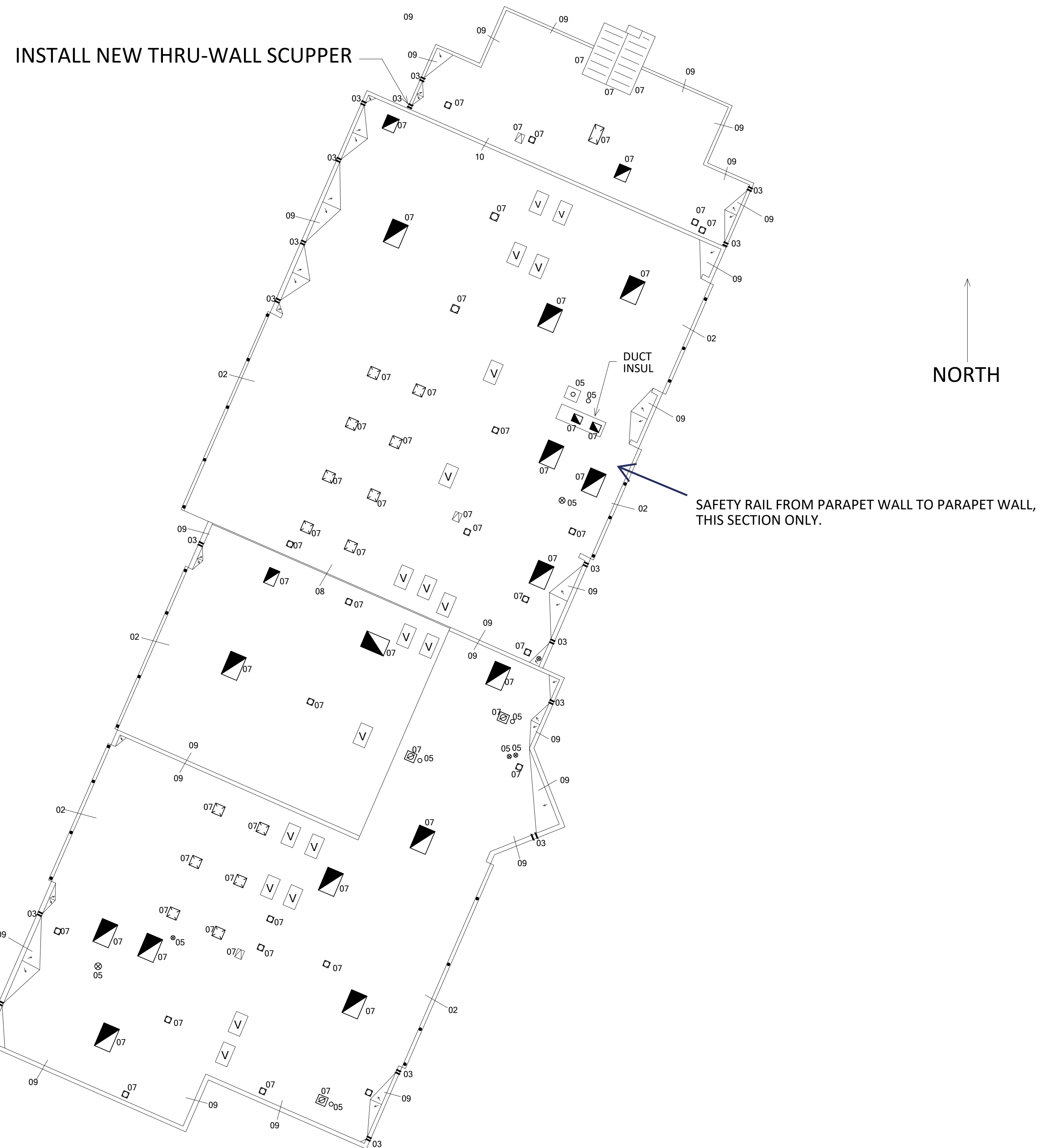
- A. Protect drains during construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 22 1423

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DRAWINGS

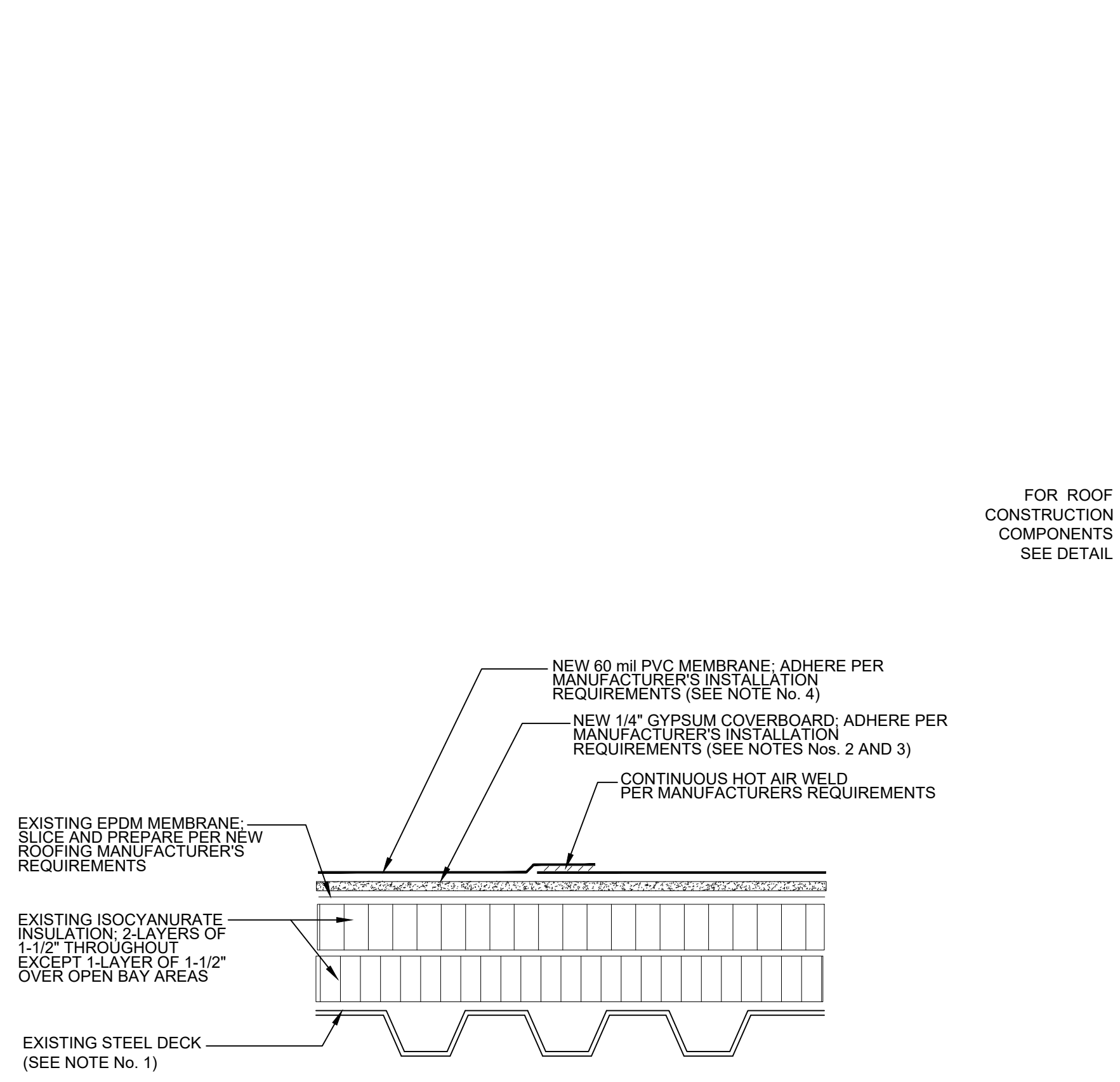
Drawings prepared by RoofConnect Inc. are attached and made a part of this bid package. Three (3) sheets are attached.



