

# **CITY OF MUSKEGON - ROOF REPLACEMENTS**

## **PROJECT MANUAL**

4/18/2023

### **OWNER**

**CITY OF MUSKEGON**  
933 TERRACE ST  
MUSKEGON, MI 49440

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**PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5**

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**SECTION 00 10 00 - SUMMARY OF WORK**

**PART 1 GENERAL**

**1.1 PROJECT RELATED:**

- A. Manufacturer's representative must be present at least 3 days per week during the duration of the project and for all pre-determined milestones.
- B. All contractors are responsible for roof cores, removing existing coping, metal wall panels, etc., at time of the pre-bid review for verification of existing roof system and building structure and wall composition before proceeding with their project bid.

**1.2 SUMMARY OF WORK: City Hall**

- A. Remove any and all existing roofing material, from sections exposing the decking substrate.
- B. Prime existing concrete deck with Garla-Prime asphalt primer and install a torch applied SBS vapor barrier.
- C. Install 2-Layers of 2" Polyisocyanurate insulation in high-rise foam adhesive.
- D. Install a 1/8:12 tapered system to ensure positive drainage with ¼:12 saddles and crickets.
- E. Install ¼" primed DensDeck cover board over newly installed insulation.
- F. Install HPR Torch Base sheet over entire roofing surface and flashings.
- G. All sections are to receive new edge metal meeting ANSI-SPRI ES1 standards.
- H. On the upper mansard roof area, the membrane is to be cleaned and prepped. Install LiquiTec over the existing EPDM at a rate of 2 gal/sq. Multiple coats will be required to ensure coating does not drip or run off the surface of the roof.

**1.3 SUMMARY OF WORK: Fire Station #5**

- A. Remove and replace any wet or damaged insulation and return the roof to watertight condition.
- B. Mechanically fasten 1/2" dens deck primed over existing roofing system per manufacturer's guidelines.
- C. Ann new nailers around the perimeter to match or exceed the new roofing height.
- D. Install HPR Torch Base sheet over the entire roofing surface and flashings.
- E. Install new Stressply IV Mineral Cap sheet over the entire roofing surface and flashings.
- F. All sections are to receive new edge metal meeting ANSI-SPRI ES1 standards.

**1.4 INTENT OF THE SPECIFICATIONS**

- A. The intent of these specifications is to describe the material and methods of construction required for the performance of the work. In general, it is intended that the drawings shall delineate the detailed extent of the work. When there is a discrepancy between drawings, referenced specifications, and standards and this specification, this specification shall govern.

**1.5 PROTECTION**

- A. The contractor shall use every available precaution to provide for the safety of the property owner, visitors to the site, and all connected with the work under the Contract.



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CITY HALL & FIRE STATION #5**

**SUMMARY OF WORK  
00 1000 - 3  
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- B. All existing facilities both above and below ground shall be protected and maintained free of damage. Existing facilities shall remain operating during the period of construction unless otherwise permitted. All access roadways must remain open to traffic unless otherwise permitted.
- C. Barricades shall be erected to fence off all construction areas from operations personnel.
- D. Safety Requirements:
  - 1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
  - 2. Comply with federal, state, and local and owner fire and safety requirements.
  - 3. Advise owner whenever work is expected to be hazardous to owner employees and/or operations.
  - 4. Maintain a crewman as a floor guard whenever roof decking is being repaired or replaced and whenever any roofing is being removed.
  - 5. Maintain proper fire extinguisher within easy access whenever power tools, roofing kettles, and torches are being used. A MINIMUM OF A 2 HOUR FIRE WATER SHALL BE STRICTLY ADHERED TO WHENEVER PROPANE TORCHES ARE IN USE.
  - 6. ALL SAFETY REQUIREMENTS OF THE BUILDING OWNER MUST BE FOLLOWED. NO EXCEPTIONS WILL BE PERMITTED. SAFETY ORIENTATION MEETING REQUIRED PRIOR TO PERFORMING ANY WORK.

**1.6 HOUSEKEEPING**

- A. Keep materials neat and orderly.
- B. Remove scrap, waste and debris from the project area.
- C. Maintenance of clean conditions while work is in progress and cleanup when work is completed shall be in strict accordance with the "General Conditions" of this contract.

**1.7 FIRE PROTECTION DURING CONSTRUCTION**

- A. Follow all requirements established by the building owner.

**END OF DOCUMENT 00 1000**



**PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5**

**ADVERTISEMENT FOR BIDS  
00 1113 - 1  
4/18/2023**

**SECTION 00 1113 - ADVERTISEMENT FOR BIDS**

Notice is hereby given that bids will be received via sealed bid to:

By: City of Muskegon  
Att: Ann Meisch  
933 Terrace St  
Muskegon, MI 49440  
**Bids must be received no later than 2:00 p.m., May 9, 2023**

For: City of Muskegon – Roof Replacement  
Project: City Hall & Fire Station #5

Bids will be received and publicly opened and read at the City of Muskegon – City Hall, 933 Terrace Street, Muskegon, MI 49440.

All work for the complete construction of the Project will be under one prime contract.

Project Description: Roof replacement at City Hall and Roof Retrofit at Fire Station #5

Bid Documents will be available on the City of Muskegon's website or Electronic PDF Copies can be obtained directly from the owner's representative directly Att: TJ Morris [tmorris@garlandind.com](mailto:tmorris@garlandind.com)  
All questions shall be emailed to TJ Morris, Owners Representative ([tmorris@garlandind.com](mailto:tmorris@garlandind.com))

As required by State Law (P.A. 232 of 2004), all bids shall be accompanied by the following disclosure statements; Noncollusion Affidavit. Notarized disclosure statements are required for recommendation for Award.

Bidders will be required to provide Bid security in the form of a surety bond, certified check, or cashier's check in the amount of 5 percent of the bid amount. Performance and Payment bonds will be required.

A mandatory pre-bid meeting is required for this project. A scheduled walk-through will be held on April 27, 2023 at 10am starting at City Hall. Interested bidders need to have representation at the posted pre-bid meeting date and time. A 2<sup>nd</sup> walk-through will be available if necessary.

No bids may be withdrawn for a period of 30 days after submission.

The Owner reserves the right to accept or reject any or all bids, alternates, or proposals, and to accept those bids, alternates, or proposals that, in their judgment, serve the Cities best interests.

**END OF DOCUMENT 00 1113**

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## **SECTION 00 2113 - INSTRUCTIONS TO BIDDERS**

### **FORM OF INSTRUCTIONS TO BIDDERS**

See AIA Document A701 (1997 Edition), Instructions to Bidders, issued by the American Institute of Architects. It is an integral part of the Bidding Documents but is not bound in the Project Manual. Refer to this document for pertinent information. Failure to consult this document shall not relieve the Bidder of its obligations therein. Copies of this document may be viewed at the office of the Architect, and may be purchased at the following location:

AIA Michigan  
4219 Woodward Avenue  
Detroit, MI 48201  
(313) 965-4100

The instructions in this document amend or supplement the Instructions to Bidders and other provisions of the Bidding and Contract Documents. Where any Article of the Instructions to Bidders is modified, or any paragraph, sub-paragraph or clause thereof is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, sub-paragraph, or clause shall remain in effect.

### **ARTICLE 1 – DEFINITIONS**

Make the following revisions to paragraph 1.1:

- 1.1 In the first and second sentences, replace the phrase "Bidding Requirements" with the phrase "Procurement Requirements." In the second sentence replace the words "and contract forms" with the word "forms." In the third sentence, after the words replace the words "Conditions of the Contract" with the words "contracting forms, Conditions of the Contract."

### **ARTICLE 2 – BIDDER'S REPRESENTATIONS**

Add the following clause 2.1.3.1 to subparagraph 2.1.3:

- .1 The Bidder has investigated all required fees, permits, and regulatory requirements of authorities having jurisdiction (State of Michigan Bureau of Construction Codes) and has properly included in the submitted bid the cost of such fees, permits, and requirements not otherwise indicated as provided by Owner.

### **ARTICLE 3 – BIDDING DOCUMENTS**

#### **3.3 SUBSTITUTIONS**

Add the following Sub-paragraph 3.3.5:

- 3.3.5 Voluntary alternates shall be presented on the Bidder's letterhead, together with the amount to be deducted from, or added to, his proposal. The Owner may accept or reject such voluntary alternates based upon his best judgement of value.

## **ARTICLE 4 – BIDDING PROCEDURE**

### **4.1 PREPARATION OF BIDS**

Add the following clause 4.1.1.1 to subparagraph 4.1.1:

- .1 Submit two fully executed copies of the bid, including all required attachments.

Add the following Subparagraph 4.1.8:

- 4.1.8 The Bid shall include unit prices when called for by the Procurement and Contracting Documents. Owner may elect to consider unit prices in the determination of award. Unit prices will be incorporated into the Contract.

### **4.2 BID SECURITY**

Omit the last sentence of Subparagraph 4.2.1.

Add the following Subparagraph 4.2.4:

- 4.2.4 Bid security equal to 5 percent of the bid shall be provided in the form of a surety bond, certified check, or cashier's check made payable to the Owner.

### **4.4 MODIFICATION OR WITHDRAWAL OF BID**

Add the following clauses to Subparagraph 4.4.2:

- .1 Such modifications to or withdrawal of a bid may only be made by persons authorized to act on behalf of the Bidder. Authorized persons are those so identified in the Bidder's corporate bylaws, specifically empowered by the Bidder's charter or similar legally binding document acceptable to Owner, or by a power of attorney, signed and dated, describing the scope and limitations of the power of attorney. Make such documentation available to Owner at the time of seeking modifications or withdrawal of the Bid.
- .2 Owner will consider modifications to a bid written on the sealed bid envelope by authorized persons when such modifications comply with the following: the modification is indicated by a percent or stated amount to be added to or deducted from the Bid; the amount of the Bid itself is not made known by the modification; a signature of the authorized person, along with the time and date of the modification, accompanies the modification. Completion of an unsealed bid form, awaiting final figures from the Bidder, does not require power of attorney due to the evidenced authorization of the Bidder implied by the circumstance of the completion and delivery of the Bid.