CONSTRUCTION NOTES:

- 1.) CONTRACTOR TO BE RESPONSIBLE FOR ALL CONSTRUCTION COSTS INCLUDING MECHANICAL TO RAISE EXISTING CURBS TO A WARRANTABLE HEIGHT
- 2.) PROVIDE AND INSTALL TAPERED EXPANDED POLYSTYRENE INSULATION SADDLES AT LOCATIONS SHOWN ON DRAWING INSULATION TO PROVIDE A SLOPE OF 1" PER FOOT TO DRAINS
- 3.) PROVIDE AND INSTALL MANUFACTURER APPROVED WALKPADS AT ALL ROOF ACCESS POINTS AND ROOFTOP UNITS
- 4.) REMOVE, DECK OVER AND INSULATE CURBS MARKED ON DRAWING AS "V" BEFORE INSTALLING NEW ROOFING SYSTEM
- 5.) PROVIDE LINE ITEM ON BID FORM TO REPLACE INSULATION ON DUCT MARKED AS "DUCT INSUL" WITH NEW OF LIKE TYPE AND KIND
- 6.) PROVIDE AND INSTALL SCHEDULE 40 PVC PIPING RUNNING FROM HVAC CONDENSATE DRAINS TO EXTERIOR GUTTERS.
- 7.) INSTALL SAFETY RAIL AT SKYLIGHTS AND ROOFHATCHS. INSTALL SAFETY RAIL AT EDGE MARKED ON DRAWING APPROX 80 LN.FT.

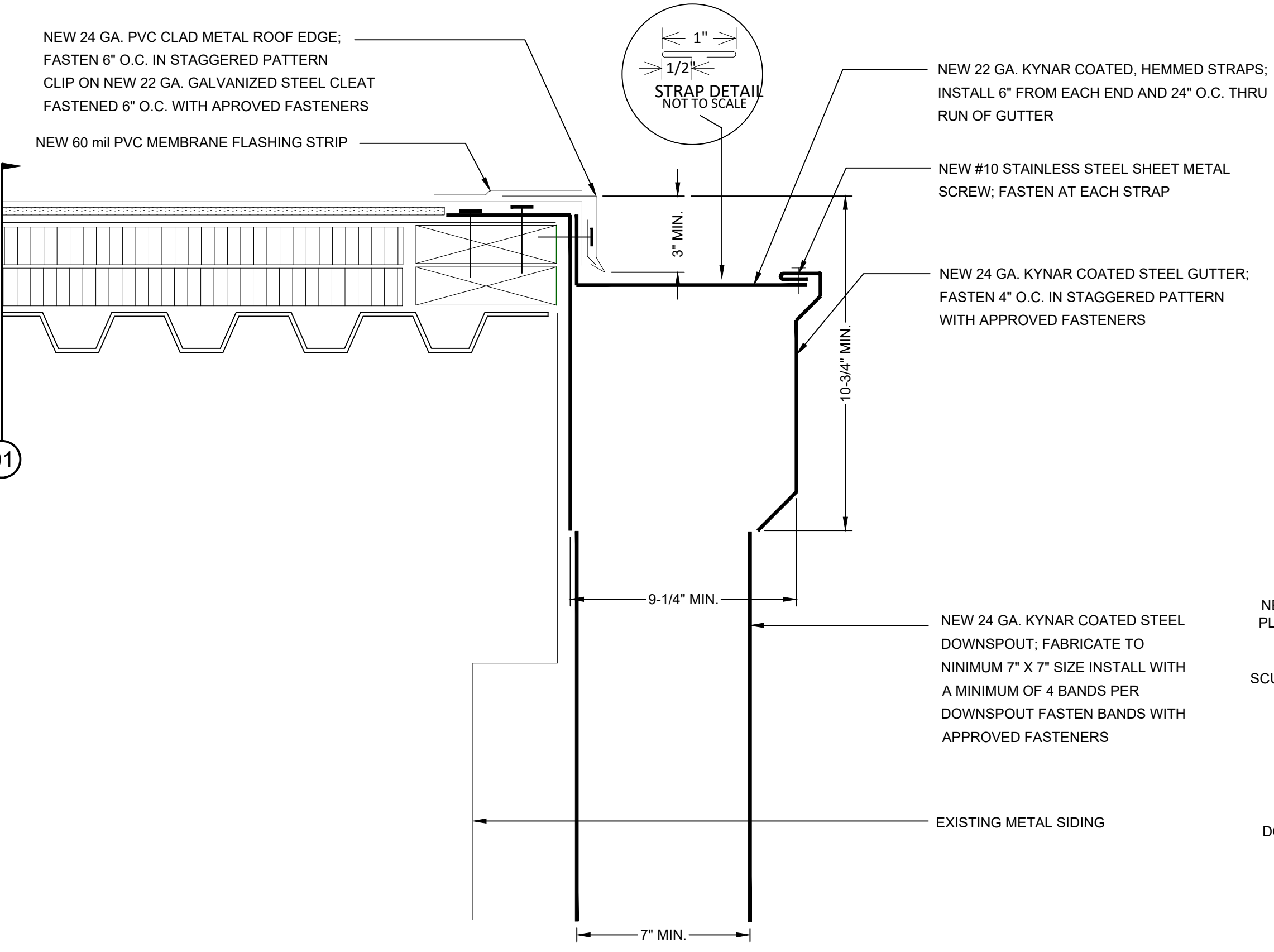
CITY OF OAK RIDGE
 CENTRAL SERVICE CENTER
 100 WOODBURY LANE
 OAK RIDGE TN 37830



NEW CONSTRUCTION PROFILE

SCALE: N.T.S.

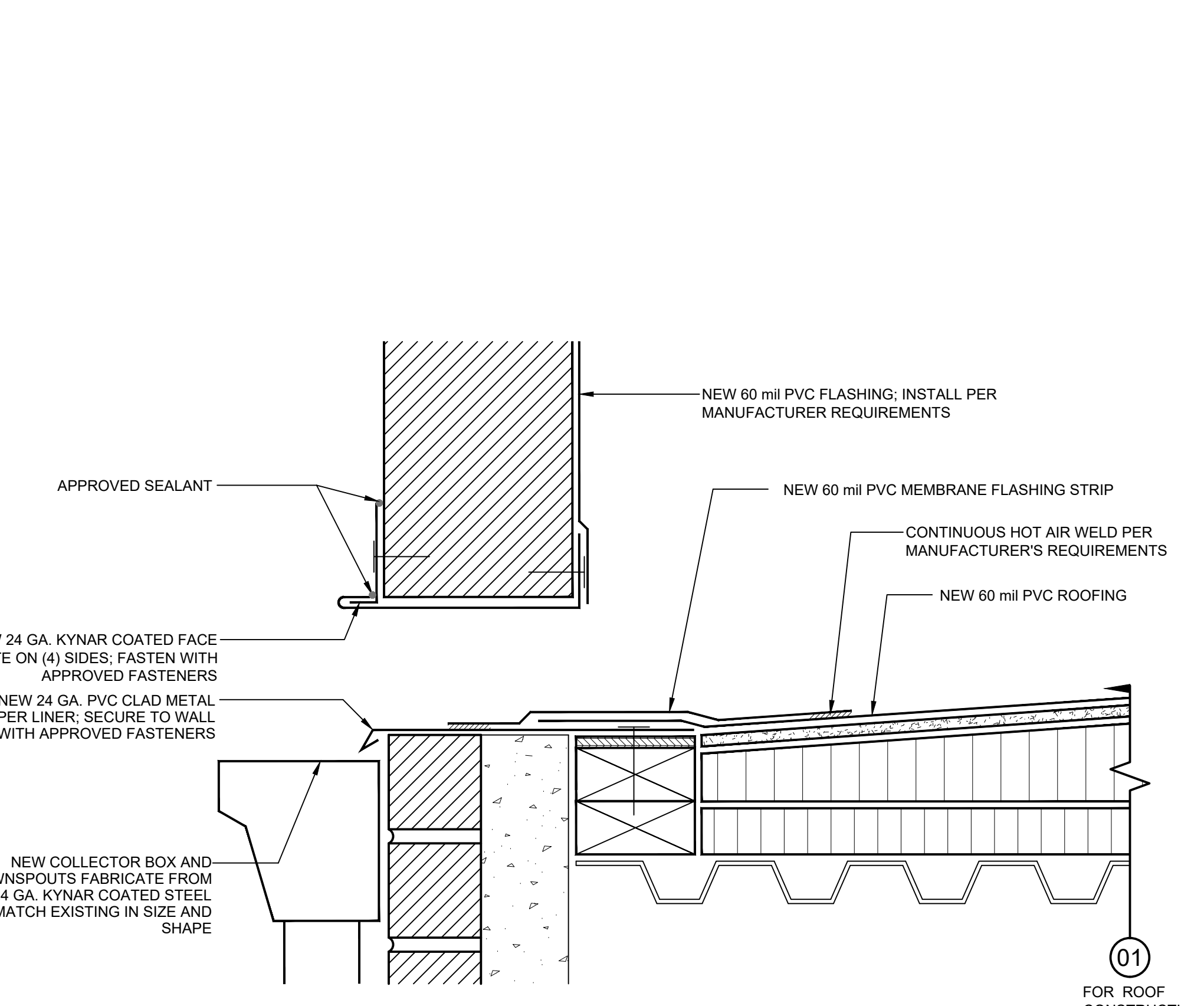
NOTES:
 1.) REPORT ANY STRUCTURAL DAMAGE TO OWNER'S REPRESENTATIVE IMMEDIATELY.
 2.) STAGGER BOARD JOINTS 12" MINIMUM WHEN POSSIBLE.
 3.) MECHANICALLY ATTACH IN ACCORDANCE WITH FM ROOF NAV REQUIREMENTS.
 4.) LAP FIELD SHEETS TO PREVENT BACKWATER LAPS.



GUTTER/DOWNSPOUT AT ROOF EDGE

SCALE: N.T.S.

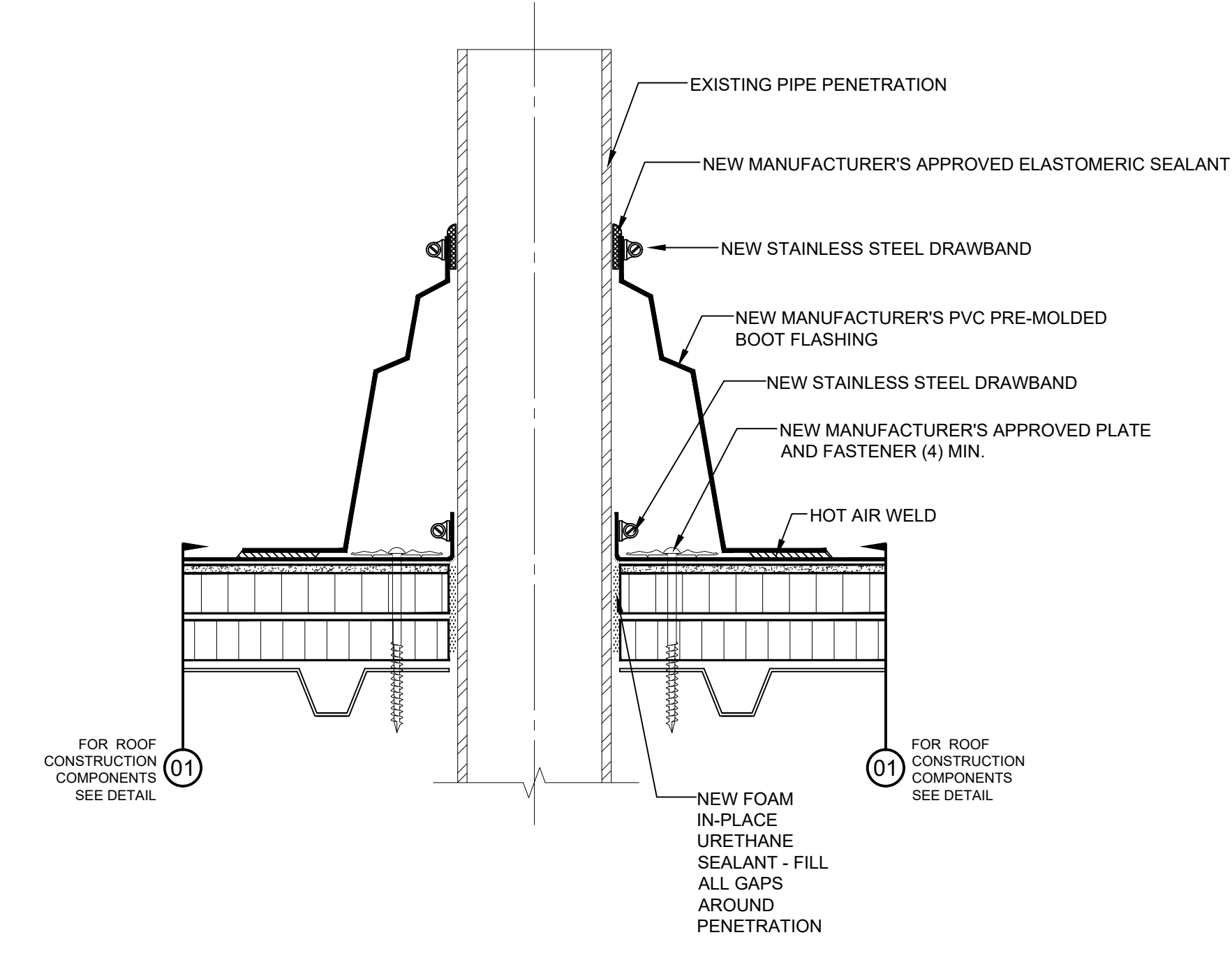
NOTES:
 1.) CLEAN ALL MASONRY AND METAL COMPONENTS BEFORE APPLICATION OF NEW MATERIALS
 2.) HEAT WELD THERMOPLASTIC MEMBRANE PER MANUFACTURERS REQUIREMENTS