## **ARTICLE 5 – CONSIDERATION OF BIDS**

Add the following subparagraph 5.2.1 to paragraph 5.1:

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

jurisdiction, record of and number of current claims and disputes and the status of their resolution, and qualifications of the Bidder's proposed Project staff and proposed subcontractors.

## **ARTICLE 6 – POST BID INFORMATION**

### **6.2 OWNER'S FINANCIAL CAPABILITY**

Omit Paragraph 6.2.

### **6.3 SUBMITTALS**

Replace Subparagraph 6.3.1 with the following:

- 6.3.1 All bidders whose bid is under consideration shall submit, within 48 hours of bid opening, a Schedule of Values listing all subcontractors proposed for the Work and the following:
- .1 A designation of the Work to be performed with the Bidder's own forces.
  - .2 Names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work.

## **ARTICLE 7 – PERFORMANCE BOND AND PAYMENT BOND**

### **7.1 BOND REQUIREMENTS**

Add the following Subparagraph 7.1.4:

- 7.1.4 Performance and Payment Bonds in the amount of 100 percent of the Contract amount will be required.

## **ARTICLE 9 – ADDITIONAL ITEMS**

### **9.1 EXECUTION OF THE CONTRACT**

- 9.1.1 Subsequent to the Notice of Intent to Award, and within ten 10 days after the prescribed Form of Agreement is presented to the Awardee for signature, the Awardee shall execute and deliver the Agreement to Owner throughin such number of counterparts as Owner may require.
- 9.1.2 Owner may deem as a default the failure of the Awardee to execute the Contract and to supply the required bonds when the Agreement is presented for signature within the period of time allowed.
- 9.1.3 Unless otherwise indicated in the Procurement and Contracting Documents or the executed Agreement, the date of commencement of the Work shall be the date of the executed Agreement

### **9.2 PRE-BID MEETING**

A mandatory pre-bid meeting is required for this project. All bidders must be pre-approved by the Garland Company.

**END OF DOCUMENT 00 2113**

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**PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5**

**BID FORM  
00 4100 - 1  
4/18/2023**

**SECTION 00 4100 - BID FORM**

**THE PROJECT AND THE PARTIES:**

TO: City of Muskegon (the Owner)  
933 Terrace St.  
Muskegon, MI 49440

FOR: 2023 Roof Projects

DATE: \_\_\_\_\_(Bidder to enter date)

SUBMITTED BY: (Bidder to enter name and address)

Bidders Full Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, and Zip \_\_\_\_\_

Phone Number \_\_\_\_\_

Email address \_\_\_\_\_

**OFFER: City Hall**

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Tower Pinkster Titus Associates for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
in lawful money of the United States of America.

- ☐ We have included the required security as required by the Instruction to Bidders.
- ☐ All applicable taxes are included in the Bid Sum.
- ☐ Fully executed Document 00 4519 – Noncollusion Affidavit is attached.

**OFFER: Fire Station #5**

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Tower Pinkster Titus Associates for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
in lawful money of the United States of America.

- ☐ We have included the required security as required by the Instruction to Bidders.
- ☐ All applicable taxes are included in the Bid Sum.
- ☐ Fully executed Document 00 4519 – Noncollusion Affidavit is attached.

**PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5**

**BID FORM  
00 4100 - 2  
4/18/2023**

**ACCEPTANCE**

This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date. If this bid is accepted by the Owner within the time period stated above, we will:

Execute the Agreement within seven days of receipt of Notice of Award.  
Furnish the required bonds within seven days of receipt of Notice of Award.  
Commence work within seven days after written Notice to Proceed of this bid.

If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

**CONTRACT TIME**

If this Bid is accepted, work can begin as soon as:  
July 15,2023.

Work shall be completed by:  
June 30,2023.

**ALTERNATES**

Alternate No. 1 – City Hall – Section E Only

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
(circle one)

Alternate No. 2 – City Hall – Section B & C Only

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
(circle one)

**ADDENDA**

The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

\_\_\_\_\_

**PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5**

**BID FORM  
00 4100 - 3  
4/18/2023**

**U.S. Communities / OMNIA Government Purchasing Alliance**

It is the intent of Otsego Public Schools ("Agency") to purchase materials for the 2023 Roof Replacement at City Hall and Fire Station #5 ("Project") located at 933 Terrace St. Muskegon, MI 49440 and 1477 Marquette Ave. Muskegon, MI 49442 directly from Garland Inc., based upon the Agency's participation in the U.S. Communities / OMNIA Government Purchasing Alliance's program for Roofing Supplies and Related Products and Services, as priced by and awarded to Garland/DBS, Inc., resulting from the competitively solicited Sealed Bid # PW1925 issued by the Racine County Board of Commissioners.

The district has agreed to purchase the below breakdown of materials direct. Per the agreement, if the contractor needs additional material, it will be solely the contractor's responsibility and should be included in their Labor bid.

Below is a Garland breakdown of the materials that will be purchased as part of the OMNIA Partners / US Communities contract per building:

<b>Material</b>	<b>Quantity</b>	<b>Coverage</b>	<b>Supplied</b>
City Hall (Section E)			
Garla-Prime	5 gallon bucket	.5 gal / 100 SF	9
Ultra-Shield Torch Base (Vapor Barrier)	Roll	100 sqft	92
HPR Torch Base	roll	100 sqft	100
StressPly IV Mineral	roll	75 sqft	130
Silver Flash	5 gallon bucket	7-8 Inft/gallon	5
GarMesh - 6"	roll	150 ft	2
LiquiTec	4.5 gallon bucket	2 gal/sq	22
City Hall (Section B&C)			
Garla-Prime	5 gallon bucket	.5 gal / 100 SF	7
Ultra-Shield Torch Base (Vapor Barrier)			66
HPR Torch Base	roll	100 sqft	70
StressPly IV Mineral	roll	75 sqft	95
Silver Flash	5 gallon bucket	7-8 Inft/gallon	5
GarMesh - 6"	roll	150 ft	2
Fire Station #5			
HPR Torch Base	roll	100 sqft	35
StressPly IV Mineral	roll	75 sqft	45
Silver Flash	5 gallon bucket	7-8 Inft/gallon	3
GarMesh - 6"	roll	150 ft	1

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BID FORM  
00 4100 - 4  
4/18/2023

### BID FORM SUPPLEMENTS

We agree to submit the following Supplements to Bid Forms if requested by the Architect within 48 hours after submission of this bid for additional bid information:

Schedule of Values: Include the names of all Subcontractors BID FORM SIGNATURE(S)

The Corporate Seal of

.....

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

.....

(Authorized signing officer, Title)

(Seal)

.....

(Authorized signing officer, Title)

IF THE BID IS A JOINT VENTURE OR PARTNERSHIP ADD ADDITIONAL FORMS OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE APPROPRIATE FORM OR FORMS AS ABOVE.

**END OF DOCUMENT 00 4100**

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PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5

FAMILIAL STATEMENT OF DISCLOSURE  
00 4518 - 1  
4/18/2023

**SECTION 00 4518 - FAMILIAL STATEMENT OF DISCLOSURE**

**THE PROJECT AND THE PARTIES:**

TO: The City of Muskegon

FOR: 2023 Roof Projects

SUBMITTED BY: (Bidder to enter name)

Bidder's Full Name \_\_\_\_\_

**REPRESENTATION**

Affiant, "the Bidder," has personal knowledge of the matters set forth in this Affidavit, is competent to testify about them, and being first duly sworn, deposes and says that:

1. No officer or employee of the Owner is personally or financially interested, directly or indirectly, in the Bid, or any Contract which may be under it, or in the purchase or sale of any materials, equipment or supplies for the Work to which it relates, or any portion of any expected profits thereto. In compliance with Michigan Public Act 232 of 2004, any familial relationship that exists between the Owner or any employee of the Bidder and any member of the Owner's Board of Directors is disclosed below. If no familial relationship exists, write "none."

\_\_\_\_\_  
\_\_\_\_\_

2. The Bid is not intended to secure an unfair advantage or benefit from the Owner or in favor of any person interested in the proposed Contract.

By:

.....  
(Authorized signing officer, Title)

PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5

FAMILIAL STATEMENT OF DISCLOSURE  
00 4518 - 2  
4/18/2023

**VERIFICATION**

STATE OF MICHIGAN

COUNTY OF \_\_\_\_\_

Before me, a Notary Public commissioned, qualified and acting, personally appeared (enter name of the person signing this Affidavit) \_\_\_\_\_ to me well known to be the person described in and who signed this Noncollusion Affidavit, who being by me first duly sworn upon oath, says that he/she is the Attorney-in-Fact for (enter Bidder's name) \_\_\_\_\_ -

\_\_\_\_\_, that he/she has been authorized by  
(enter name of individual, partnership name, or the authorized governing body of the Bidder)  
\_\_\_\_\_ to execute this Noncollusion Affidavit on behalf of the named Bidder in  
favor of the Owner, for the uses and purposes mentioned.