EXISTING THRU-WALL SCUPPER

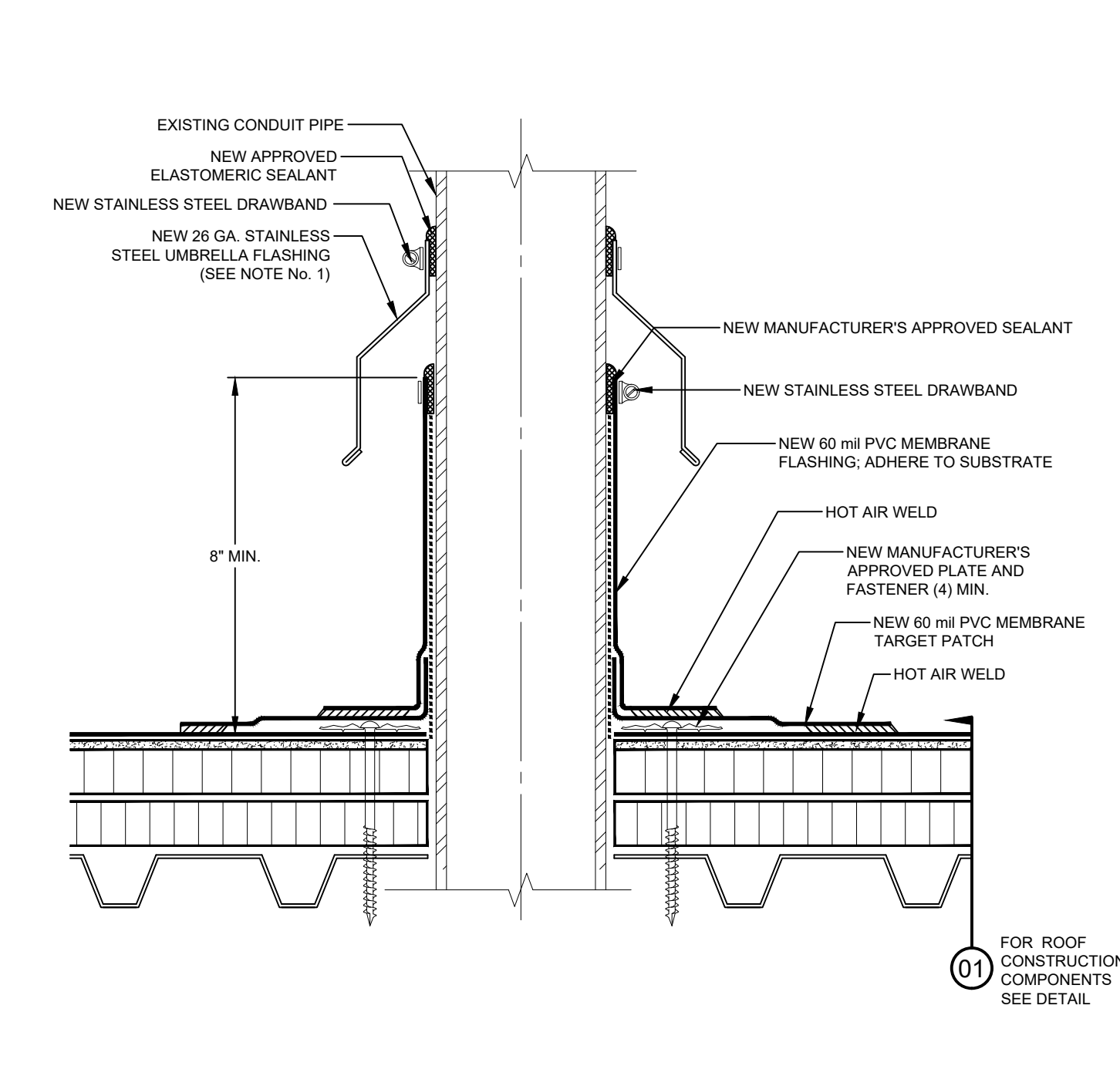
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NOTES:
 1.) PROPERLY CLEAN ALL SURFACES BEFORE INSTALLING NEW MATERIALS.



PLUMBING VENT FLASHING

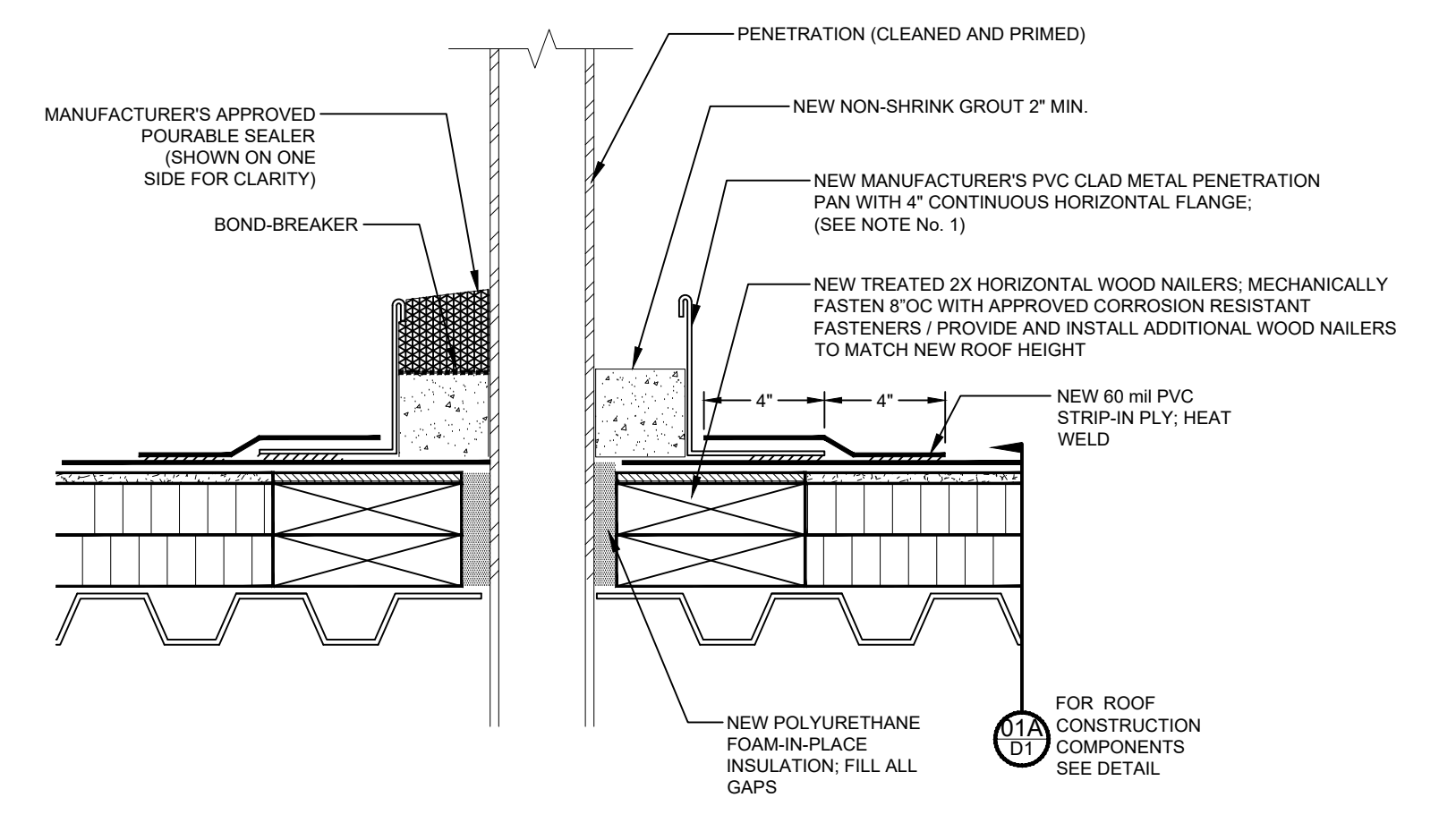
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ROUND PENETRATION FLASHING

SCALE: N.T.S.

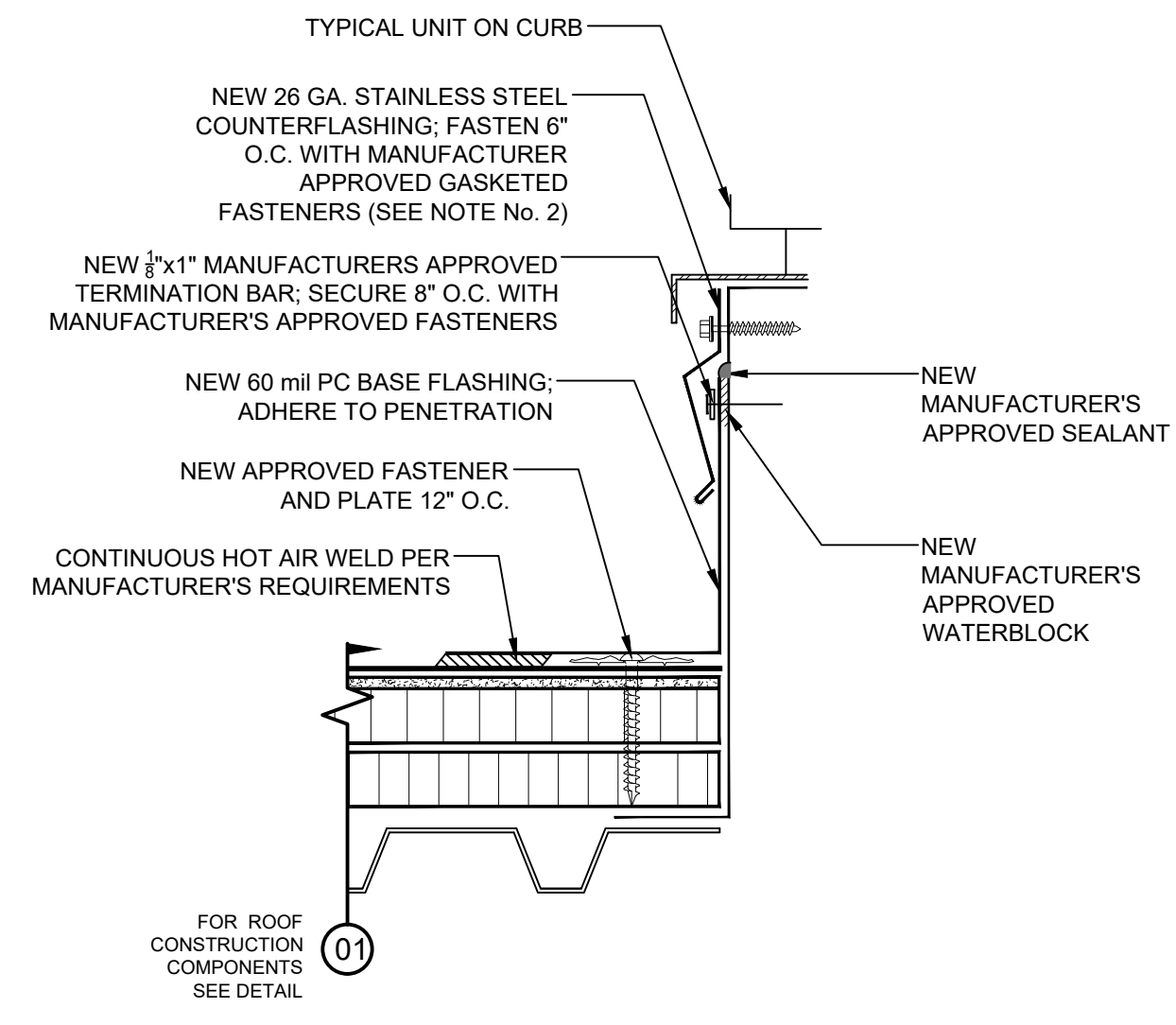
NOTES:
 1.) CONTINUOUSLY SOLDER ALL JOINTS WATERTIGHT.