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

\_\_\_\_\_  
Notary Public, State of Michigan

My Commission expires: \_\_\_\_\_, 20\_\_\_\_\_

**END OF DOCUMENT 00 4518**

SECTION 00 4519 - NONCOLLUSION AFFIDAVIT

THE PROJECT AND THE PARTIES:

TO: The City of Muskegon

FOR: 2023 Roofing Projects

SUBMITTED BY: (Bidder to enter name)

Bidder's Full Name \_\_\_\_\_

REPRESENTATION

Affiant, "the Bidder," has personal knowledge of the matters set forth in this Affidavit, is competent to testify about them, and being first duly sworn, deposes and says that:

1. The Bidder has submitted to the Owner a "Bid" to enter into the above referenced Contract, also referred to in this Affidavit as "the Work."
2. This Noncollusion Affidavit is executed by Affiant for inclusion with the submission to the Owner of the Bid and may be relied upon by the Owner in considering the Bid.
3. Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid, has not entered into any contract, combination, conspiracy or other act prohibited by federal, State or any other local Law. The Bid is genuine and is not a collusive or sham Bid.
4. Neither the Bidder nor any of the Bidder's owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix any prices (including overhead, profit or other costs) for the Bid; or have made any agreement, or given or promised any consideration to induce any other person not to Bid for the Work, or to Bid at a specified price; or have secured, proposed or intended to secure through any agreement an unlawful advantage against the Owner or any other person interested in the Work.
5. No officer or employee of the Owner is personally or financially interested, directly or indirectly, in the Bid, or any Contract which may be under it, or in the purchase or sale of any materials, equipment or supplies for the Work to which it relates, or any portion of any expected profits thereto. In compliance with Michigan Public Act 232 of 2004, any familial relationship that exists between the Owner or any employee of the Bidder and any member of the Owner's Board of Directors is disclosed below. If no familial relationship exists, write "none."

- 
- 
6. The Bid is not intended to secure an unfair advantage or benefit from the Owner or in favor of any person interested in the proposed Contract.
  7. The prices bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any other of the Bidder's owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant; and neither the Bidder nor any of its owners, officers, partners, directors, agents, representatives, employees or parties in interest, including this Affiant, have divulged any information regarding the Bid or any data about the Bid to any other person.



PROJECT NO.  
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CITY HALL & FIRE STATION #5

NONCOLLUSION AFFIDAVIT  
00 4519 - 2  
12/02/2022

By:

.....  
(Authorized signing officer, Title)

## VERIFICATION

STATE OF MICHIGAN

COUNTY OF \_\_\_\_\_

Before me, a Notary Public commissioned, qualified and acting, personally appeared (enter name of the person signing this Affidavit) \_\_\_\_\_ to me well known to be the person described in and who signed this Noncollusion Affidavit, who being by me first duly sworn upon oath, says that he/she is the Attorney-in-Fact for (enter Bidder's name) \_\_\_\_\_ -

\_\_\_\_\_, that he/she has been authorized by  
(enter name of individual, partnership name, or the authorized governing body of the Bidder)  
\_\_\_\_\_ to execute this Noncollusion Affidavit on behalf of the named Bidder in  
favor of the Owner, for the uses and purposes mentioned.

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

\_\_\_\_\_  
Notary Public, State of Michigan

My Commission expires: \_\_\_\_\_, 20\_\_\_\_\_

END OF DOCUMENT 00 4519

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**SECTION 00 6325 - SUBSTITUTION DURING CONSTRUCTION REQUEST FORM**

**INTRODUCTORY INFORMATION**

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

Requesting substitution of \_\_\_\_\_

As specified in Section \_\_\_\_\_

Requested Substitute Product: \_\_\_\_\_

**SUBMITTING PARTY'S STATEMENT**

Circle "Y" for yes and "N" for no for each of the following statements and submit supporting data. Indicate impact for all statements below answered as no, with supporting data:

- [Y] [N] Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- [Y] [N] Requested substitution does not require extensive revisions to the Contract Documents.
- [Y] [N] Requested substitution is consistent with the Contract Documents and will produce indicated results.
- [Y] [N] Substitution request is fully documented and properly submitted in accordance with "Product Substitution" and "Submittals" Articles in Division 01 Section "Product Requirements."
- [Y] [N] Requested substitution will not adversely affect Contractor's Construction Schedule.
- [Y] [N] Requested substitution has received necessary approvals of authorities having jurisdiction.
- [Y] [N] Requested substitution is compatible with other portions of the Work.
- [Y] [N] Requested substitution has been coordinated with other portions of the Work.
- [Y] [N] Requested substitution provides specified warranty.

I hereby certify that the above statements are true.

\_\_\_\_\_  
Submitter's signature

**CONTRACTOR'S STATEMENT**

I have reviewed this substitution request and am in agreement with the information presented and statements made. This proposal is complete, and there will be no further charges to the Owner as a result of the acceptance of this substitution.

\_\_\_\_\_  
Contractor's signature

**END OF DOCUMENT 00 6325**

**PROJECT NO.**  
**CITY OF MUSKEGON – ROOF REPLACEMENT**  
**CITY HALL & FIRE STATION #5**

**SUBSTITUTION DURING CONSTRUCTION REQUEST FORM**

**00 6325 – 1**  
**4/18/2023**

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**PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5**

**GENERAL CONDITIONS  
00 7200 - 1  
4/18/2023**

## **SECTION 00 7200 - GENERAL CONDITIONS**

### **FORM OF GENERAL CONDITIONS**

AIA Document A201, General Conditions of the Contract for Construction, 2007 Edition, is the General Conditions between the Owner and Contractor.

Refer to this document for pertinent information. Failure to consult this document shall not relieve the contractor of his obligations therein. Copies of this document may be viewed at the office of the Architect, and may be purchased at the following location:

AIA Michigan  
4219 Woodward Avenue  
Detroit, MI 48201  
(313) 965-4100

### **SUPPLEMENTARY CONDITIONS**

Refer to Document 00 7300 for amendments to these General Conditions.

**END OF DOCUMENT 00 7200**

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## SECTION 00 7300 - SUPPLEMENTARY CONDITIONS

### INTENT

These Supplementary Conditions amend and supplement the General Conditions AIA A201 - 2007 defined in Document 00 7200 and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

### MODIFICATIONS TO AIA A 201

#### ARTICLE 1 – GENERAL PROVISIONS

##### 1.1 BASIC DEFINITIONS

Make the following changes to subparagraph 1.1.1:

- 1.1.1 In the first sentence, replace the phrase "Conditions of the Contract" with the phrase "Contracting Requirements."

Add the following paragraph 1.1.9:

- 1.1.9 The Project Manual is a volume assembled for the Work which may include Procurement Requirements, Contracting Requirements, and Specifications.

##### 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following clause to Subparagraph 1.2.1

- .1 Indicated results shall include those that can be reasonably inferred from the Contract Documents, whether expressly stated or not.

Add the following subparagraph to Paragraph 1.2:

- 1.2.4: In the case of an inconsistency between Drawings and Specifications, or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation.

#### ARTICLE 3 – CONTRACTOR

##### 3.4 LABOR AND MATERIALS

Add the following subparagraphs to Paragraph 3.4:

- 3.4.4 : After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements of the Specifications (Division 01).

- 3.4.5 : By making requests for substitutions based on Subparagraph 3.4.4 above, the Contractor:
- .1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
  - .2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
  - .3 certifies that the cost data presented is complete and includes all related costs under this Contract but excludes costs under separate Contracts, and excludes the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and
  - .4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- 3.4.6 : Not later than 30 days from the Contract Date, the Contractor shall provide a list showing the name of the manufacturer proposed to be used for each of the principle products called for in the Specifications, and where applicable, the name of the installing Subcontractor.
- .1 The Architect will promptly reply in writing to the Contractor stating whether the Owner or the Architect, after due investigation, has reasonable objection to any such proposal. If adequate data on any proposed manufacturer or installer is not available, the Architect may state that action will be deferred until the Contractor provides further data. Failure of the Owner or the Architect to reply promptly shall constitute notice of no reasonable objection. Failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the Contract Documents, and all products furnished by the listed manufacturer must conform to such requirements.
- 3.4.7 : The Owner's cost for Architect's services, at Architect's normal billing rates, for review of substitution requests shall be deducted from the Contract Amount regardless of Architect's recommendation of acceptance or rejection of the substitution.

### 3.6 TAXES

Add the following subparagraph to Paragraph 3.6:

- 3.6.2: The Owner is a nonprofit corporation and therefore is exempt from State Sales and Use Tax and Federal Excise Taxes. However, the Contractor is responsible for the payment of any tax obligation it may incur in connection with the Work of this Project.

### 3.12 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

Add the following subparagraph 3.12.11 to Paragraph 3.12:

- 3.12.11: The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

### 3.18 INDEMNIFICATION

Make the following changes in Subparagraph 3.18.1:

- 3.18.1 : In the first sentence, after the words ". . . or resulting from", insert the words "or in connection with". After the words "damage, loss or expense is", delete the phrase beginning with "attributable to . . ." and ending



with ". . . regardless of whether or not such claim, damage, loss or expense is". In the second sentence, after the words ". . . of indemnity", insert the words "or contribution".

Add the following subparagraphs to Paragraph 3.18:

- 3.18.3 "Claims, damages, losses and expenses" as these words are used in this agreement shall be construed to include, but not be limited to (1) injury or damage consequent upon the failure of or use or misuse by the Contractor, his subcontractors, agents, servants or employees, of any hoist, rigging, blocking, scaffolding, or any and all other kinds of items of equipment, whether or not the same be owned, furnished or loaned by the Owner; and (2) all attorney's fees and costs incurred in bringing an action to enforce the provisions of this indemnity or any other indemnity contained in the General Conditions, as modified by the Supplementary Conditions.
- 3.18.4: Only to the extent prohibited by law, the obligations of the Contractor under this agreement shall not extend to the liability of the Owner, Architect, their agents or employees, arising out of their negligence.

#### **ARTICLE 4 – ARCHITECT**

##### **4.1 GENERAL**

Add the following clause to subparagraph 4.1.1:

- .1: The terms Owner and Owner's Representative as defined here and used in the Contract Documents shall mean City of Muskegon and The Garland Company.

#### **ARTICLE 7 – CHANGES IN THE WORK**

##### **7.2 CHANGE ORDERS**

Add the following Subparagraph 7.2.2:

7.2.2 : Adjustments to the Contract Sum shall be based on the Contractor's direct cost plus overhead and profit.