PENETRATION PAN FLASHING

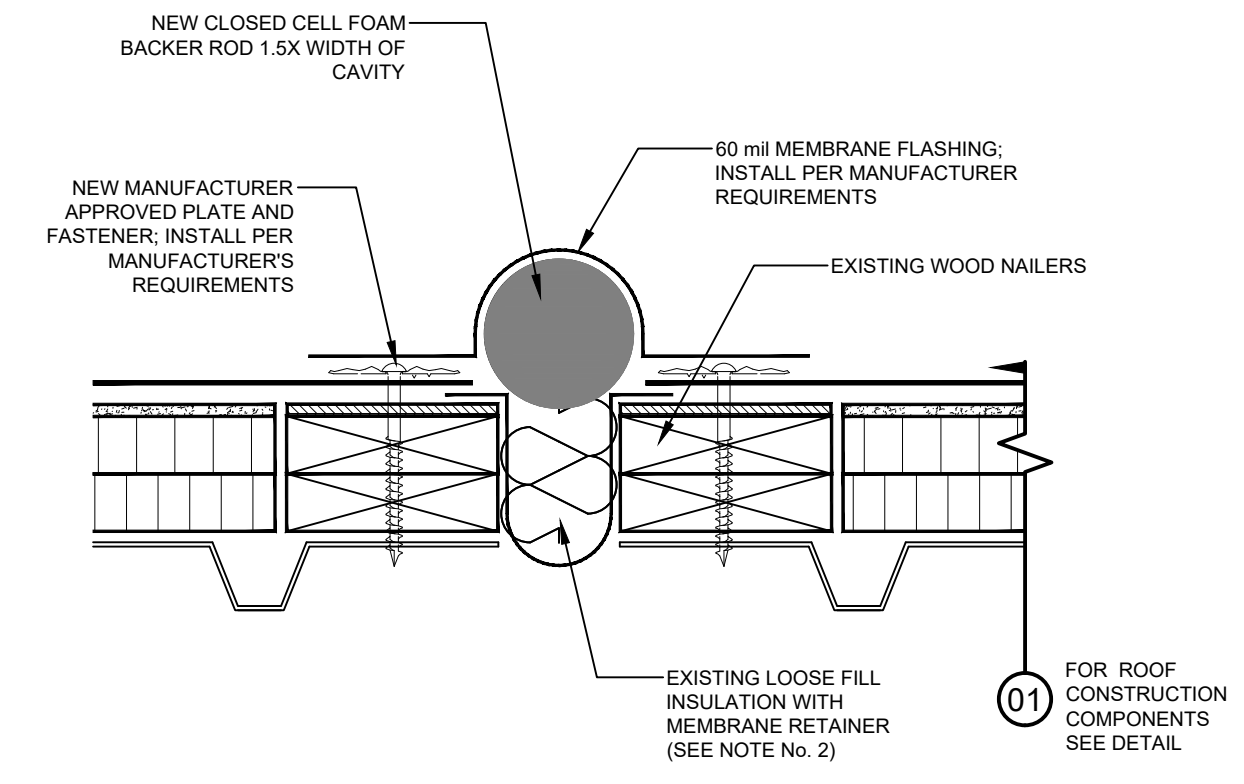
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NOTES:
 1.) CONTINUOUSLY SOLDER ALL JOINTS WATERTIGHT.
 2.) PROVIDE AND INSTALL NEW 16oz. COPPER RAIN COLLAR (NOT SHOWN FOR CLARITY); SOLDER ALL JOINTS WATERTIGHT.



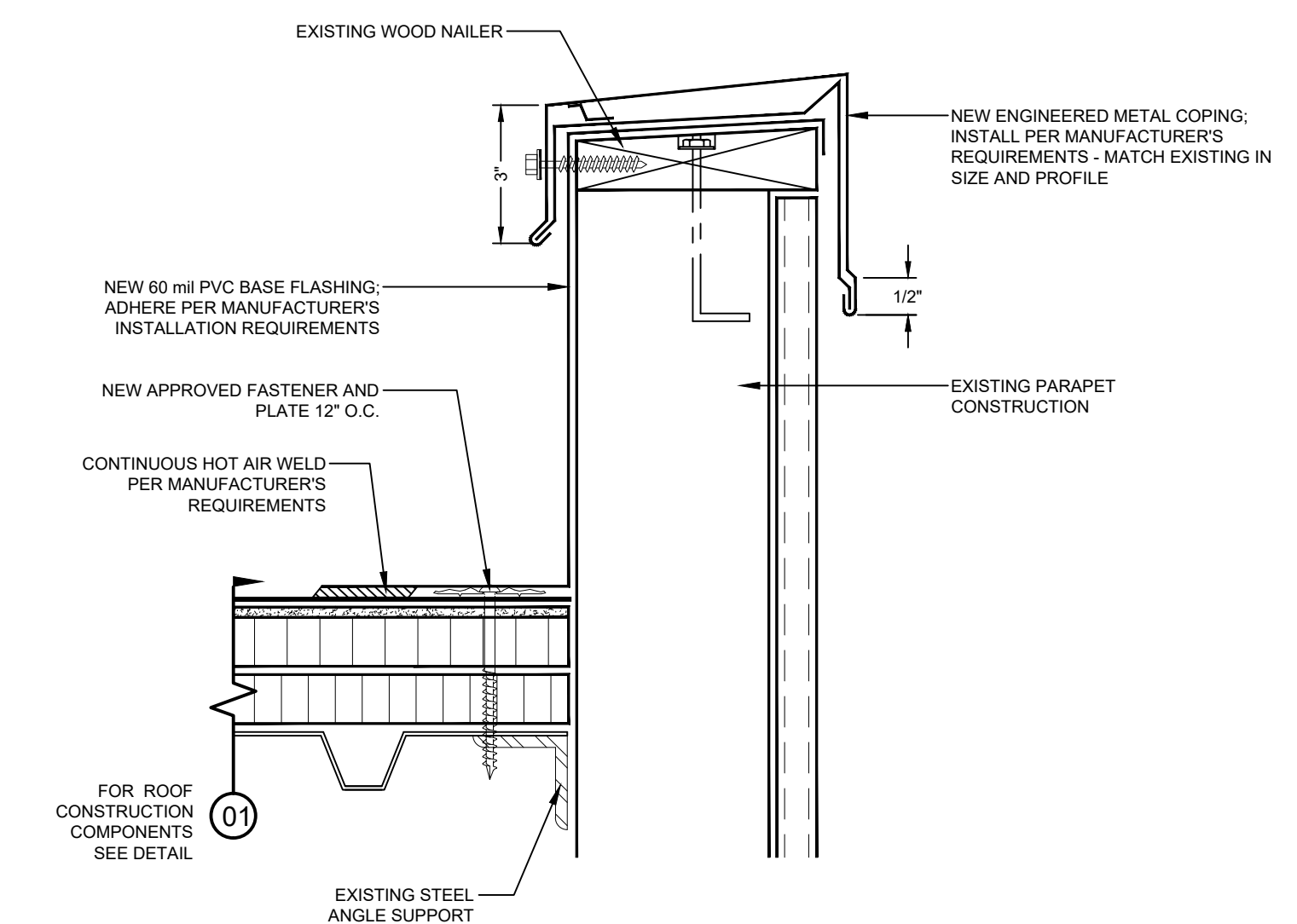
07 **TYPICAL CURB FLASHING**
SCALE: N.T.S.

NOTES:
1.) CLEAN SUBSTRATE MATERIALS BEFORE APPLICATION OF NEW ROOFING COMPONENTS.
2.) FORM IN 10' LENGTHS MAX; LAP CORNERS 3/4" POP RIVET AND SOLDER.



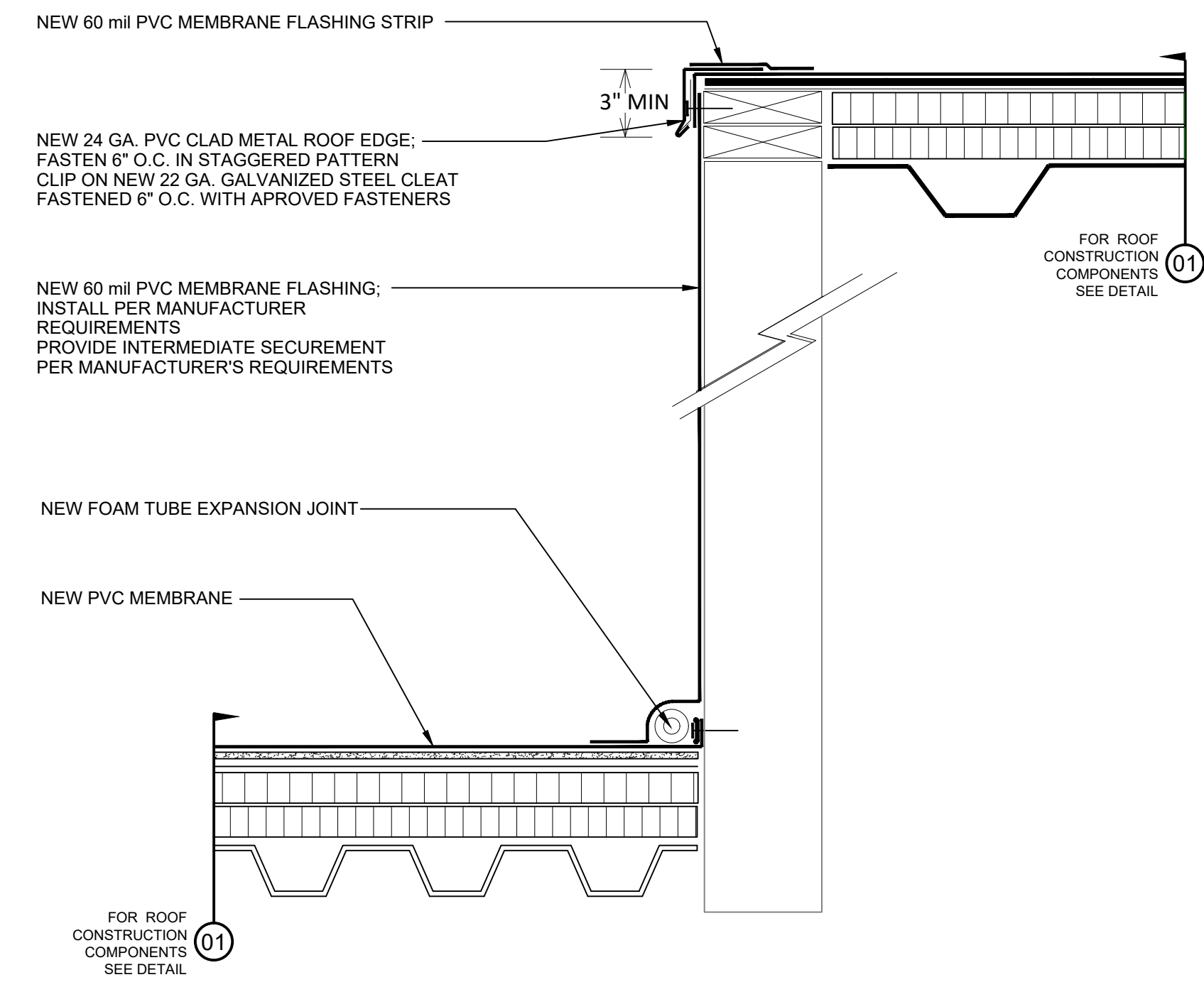
08 **EXPANSION JOINT**
SCALE: N.T.S.

NOTES:
1.) PROVIDE AND INSTALL NEW ADDITIONAL WOOD BLOCKING TO LEVEL WITH ROOF SURFACE.
2.) REPLACE DAMAGED OR DETERIORATED LOOSE FILL INSULATION OR RETAINING MEMBRANE.



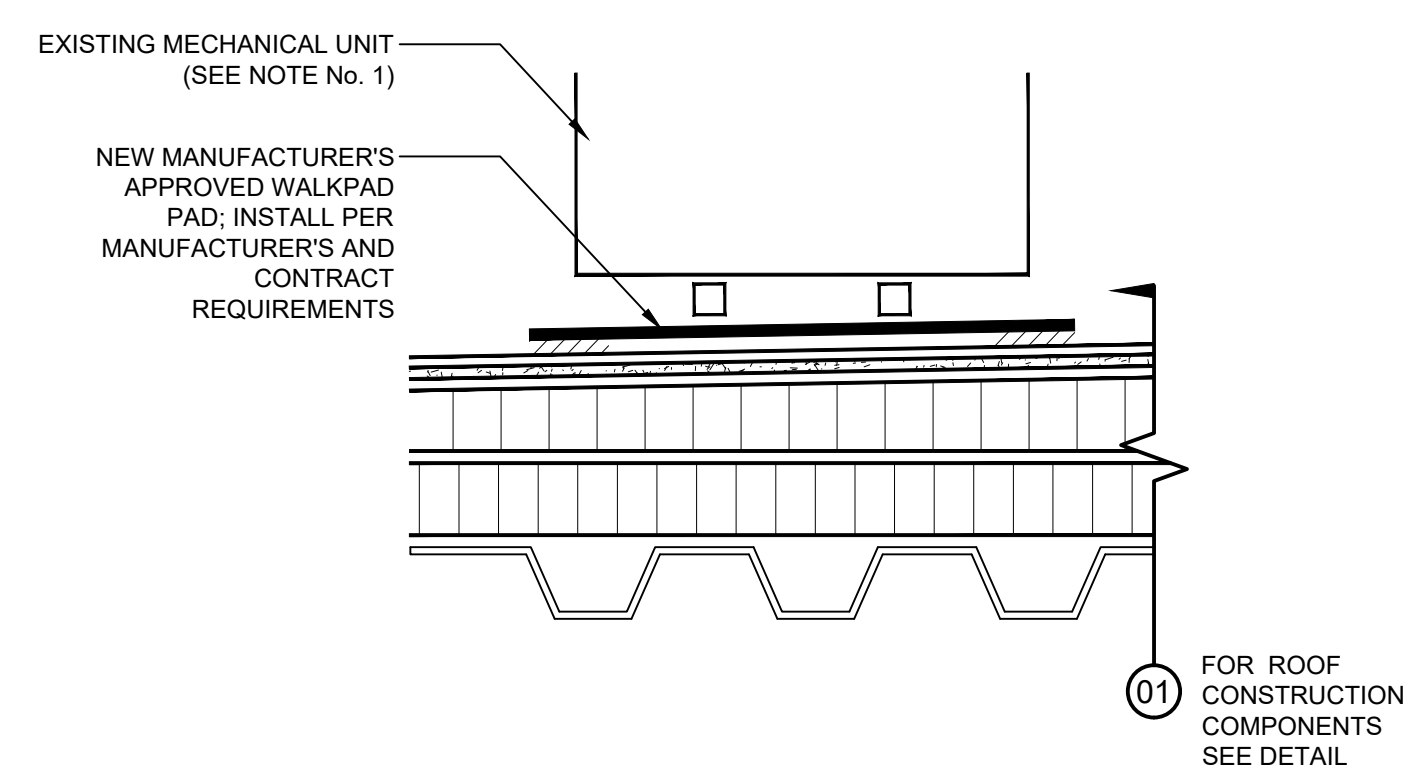
09 **PARAPET WALL FLASHING**
SCALE: N.T.S.