7.2.3 : Contractor's direct cost shall be determined in accordance with Subparagraph 7.3.6.

- .1: All proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving more than \$100.00 be approved without such itemization.

7.2.4 : Combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

- .1: For the Contractor, for Work performed by the Contractor's own forces, 15 percent of the cost.
- .2: For the Contractor, for Work performed by the Contractor's Subcontractor, 5 percent of the amount due to the Subcontractor.
- .3: For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor or Sub-subcontractor's own forces, 15 percent of the cost.
- .4: For each Subcontractor, for Work performed by the Subcontractor's Sub-subcontractor's, 5 percent of the amount due to the Sub subcontractor.

## **ARTICLE 9 – PAYMENTS AND COMPLETION**

### **9.3 APPLICATIONS FOR PAYMENT**

Add the following Clauses 9.3.1.3 and 9.3.1.4 to Subparagraph 9.3.1 of 9.3:

- .3 Until the Work is 50 percent complete, the Owner will pay 90 percent of the amount due the Contractor on account of progress payments. At the time the work is 50 percent complete and thereafter, if the manner of completion of the Work and its progress are and remain satisfactory to the Architect and in the absence of other good and sufficient reasons, the Architect will (on presentation by the Contractor of Consent of Surety for each application) authorize any remaining partial payments to be paid in full.
- .4 The full Contract retainage may be reinstated if the manner of completion of the Work and its progress do not remain satisfactory to the Architect (or if the Surety withholds its consent) or for other good and sufficient reasons.

Add the following Clause 9.3.1.3 to Subparagraph 9.3.1 of 9.3:

- .3 Until the Work is Substantially Complete, the Owner will pay 90 percent of the amount due the Contractor on account of progress payments.

## **ARTICLE 11 – INSURANCE AND BONDS**

### **11.1 CONTRACTOR'S LIABILITY INSURANCE**

Add the following Clauses 11.1.1.9 and 11.1.1.10 to 11.1.1:

- .9 Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:
  - A. Premises Operations (including X, C, and U coverages as applicable).

- B. Independent Contractor Protective.
  - C. Products and Completed Operations.
  - D. Personal Injury.
  - E. Contractual, including specified provision for Contractor's obligation under Par. 3.18.
  - F. Owned, non-owned and hired motor vehicles.
  - G. Broad Form Property Damage including Completed Operations.
- .10 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverage required to be maintained after final payment, certified in accordance with Subparagraph 9.10.2.

Add the following Clause 11.1.2.1 to 11.1.2:

- .1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following, or greater if required by law:
- A. Commercial General Liability (including Premises-Operations; Independent Contractor's Protective; Products and Completed Operations; Broad Form Property Damage):
    - 1) General Aggregate (Applied in total to this Project only) \$2,000,000.00
    - 2) Bodily Injury:
      - a. Each Occurrence \$1,000,000.00
    - 3) Products and Completed Operation to be maintained for one Year after final payment, aggregate \$2,000,000.00
    - 4) Personal Injury \$1,000,000.00
    - 5) Fire Damage (Any one fire) \$100,000.00
    - 6) Medical Expense (Any one person) \$5,000.00
    - 7) Property Damage Liability Insurance shall provide X, C, and U coverage.
    - 8) Broad Form Property Damage Coverage shall include Completed Operations.
  - B. Business Auto Liability on Combined Single Limit or Occurrence Basis d (including owned, non-owned and hired vehicles):
    - 1) Combined Single Limit Basis \$1,000,000.00
  - C. Umbrella Excess Liability:
    - 1) Each Occurrence \$5,000,000.00
    - 2) Aggregate \$5,000,000.00
  - D. Worker's Compensation:
    - 1) State Statutory
    - 2) Applicable Federal Statutory
    - 3) Employer Liability:
      - a. Each Accident \$500,000.00
      - b. Disease - Policy Limit: \$500,000.00

c. Disease - Each Employee: \$500,000.00

### 11.3 PROPERTY INSURANCE

Delete Clause 11.3.1.4 and substitute the following:

- .4 The Contractor shall provide insurance coverage for portions of the Work stored off the site or in transit, after written approval of the Owner, at the value established in the approval when such portions of the Work are included in an Application for Payment under Subparagraph 9.3.2.

### 11.4 PERFORMANCE BOND AND PAYMENT BOND

Add the following Subparagraph 11.4.3:

11.4.3 : The bond value requirements are as follows:

- .1 Provide a 100 percent Performance Bond on AIA A312.
- .2 Provide a 100 percent Payment Bond on AIA A312.
- .3 Deliver bonds within 3 days after execution of the Contract.

Add the following Article 16:

## ARTICLE 16 – EQUAL OPPORTUNITY

### 16.1 CONTRACTOR'S EMPLOYMENT POLICY

16.1.1 The Contractor shall maintain policies of employment as follows:

- .1 The Contractor and its sub-contractors shall not discriminate against any employee or applicant for employment with respect to hire, tenure, terms, conditions or privileges or employment, or any matter directly or indirectly related to employment, because of race, color, religion, sex, national origin, or age. Breach of this covenant will be regarded as a material breach of the Contract.
- .2 The Contractor and all Subcontractors shall in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or age.

END OF DOCUMENT 00 7300

PROJECT NO.  
CITY OF MUSKEGON – ROOF REPLACEMENT  
CITY HALL & FIRE STATION #5

WAGE RATE REQUIREMENTS  
00 7343 - 1  
12/02/2022

**SECTION 00 7343 - WAGE RATE REQUIREMENTS**

**PREVAILING WAGE REQUIREMENTS**

Payment of a minimum of the prevailing wage rate is not a requirement of this project.

**END OF DOCUMENT 00 7343**

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**SECTION 01 2300 - ALTERNATES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

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

**1.2 DEFINITIONS**

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

**1.3 PROCEDURES**

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

**SCHEDULE OF ALTERNATES**

- D. Alternate No. 1: – None

The drill and fill procedure shown for the SIPS panel joints is not a part of base-bid. If Alternate No. 1 is accepted, provide the drill and fill procedure shown.

**END OF SECTION 01 2300**

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**SECTION 01 4333 MANUFACTURERS FIELD SERVICES**

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 07 Specification Sections apply to this Section.

**1.3 REFERENCES**

- A. International building Code (current edition) or local authority building code.
- B. American Society of Civil Engineers (ASCE): ASCE 7, Minimum Design Loads for Buildings and Other Structures.
- C. Factory Mutual Global (FMG): Roof Assembly Classifications.
- D. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- E. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI): ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal.

**1.4 SUBMITTALS FOR REVIEW**

- A. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- B. Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.
- C. Roofing System Manufacturer's Evaluation: Provide a comprehensive written assessment comparing available roofing solutions with validation of why the roofing system selection for the specific project is suitable and appropriate.
- D. Roofing System Manufacturer's Report Form: Provide a copy of the report form utilized by the roofing system manufacturer for progress inspections to monitor installation and quality.
- E. Online Reporting Capabilities: Provide a sample of the roofing system manufacturer's online roof inspection report as well as information about how long inspection reports are available to owner.

**1.5 SUBMITTALS FOR INFORMATION**

- A. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- B. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual Global, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class [A or B or C] for external fire and meets local or nationally recognized building codes.
- C. Manufacturer's Certificate: Certify that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- D. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- E. Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.
- F. Design Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7, Method 2 for Components and Cladding. In no case shall the design loads be taken to be less than those detailed in Design and Performance Criteria article of this specification.
- G. Qualification data for firms and individuals identified in Quality Assurance Article below.
- H. Test Reports: Submit ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal Products.
- I. Substitutions: Products proposed as equal to the products specified for this project shall meet all of the requirements in the appropriate Division 7 specifications and shall be submitted for consideration at least 7 days prior to the date that bids must be submitted.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification Section. That specification Section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
  - 2. Manufacturer's checklist will be accompanied with any substitution to verify equal performance characteristics to those specified in Division 7 specification.
  - 3. The Owner's decision regarding substitutions will be considered final.

**1.6 CONTRACT CLOSEOUT SUBMITTALS**

- A. Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.

- B. Roofing Maintenance Instructions: Provide a roof care and maintenance manual of manufacturer's recommendations for maintenance of installed roofing systems.
- C. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.
- D. Inspection Logs: Copy of inspection reports as performed by the manufacturer shall be submitted at project closeout and include photographic documentation of installation progress, weather conditions, and personnel on the project at the time of every inspection.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with not less than [12] years documented experience [and have ISO 9001 certification].
- B. Installer Qualifications: Company specializing in specified roofing installation with not less than [5] years experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Maintain proper supervision of workmen.
- D. Maintain a copy of the roof plans, details, and specifications in the possession of the Supervisor/Foreman and on the roof at all times.
- E. Source Limitations: Obtain all primary components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
  - 1. The manufacturer providing the roofing system warranty must verify that they manufacture a minimum of 75% of the products utilized in the roofing system of this project. Products that are private labeled shall not be considered as manufactured by the roofing system supplier.
  - 2. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- F. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001.

#### 1.8 PRE-INSTALLATION CONFERENCE

- A. Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of roofing system installation and associated work.

- B. Require attendance of installer of each component of associated work: installers of deck or substrate construction to receive roofing work: installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work if any): architect and/or engineer: owner: roofing system manufacturer's full time employee: and other representatives directly concerned with performance of the Work, including (where applicable) owner's insurers, testing agencies and governing authorities. Objectives of conference include:
1. Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
  2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
  3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
  4. Review roofing system requirements (drawings, specifications and other contract documents).
  5. Review required submittals both completed and yet to be completed.
  6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
  7. Review required inspection, testing, certifying and material usage accounting procedures.
  8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).
  9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish a copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
- C. The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
- D. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved to the satisfaction of the owner and [architect and/or engineer] of record. This shall not be construed as interference with the progress of Work on the part of the owner or [architect or engineer] of Record.

#### 1.9 MANUFACTURER'S INSPECTIONS

- A. When the Project is in progress, a full-time employee of the roofing system manufacturer must provide the following:
1. Report progress and quality of the work as observed. Progress reports must be published to an online system as referenced in Section 1.4.
  2. Provide periodic (3 days per week) roofing installation inspections: Inspections must include; photographic documentation of work in-progress and written statements of compliance with details/shop drawings.
  3. Report to the owner, architect and/or engineer in writing any failure or refusal of the contractor to correct unacceptable practices called to the contractor's attention.
  4. Confirm after project completion that the manufacturer has observed no application procedures in conflict with the specifications other than those that may have been previously reported and corrected.

#### 1.10 WARRANTY

- A. Upon completion of installation, and acceptance by the owner and architect and/or engineer, the manufacturer will supply to the owner the specified warranty.

**PROJECT NO.**  
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**CITY HALL & FIRE STATION #5**

**MANUFACTURERS FIELD SERVICES**  
**01 4333 - 5**  
**4/18/2023**

- B. Installer will submit a two (2)- year workmanship warranty to the membrane manufacturer with a copy directly to the owner.
- C. The roofing system manufacturer must have been in continuous business operation for a period of time at least as long as the length of the roof system warranty provided for this project.

**1.11 DESIGN AND PERFORMANCE CRITERIA**

- A. Uniform Wind Uplift Load Capacity
  - a. Wind Uplift Calculations will be provided at Pre-Bid Meeting

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

**3.1 EXECUTION, GENERAL**

- A. Comply with requirements of related Division 07 Section.

**3.2 GENERAL INSTALLATION REQUIREMENTS**

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.

**3.3 FIELD QUALITY CONTROL**

- A. Roofing Manufacturer Representative shall perform field inspection as specified in Article titled: MANUFACTURER'S INSPECTIONS above. Inspections must include photographic documentation of installation progress, weather conditions, and personnel on the project at the time of inspection.
- B. Correct defects or irregularities discovered during field inspection. Issues deemed defective must be re-inspected and determined suitable by the roofing manufacturer.
- C. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system. A copy of the specification shall also be on site at all times.
- D. Frequent progress meetings shall be conducted during the performance of roof system installation and must be attended by the owner, architect or engineer, roofing system manufacturer's full time employee, and other representatives directly concerned with performance of the work.

**3.4 FINAL INSPECTION**

- A. At the completion of the roofing installation and associated work, meet with contractor, architect or engineer, installer, installer of associated work, owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Notify the [contractor] [architect and/or engineer] [owner] upon completion of corrections.
- D. The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the roofing contractor.
- E. If core cuts verify the presence of damp or wet materials, the roofing contractor shall be required to replace the damaged areas at his own expense.
- F. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- G. Immediately correct roof leakage during construction. If the contractor does not respond within twenty four (24) hours, the owner may exercise right to correct the Work under the terms of the Conditions of the Contract.

**END OF SECTION 01 4333**

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**SECTION 01 7300 - EXECUTION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

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

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.

- B. Related Requirements:

1. Division 01 Section "Summary" for limits on use of Project site.
2. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

**1.2 INFORMATIONAL SUBMITTALS**

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

**1.3 QUALITY ASSURANCE**

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
  2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.



3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

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

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish limits on use of Project site.
  - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 4. Inform installers of lines and levels to which they must comply.
  - 5. Check the location, level and plumb, of every major element as the Work progresses.
    - a. Include footings, foundations, anchor bolts, and similar items.
  - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each

survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

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2. Allow for building movement, including thermal expansion and contraction.
  3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

**3.6 CUTTING AND PATCHING**

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching of the material being cut and patched. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  3. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  5. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### 3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
  3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
  2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

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- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

**3.8 STARTING AND ADJUSTING**

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "General Commissioning Requirements."
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

**3.9 PROTECTION OF INSTALLED CONSTRUCTION**

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 01 7300**

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**SECTION 02 4119 - SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of site, building or structure.
2. Salvage of existing items to be reused or recycled.

B. Related Requirements:

1. Division 01 Section "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Division 01 Section "Execution" for cutting and patching procedures.

1.2 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 Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. 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.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.



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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.

- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Predemolition Photographs or Video: Submit before Work begins.
- F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

**1.5 CLOSEOUT SUBMITTALS**

- A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

**1.6 FIELD CONDITIONS**

- A. Owner will occupy portions of building immediately adjacent to 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 Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.
  2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. 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.

**1.7 WARRANTY**

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

**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.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. 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 Architect.
- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
  - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes, and templates as appropriate.

**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 Division 01 Section "Summary."
  - 2. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- 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. Arrange to shut off indicated utilities with utility companies.

2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

### 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. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

### 3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Maintain adequate ventilation when using cutting torches.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Related Items: Removal of a component includes the removal of associated items. Removal of a wall or ceiling includes all items mounted to that wall or ceiling.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.

**B. Removed and Salvaged Items:**

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

**C. Removed and Reinstalled Items:**

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

**D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.**

**3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS**

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Only remove or demolish materials that can be returned to a watertight condition before the end of the work day or in advance of pending weather events.

**3.6 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, 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 chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- 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 06 1000 - ROUGH CARPENTRY**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Wood blocking and nailers.
3. Wood furring.
4. Wood sleepers.

1.2 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.
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.

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Shear panels.
5. Power-driven fasteners.
6. Post-installed anchors.
7. Metal framing anchors.

**1.4 QUALITY ASSURANCE**

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

**1.5 DELIVERY, STORAGE, AND HANDLING**

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

**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, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
  - 1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

**2.2 WOOD-PRESERVATIVE-TREATED LUMBER**

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.



D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

## 2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
1. Treatment shall not promote corrosion of metal fasteners.
  2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings, and the following:
1. Plywood backing panels.

## 2.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 3 grade.
1. Application: Interior partitions not indicated as load bearing.
  2. Species:
    - a. Southern pine or mixed southern pine; SPIB.
    - b. Northern species; NLGA.
    - c. Eastern softwoods; NeLMA.
    - d. Western woods; WCLIB or WWPA.

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- B. Framing Other Than Non-Load-Bearing Partitions: Any species and grade with a modulus of elasticity of at least 1,100,000 psi (7590 MPa) and an extreme fiber stress in bending of at least for 2-inch nominal (38-mm actual) thickness and 12-inch nominal (286-mm actual) width for single-member use.

1. Application: Framing other than interior partitions not indicated as load-bearing.

- C. Exposed Framing: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot- holes, shake, splits, torn grain, and wane.

1. Species and Grade: As indicated above for load-bearing construction of same type.

**2.5 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. Grounds.

- B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species.

- C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
2. Eastern softwoods; No. 3 Common grade; NeLMA.
3. Northern species; No. 3 Common grade; NLGA.
4. Western woods; Standard or No. 3 Common grade; WCLIB or WWPA.

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

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

- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

**2.6 PLYWOOD BACKING PANELS**

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

**2.7 FASTENERS**

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

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1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC58 as appropriate for the substrate.
  1. Material for Interior Applications: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
  2. Material for Exterior Applications: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

**2.8 MISCELLANEOUS MATERIALS**

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).
- C. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

- F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- G. Do not splice structural members between supports unless otherwise indicated.
- H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
- I. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
  - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
  - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
  - 3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
  - 4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
- J. Sort and select lumber so that natural characteristics do 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.
- K. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- L. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- M. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
  - 2. 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.
  - 3. ICC-ES evaluation report for fastener.
- N. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
  - 1. Comply with approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
  - 2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
  - 3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

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**3.2 PROTECTION**

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

**END OF SECTION 06 1000**

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## SECTION 07 2200 – ROOF DECK AND INSULATION

### PART 1 – GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes roof insulation over the properly prepared deck substrate.

#### 1.3 REFERENCES

- A. American Society for Testing and materials (ASTM):
  1. ASTM A167 Standard Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet and Strip.
  2. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
  3. ASTM B29 Standard Specification for Refined Lead.
  4. ASTM B32 Standard Specification for Solder Metal.
  5. ASTM C165 Standard Test Method for Measuring Compressive Properties of Thermal Insulation.
  6. ASTM C208 Standard Specification for Cellulosic Fiber Insulation Board.
  7. ASTM C209 Standard Test Method for Cellulosic Fiber Insulating Board.
  8. ASTM C272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
  9. ASTM C1396 Standard Specification for Gypsum Wallboard.
  10. ASTM C518 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
  11. ASTM C578 Standard Specification for Perlite Thermal Insulation Board.
  12. ASTM C728 Standard Test Methods for Fire Test of Roof Coverings.
  13. ASTM C1289 Standard Specification for Faced Rigid Polyisocyanurate Thermal Insulation.
  14. ASTM D5 Standard Test Method for Penetration of Bituminous Materials.
  15. ASTM D36 Standard Test Method for Softening Point of Bitumen (Ring and Ball Apparatus).
  16. ASTM D312 Standard Specification for Asphalt Used in Roofing.
  17. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
  18. ASTM D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
  19. ASTM D1622 Standard Test Method for Apparent Density of Rigid Cellular Plastics.
  20. ASTM D1863 Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
  21. ASTM D2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal Humid Aging.
  22. ASTM D2178 Standard Specification for Asphalt Glass Felts used in Roofing and Waterproofing.
  23. ASTM D4601 Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
  24. ASTM D5147 Standard Sampling and Testing Modified Bituminous Sheet Material.
- B. Cast Iron Soil Pipe Institute, Washington, D.C. (CISPI)

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- C. Factory Mutual Research (FM):
  - 1. Roof Assembly Classifications.
- D. National Roofing Contractors Association (NRCA):
  - 1. Roofing and Waterproofing Manual.
- E. Underwriters Laboratories, Inc. (UL):
  - 1. Fire Hazard Classifications.
- F. Warnock Hersey (WH):
  - 1. Fire Hazard Classifications.
- G. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- H. Steel Deck Institute, St. Louis, Missouri (SDI)
- I. Southern Pine Inspection Bureau, Pensacola, Florida (SPIB)
- J. Insulation Board, Polyisocyanurate (FS HH-I-1972)
- K. Insulation Board, Thermal (Fiberboard) (FS LLL-1-535B)

**1.4 SUBMITTALS**

- A. Product Data: Provide manufacturer's specification data sheets for each product in accordance with Division 01 Section Submittal Procedures. 01300.
- B. Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.
- C. Provide a sample of each insulation type.
- D. Shop Drawings
  - 1. Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
  - 2. Shop drawing shall include: Outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.
- E. Certification
  - 1. Submit roof manufacturer's certification that insulation fasteners furnished are acceptable to roof manufacturer.
  - 2. Submit roof manufacturer's certification that insulation furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.