NOTES:
1.) CLEAN SUBSTRATE MATERIALS BEFORE APPLICATION OF NEW ROOFING COMPONENTS.



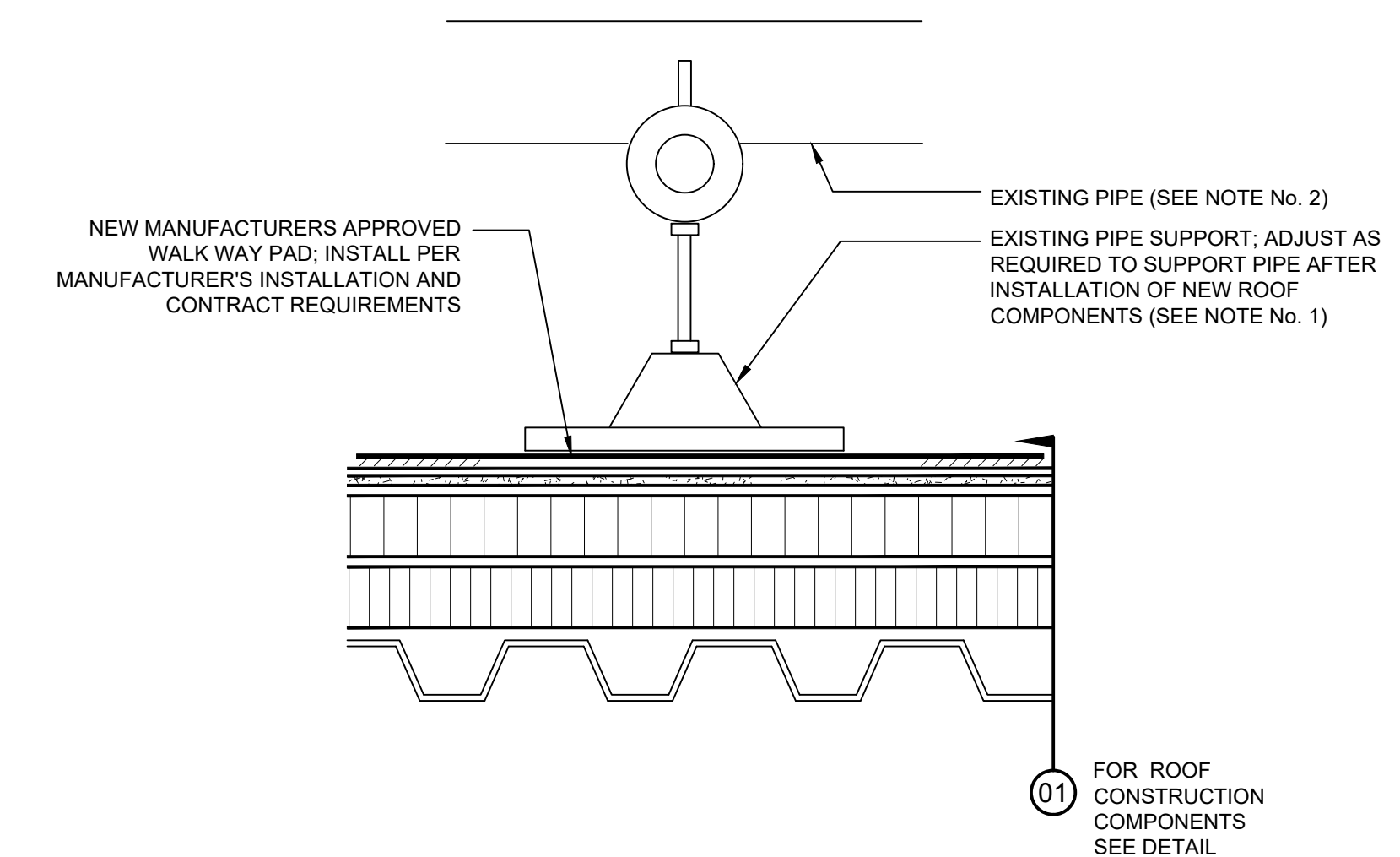
10 **CENTER HIGH WALL FLASHING**
SCALE: N.T.S.

NOTES:
1.) CLEAN ALL MASONRY AND METAL COMPONENTS BEFORE APPLICATION OF NEW MATERIALS.
2.) HEAT WELD THERMOPLASTIC MEMBRANE PER MANUFACTURER'S REQUIREMENTS.



11 **UNIT OF WALKPAD**
SCALE: N.T.S.

NOTES:
1.) LIFT AND RESET TO INSTALL NEW ROOF COMPONENTS. INCLUDE ALL COSTS FOR UTILITY DISCONNECTS AND RECONNECTS TO COMPLETE WORK.
2.) REPLACE ALL EXISTING BLOCKING WITH NEW TREATED LUMBER BLOCKING.



12 **PIPING SUPPORT**
SCALE: N.T.S.

NOTES:
1.) SALVAGE EXISTING PIPE SUPPORT FOR REUSE; PROVIDE NEW MATCHING SUPPORTS WHERE MISSING.
2.) SUPPORT EXISTING PIPE DURING CONSTRUCTION.