1.5 QUALITY ASSURANCE

- A. Fire Classification, ASTM E-108.
- B. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class [A or B or C] for external fire and meets local or nationally recognized building codes.
- C. Manufacturer's Certificate: Certify that the roof system is adhered properly to meet or exceed the requirements of FM [1-90].
- D. Pre-installation meeting: Refer to Division 07 roofing specifications for pre-installation meeting requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.
- C. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).
- D. Store materials off the ground. Any warped, broken or wet insulation boards shall be removed from the site.

**PART 2 – PRODUCTS**

2.1 PRODUCTS, GENERAL

- A. Refer to Division 01 Section "Common Product Requirements."
- B. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section. That specification section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.

2. Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner's Representative.
3. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
4. The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

## 2.2 INSULATION MATERIALS

1. Tapered Polyisocyanurate Roof Insulation; ASTM C1289:
  - a. Qualities: Factory Tapered, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
  - b. Thickness: Minimum 1/2"
  - c. Average R-Value: Minimum R-30
  - d. Tapered Slope: 1/4"
  - e. Compliances: UL, WH or FM listed under Roofing Systems Federal Specification HH-I-1972, Class 1
  - f. Acceptable Products:
    - 1) ENRGY 3; Johns Manville
    - 2) EnergyGuard; GAF
    - 3) Approved Equivalent
2. Securock Roof Board
  - a. Qualities: Nonstructural, noncombustible, homogenous composition panel.
  - b. Board Size: Four by eight feet (4'x8').
  - c. Thickness: One half (1/2) inch.
  - d. R-Value: .5
  - e. Compliances: UL, WH or FM listed under Roofing Systems.
  - f. Manufacturer: USG

## 2.3 RELATED MATERIALS

- A. Fiber Cant and Tapered Edge Strips: Performed rigid insulation units of sizes/shapes indicated, matching insulation board or of perlite or organic fiberboard, as per the approved manufacturer.
  1. Acceptable Manufacturers:
    - a. The Garland Company, Inc.
- B. Protection Board: Pre-molded semi-rigid asphalt composition board one half (1/2) inch.
- C. Roof Board Joint Tape: Six (6) inches wide glass fiber mat with adhesive compatible with insulation board facers.
- D. Roof Deck Insulation Adhesive: Insul-Lock HR - Dual-component, high rise foam adhesive as recommended by insulation manufacturer and approved by FM indicated ratings.
  1. Tensile Strength (ASTM D412).....250 psi
  2. Density (ASTM D1875)..... 8.5 lbs./gal.
  3. Viscosity (ASTM D2556).....22,000 to 60,000 cP.
  4. 2 "Peel Strength (ASTM D903) ..... 17 lb/in.
  5. 3 "Flexibility (ASTM D816).....Pass @ -70°F

- E. Fasteners: Corrosion resistant screw fastener as recommended by roof membrane manufacturer.
1. Factory Mutual Tested and Approved with three (3) inches coated disc for I-90 rating, length required to penetrate metal deck one inch.

### PART 3 – EXECUTION

#### 3.1 EXECUTION, GENERAL

- A. Comply with requirements of Division 01 Section "Common Execution Requirements."

#### 3.2 INSPECTOR OF SURFACES

- A. Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
1. Verify that work which penetrates roof deck has been completed.
  2. Verify that wood nailers are properly and securely installed.
  3. Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
  4. Do not proceed until defects are corrected.
  5. Do not apply insulation until substrate is sufficiently dry.
  6. Broom clean substrate immediately prior to application.
  7. Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.
  8. Verify that temporary roof has been completed.

#### 3.3 INSTALLATION

- A. Attachment with Mechanical Fasteners
1. Approved insulation board shall be fully attached to the deck with an approved mechanical fastening system – Auger type fasteners for Tectum Deck. As a minimum, the amount of fasteners shall be in accordance with manufacturer's recommendation for FM I-90 system. Otherwise, a minimum of one fastener per two square feet shall be installed.
  2. Filler pieces of insulation require at least two fasteners per piece if size of insulation is less than four square feet.
  3. Spacing pattern of fasteners shall be as per manufacturer's recommendations to meet the FM requirements. Placement of any fastener from edge of insulation board shall be a minimum of three inches, and a maximum of six (6) inches.
  4. Minimum penetration into deck shall be as recommended by the fastener manufacturer. There is a one (1) inch minimum for metal, wood and structural concrete decks where not specified by the manufacturer. For gypsum and cement-wood fiber decks, penetration shall be determined from pull-out test results with a minimum penetration of one and one-half (1 ½) inches.
  5. Tape joints of insulation as per manufacturer's requirements.
- B. Attachment with Insulation Adhesive
1. Ensure all surfaces are clean, dry, free of dirt, debris, oils, loose ore embedded gravel, unadhered coatings, deteriorated membrane and other contaminants that may inhibit adhesion.
  2. Apply insulation adhesive directly to the substrate using a ribbon pattern with one quarter to one half (1/4-1/2) inch wide beads 12 inches o.c., using either the manual applicator or an automatic applicator, at a rate of one (1) gallon per one hundred (150) square feet per cartridge.
  3. Immediately place insulation boards into wet adhesive. Do not slide boards into place. Do not allow the adhesive to skin over before installing insulation boards.

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4. Briefly step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weights may be required to ensure proper contact.
5. All boards shall be cut and fitted where the roof deck intersects a vertical surface. The boards shall be cut to fit a minimum of one quarter (1/4) inch away from the vertical surface.
6. Tape joints of insulation as per manufacturer's requirements.

**3.4 CLEANING**

- A. Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

**3.5 CONSTRUCTION WASTE MANAGEMENT**

- A. Remove and properly dispose of waste products generated during installation. Comply with requirements of authorities having jurisdiction.

**END OF SECTION 07 2220**

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**SECTION 07 5200 – MODIFIED BITUMINOUS MEMBRANE ROOFING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Torch Applied 2-Ply Asphalt Roofing
- B. Accessories.
- C. Edge Treatment and Roof Penetration Flashings. (2.20)(3.9)

**1.2 REFERENCES**

- A. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D 312 - Standard Specification for Asphalt used in Roofing.
- C. ASTM D 451 - Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
- D. ASTM D 1079 Standard Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
- E. ASTM D 1863 Standard Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
- F. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- G. ASTM D 4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
- H. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
- I. ASTM D 6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
- J. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- K. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- L. ASTM E 108 - Standard Test Methods for Fire Test of Roof Coverings
- M. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- N. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- O. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.
- P. ANSI-SPRI ES-1 Wind Design Standard for Edge Systems used with Low Slope Roofing Systems.
- Q. ASCE 7, Minimum Design Loads for Buildings and Other Structures

**1.3 DESIGN / PERFORMANCE REQUIREMENTS**

- A. Perform work in accordance with all federal, state and local codes.
- B. Exterior Fire Test Exposure: Roof system shall achieve a UL, FM or WH Class rating for roof slopes indicated on the Drawings as follows:
  - 1. Factory Mutual Class A Rating.
  - 2. Underwriters Laboratory Class A Rating.
  - 3. Warnock Hersey Class A Rating.
- C. Roof System membranes containing recycled or bio-based materials shall be third party certified through UL Environment.

**1.4 SUBMITTALS**

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation instructions.
- C. Shop Drawings: Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor barrier, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.
- D. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins.
- E. Verification Samples: For each modified bituminous membrane ply product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Provide to certify products meet or exceed specified requirements.
- G. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Testing must be performed at 77 deg. F. Tests at 0 deg. F will not be considered.
- H. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

**1.5 QUALITY ASSURANCE**

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five

years documented experience and a certified Pre-Approved Garland Contractor.

- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- E. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

#### 1.6 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to commencing Work of this section.
- B. Review installation procedures and coordination required with related Work.
- C. Inspect and make notes of job conditions prior to installation:
  - 1. Record minutes of the conference and provide copies to all parties present.
  - 2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
  - 3. Installation of roofing system shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods on end on a clean flat surface except store KEE-Stone FB 60 rolls flat on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50 degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.
- F. Adhesive storage shall be between the range of above 50 degree F (10 degree C) and below 80 degree F (27 degree C). Area of storage shall be constructed for flammable storage.

#### 1.8 COORDINATION

- A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

#### 1.9 PROJECT CONDITIONS



- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### 1.10 WARRANTY

- A. Upon completion of the work, provide the Manufacturer's written and signed NDL Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.
  - 1. Warranty Period:
    - a. 30 years from date of acceptance.
- B. Installer is to guarantee all work against defects in materials and workmanship for a period indicated following final acceptance of the Work.
  - 1. Warranty Period:
    - a. 2 years from date of acceptance.

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Garland Company, Inc. (The); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: [www.garlandco.com](http://www.garlandco.com).
- B. The City of Muskegon ("Agency") has purchased materials for the 2023 Roof Replacements ("Project") directly from Garland Inc., based upon the Agency's participation in the U.S. Communities / OMNIA Government Purchasing Alliance's program for Roofing Supplies and Related Products and Services, as priced by and awarded to Garland/DBS, Inc., resulting from the competitively solicited Sealed Bid # PW1925 issued by the Racine County Board of Commissioners.
  - 1. Contractor to review materials pre-purchased and include any additional material needed in their bid.

##### 2.2 TORCH APPLIED 2-PLY ASPHALT ROOFING

- A. Base (Ply) Sheet:
  - 1. HPR Torch Base:
- B. Modified Cap (Ply) Sheet: One ply bonded to the prepared substrate with interply adhesive.
  - 1. StressPly IV Mineral:
- C. Interply Adhesive:
  - 1. NA
- D. Flashing Base Ply:
  - 1. HPR Torch Base:
- E. Flashing Cap (Ply) Sheet
  - 1. StressPly IV Mineral:
- F. Flashing Ply Adhesive:
  - 1. None for torch sheets only.

**2.3 ACCESSORIES:**

- A. Roof Insulation: In accordance with Section 07 22 16 - Roof Board Insulation.
- B. Roof Insulation: Provide G-P Gypsum DenDeck Prime, G-P Gypsum DenDeck DuraGuard, USG Securrock for proper adhesion of the self-adhered base sheet in accordance with Section 07 22 16 - Roof Board Insulation.
- C. Vapor Retarder: HPR Torchbase SBS modified, torch applied sheet material. ASTM D 6163, Type II. Install one torch ply sheet using a suitable heat source adhere one ply to the entire surface. Shingle in direction of slope of roof to shed water on each roof area.
  - 1. Tensile Strength, ASTM D 5147
    - a. 2 in/min. @ 73.4 +/- 3.6 deg. F MD 210 lbf/in XD 210 lbf/in
    - b. 50 mm/min. @ 23 +/- 2 deg. C MD 210 lbf/in XD 210 lbf/in
  - 2. Tear Strength, ASTM D 5147
    - a. 2 in/min. @ 73.4 +/- 3.6 deg. F MD 300 lbf XD 300 lbf
    - b. 50 mm/min. @ 23 +/- 2 deg. C MD 1,134 N XD 1,134 N
  - 3. Elongation at Maximum Tensile, ASTM D 5147
    - a. 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6% XD 6%
    - b. 50 mm/min @ 23 +/- 2 deg. C MD 6% XD 6%
  - 4. Low Temperature Flexibility, ASTM D 5147: Passes -30 deg. F ( -34.4 deg. C)

**2.4 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS**

- A. Pre-Manufactured Edge Metal: R-Mer Force Flash-less Snap-On Fascia Cover and Splice Plate.
  - 1. Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 24 gauge, 22 gauge or 20 gauge, 36" to 48" by coil length, chemically treated, commercial or lock-forming quality
  - 2. Aluminum, ASTM B209, alloy 3105-H14, in thickness of .032" nom. or .040" nom. or .050" nom. or .063" nom.
- B. Flashing Boot - Rubbertite Flashing Boot: Neoprene pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- C. Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture and air to escape but not enter the roof system as recommended and furnished by the membrane manufacturer.
- D. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.
- E. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled.
- F. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.
- G. Liquid Flashing - Tuff-Flash: An asphaltic-polyurethane, low odor, liquid flashing material designed for specialized details unable to be waterproofed with typical modified membrane flashings.
  - 1. Tensile Strength, ASTM D 412: 400 psi
  - 2. Elongation, ASTM D 412: 300%
  - 3. Density @77 deg. F 8.5 lb/gal typical
- H. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07 62 00 - Sheet Metal Flashing and Trim.
  - 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA

"Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.

- I. Manufactured Roof Specialties: Shop fabricated copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are specified in Section 07 62 00 - Sheet Metal Flashing and Trim.
  1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the NRCA "Roofing and Waterproofing Manual" as applicable.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. Inspect and approve the deck condition, slopes and fastener backing if applicable, parapet walls, expansion joints, roof drains, stack vents, vent outlets, nailers and surfaces and elements.
- C. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- D. If substrate preparation and other conditions are the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.2 PREPARATION**

- A. General: Clean surfaces thoroughly prior to installation.
  1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
  2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
  3. Roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
  4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
  5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
  6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener. Base or ply sheets attached with cap nails require a minimum pullout capacity of 40 lb. per nail.
  7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.
- B. Re-Roofing Applications:
  1. Remove existing roof flashings from curbs and parapet walls down to the surface of the roof. Remove existing flashings at roof drains and roof penetrations.
  2. Remove all wet, deteriorated, blistered or delaminated roofing membrane or insulation and fill in any low spots occurring as a result of removal work to create a smooth, even surface for application of new roof membranes.
  3. Install new wood nailers as necessary to accommodate insulation/recovery board or new nailing patterns.
  4. When mechanically attached, the fastening pattern for the insulation/recovery board shall be as recommended by the specific product manufacturer.

5. Re-roofing over coal tar pitch requires a mechanically attached recovery board or insulation and a base sheet prior to the application of roofing system.
6. Existing roof surfaces shall be primed as necessary with asphalt primer meeting ASTM D 41 and allowed to dry prior to installing the roofing system.
- C. Torch Applied Vapor Barrier: Install one torch on fiberglass base sheet using a suitable heat source adhere one ply to the entire surface. Shingle in direction of slope of roof to shed water on each area of roof
- D. Fiberglass Vapor Barrier Plies: Install two fiberglass ply sheets in 25 lbs. per square (11.3kg) of ASTM D 312 Type III bitumen shingled uniformly to achieve two plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
- E. Insulation: Roof insulation is specified in Section
  1. All joints between layers should be staggered when multiple layers of insulation are installed. Insulation greater than 2.5 inches shall be installed in multiple layers.
  2. Insulation shall be kept dry at all times. Install only as much insulation as can be covered with completed roofing membrane before the end of the day's work or prior to onset of inclement weather.
  3. Edges shall butt tightly and all cuts shall fit neatly against adjoining surfaces to provide a smooth overall surface. Gaps of greater than 1/4 inch width shall be filled with insulation.
  4. Install tapered insulation around roof drains and penetrations to provide adequate slope for proper drainage.
  5. Mechanically attached insulation shall be fastened in accordance with code and insurance requirements for the applicable geographic zone with the required number and type of fasteners and plates.
  6. When asphalt or cold adhesive attachment is specified, the proposed insulation shall be compatible with the roof substrate, the proposed bitumen and the requirements of the specific membrane.
  7. Hot asphalt application:
    - a. Maximum 4 foot by 4 foot insulation boards shall be attached with hot asphalt.
    - b. Asphalt for insulation attachment shall meet ASTM D 312 Type III or IV criteria, as dictated by the roof slope or other design conditions.
    - c. Expanded polystyrene (EPS) materials shall not be installed with hot bitumen products.

### 3.3 INSTALLATION - GENERAL

- A. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.
- B. General: Avoid installation of modified bitumen membranes at temperatures lower than 40-45 degrees F. When work at such temperatures unavoidable use the following precautions:
  1. Take extra care during cold weather installation and when ambient temperatures are affected by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.
  2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.

- C. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water
- D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank 1 inch cap nails, or screws and plates at a rate of 1 fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and 4 feet o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install 4 additional fasteners at the upper edge of the membrane when strapping the plies.

### 3.4 INSTALLATION TORCH APPLIED 2-PLY ASPHALT ROOFING

- A. Base Ply: Install torch base sheet to a properly prepared substrate. Shingle in proper direction to shed water on each area of roofing.
  - 1. Lay out the roll in the course to be followed and unroll 6 feet (1.8 m).
  - 2. Using a roofing torch, heat the surface of the coiled portion until the burn-off backer melts away. At this point, the material is hot enough to lay into the substrate. Progressively unroll the sheet while heating and press down with your foot to insure a proper bond.
  - 3. After the major portion of the roll is bonded, re-roll the first 6 feet (1.8 m) and bond it in a similar fashion.
  - 4. Repeat this operation with subsequent rolls with side laps of 4 inches (101 mm) and end laps of 8 inches (203 mm).
  - 5. Give each lap a finishing touch by passing the torch along the joint and spreading the melted bitumen evenly with a rounded trowel to insure a smooth, tight seal.
  - 6. Extend underlayment 2 inches (50 mm) beyond top edges of cants at wall and projection bases.
  - 7. Install base flashing ply to all perimeter and projections details.
- B. Modified Cap (Ply) Sheet: Over torch base sheet underlayment, lay out the roll in the course to be followed and unroll 6 feet (1.8 m). Stagger seams over the torch base sheet seams.
  - 1. Using a roofing torch, heat the surface of the coiled portion until the burn-off backer melts away. At this point, the material is hot enough to lay into the substrate. Progressively unroll the sheet while heating and press down with your foot to insure a proper bond.
  - 2. After the major portion of the roll is bonded, re-roll the first 6 feet (1.8 m) and bond it in a similar fashion.
  - 3. Repeat this operation with subsequent rolls with side laps of 4 inches (101 mm) and end laps of 8 inches (203 mm).
  - 4. Give each lap a finishing touch by passing the torch along the joint and spreading the melted bitumen evenly with a rounded trowel to insure a smooth, tight seal.
- C. Fibrous Cant Strips: Provide non-combustible perlite or glass fiber cant strips at all wall/curb detail treatments where angle changes are greater than 45 degrees. Cant may be set in approved cold adhesives, hot asphalt or mechanically attached with approved plates and fasteners.
- D. Wood Blocking, Nailers and Cant Strips: Provide wood blocking, nailers and cant strips as specified in Section 06 11 00 - Wood Framing.
  - 1. Provide nailers at all roof perimeters and penetrations for fastening membrane flashings and sheet metal components.
  - 2. Wood nailers should match the height of any insulation, providing a smooth and even transition between flashing and insulation areas.
  - 3. Nailer lengths should be spaced with a minimum 1/8 inch gap for expansion and contraction

- between each length or change of direction.
4. Nailers and flashings should be fastened in accordance with Factory Mutual "Loss Prevention Data Sheet 1- 49, Perimeter Flashing" and be designed to be capable of resisting a minimum force of 200 lbs/lineal foot in any direction.
- E. Metal Work: Provide metal flashings, counter flashings, parapet coping caps and thru-wall flashings as specified in Section 07 62 00 - Sheet Metal Flashing and Trim or Section 07 71 23 - Manufactured Gutters and Downspouts. Install in accordance with the SMACNA "Architectural Sheet Metal Manual" or the NRCA Roofing Waterproofing manual.
- F. Termination Bar: Provide a metal termination bar or approved top edge securement at the terminus of all flashing sheets at walls and curbs. Fasten the bar a minimum of 8 inches (203 mm) o/c to achieve constant compression. Provide suitable, sealant at the top edge if required.
- G. Flashing Base Ply: Seal all curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
1. Prepare all walls, penetrations, expansion joints, and other surfaces to be flashed with asphalt primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
  2. Adhere modified flashing base to the underlying base flashing ply with specified flashing ply adhesive. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
  3. Solidly adhere the entire sheet of flashing membrane to the substrate. Tops of all flashings that are not run up and over curb shall be secured through termination bar 6 inches (152 mm) and sealed at top
  4. Seal all vertical laps of flashing membrane with a three-course application of trowel-grade mastic and fiberglass mesh.
  5. Coordinate counter flashing, cap flashings, expansion joints, and similar work with modified bitumen roofing work.
  6. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work. When using mineralized cap sheet all stripping plies type IV felt / Versiply 40 shall be installed prior to cap sheet installation.
- H. Flashing Cap Ply: Install flashing cap sheets by the same application method used for the base ply.
1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
  2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
  3. Adhere to the underlying base flashing ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
  4. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
  5. Coordinate roof accessories, miscellaneous sheet metal accessory items with the roofing system work.
  6. All stripping shall be installed prior to flashing cap sheet installation.
  7. Heat and scrape granules when welding or adhering at cut areas and seams to granular surfaces at all flashings.
  8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter

flashing.

- I. Roof Walkways: Provide walkways in areas indicated on the Drawings.

### 3.5 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Pre-Manufactured Flash-less Snap-On Metal Edge System:
  1. Position base ply of the Built-Up and/or Modified Roofing membrane over the roof edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations. Cap sheet shall stop at the edge of the roof and shall not turn over the edge of the nailer.
  2. Prior to installing the base anchor, assure a level plane is present. If not, shim the roof edge surface as required.
  3. Extruded base anchor: Apply two 1/4" beads of Green-Lock Sealant XL or equal on the bottom surface of the top flange of the extruded anchor.
  4. Set the extruded anchor on the edge and face fasten through pre-punched slots every 18 inches o.c. for 5.75 inch face fascia, and 18 inches o.c. staggered for any fascia size greater than 5.75 inches. Begin fastening 6 inches from ends.
  5. Install Green-Lock Sealant XL or equal at the ends of the base frame to prevent water from running between base anchor joints.
  6. Install compression seals every 40 inches on center in the slots located at the top of the extruded anchor.
  7. Install fascia cover setting the top flange over the top flange and compression seals of the base anchor. Assure compression seals are in place during this process. Beginning on one end and working towards the opposite end, press downward firmly (do not rotate) until "snap" occurs and cover is engaged along entire length of miter.
  8. Install splice plate at each end of the base anchor and fascia cover prior to the installation of the next adjacent ten foot piece.

### 3.6 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

### 3.7 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.
- B. Protect exposed surfaces of finished walls with tarps to prevent damage.
- C. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch (16 mm) thick.
- D. In addition to the plywood listed above, an underlayment of minimum 1/2 inch (13 mm) recover board is required on new roofing.
- E. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.

**3.8 FIELD QUALITY CONTROL**

- A. Inspection: Provide manufacturer's field observations at start-up and at intervals of approximately 30 percent, 60 percent and 90 percent completion. Provide a final inspection upon completion of the Work.
1. Warranty shall be issued upon manufacturer's acceptance of the installation.
  2. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
  3. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
  4. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.

**3.9 SCHEDULES**

- A. Base (Ply) Sheet:
1. HPR Torch Base: 110 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim. Designed for torch applications with a burn-off backer that indicates when the material is hot enough to be installed.
    - a. Tensile Strength, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 210 lbf/in XD 210 lbf/in
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 36.75 kN/m XD 36.75 kN/m
    - b. Tear Strength, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 300 lbf XD 300 lbf
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 1,334 N XD 1,334 N
    - c. Elongation at Maximum Tensile, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6% XD 6%
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 6% XD 6%
    - d. Low Temperature Flexibility, ASTM D5147, Passes -30 deg. F (-34.4 deg. C)
- B. Thermoplastic/Modified Cap (Ply) Sheet:
1. StressPly IV Mineral: 195 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced rubber modified roofing membrane with a dual fiberglass scrim. Designed for torch applications with a burn-off backer that indicates when the material is hot enough to be installed.
    - a. Tensile Strength, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 210 lbf/in XD 210 lbf/in
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 36.75 kN/m XD 36.75 kN/m
    - b. Tear Strength, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 250 lbf XD 250 lbf
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 1112 N XD 1112 N
    - c. Elongation at Maximum Tensile, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6% XD 6%
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 6% XD 6%
    - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- C. Flashing Base Ply:
1. HPR Torchbase: SBS modified, torch applied sheet material. ASTM D 6163, Type II.
    - a. Tensile Strength, ASTM D 5147
      - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 210 lbf/in XD 210 lbf/in
      - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 210 lbf/in XD 210 lbf/in



- b. Tear Strength, ASTM D 5147
    - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 300 lbf XD 300 lbf
    - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 1334 N XD 1334 N
  - c. Elongation at Maximum Tensile, ASTM D 5147
    - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6 % XD 6 %
    - 2) 50 mm/min @ 23 +/- 2 deg. C MD 6 % XD 6 %
  - d. Low Temperature Flexibility, ASTM D 5147:
    - 1) Passes -30 deg. F (-34 deg. C). Meets or Exceeds ASTM D 4601 Type II Performance Criteria.
- D. Flashing Cap (Ply) Sheet:
- a. StressPly IV Mineral: 195 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced rubber modified roofing membrane with a dual fiberglass scrim. Designed for torch applications with a burn-off backer that indicates when the material is hot enough to be installed.
    - 1) Tensile Strength, ASTM D 5147
      - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 210 lbf/in XD 210 lbf/in
      - b) 50 mm/min. @ 23 +/- 2 deg. C MD 36.75 kN/m XD 36.75 kN/m
    - 2) Tear Strength, ASTM D 5147
      - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 250 lbf XD 250 lbf
      - b) 50 mm/min. @ 23 +/- 2 deg. C MD 1112 N XD 1112 N
    - 3) Elongation at Maximum Tensile, ASTM D 5147
      - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6% XD 6%
      - b) 50 mm/min. @ 23 +/- 2 deg. C MD 6% XD 6%
    - 4) Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F ( -40 deg. C)

END OF SECTION

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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 the Conditions of the Contract and Division 01 Specification Sections apply to this section.

#### 1.2 SUMMARY

- A. Provide all labor, equipment, and materials to fabricate and install the following.
  - 1. Edge strip and flashing
  - 2. Fascia, scuppers, and trim
  - 3. Coping cap at parapets
  - 4. Expansion joint and area divider covers
  - 5. Fascia and edge material
  - 6. Gutters, scuppers and down spouts

#### 1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy-Coated (gal annealed) by the Hot-Dip Process.
  - 2. ASTM A792 Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
  - 3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 4. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 5. ASTM D692 Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
- B. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI)
  - 1. ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal
- C. Warnock Hersey International, Inc., Middleton, WI (WH)
- D. Underwriters Laboratories (UL)
- E. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
  - 1. 1993 Edition Architectural Sheet Metal Manual
- F. National Roofing Contractors Association (NRCA)
  - 1. Roofing and Waterproofing Manual
- G. American Society of Civil Engineers (ASCE)
  - 1. ASCE 7 Minimum Design Loads for Buildings and Other Structures

#### 1.4 SUBMITTALS FOR REVIEW

- A. Product Data:
  - 1. Provide manufacturer's specification data sheets for each product.
  - 2. Metal material characteristics and installation recommendations.
  - 3. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.
- B. Samples: Submit two (2) samples, illustrating typical metal edge, coping, gutters, fascia extenders for material and finish.

- C. Shop Drawings
  - PART 1 For manufactured and ANSI/SPRI ES-1 compliant shop fabricated gravel stops, fascia, scuppers, and all other sheet metal fabrications.
  - PART 2 Indicate material profile, jointing details, fastening methods, flashing, terminations, and installation details.
  - PART 3 Indicate type, gauge and finish of metal
- D. Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.

#### 1.5 SUBMITTALS FOR INFORMATION

- A. Design Loads: Any material submitted as equal to the specified material must be accompanied by a report signed and sealed by a professional engineer licensed in the state in which the installation is to take place. This report shall show that the submitted equal meets the wind uplift and perimeter attachment requirements according to ASCE 7 and that the submitted equal edge metal system is compliant with the ANSI/SPRI ES-1 standard. Substitution requests submitted without licensed engineer approval will be rejected for non-conformance.
- B. Factory Mutual Research Corporation's (FMRC) wind uplift resistance classification: The roof perimeter flashing shall conform to the requirements as defined by the FMRC Loss Prevention Data Sheet 1-49.
- C. A letter from the manufacturing company certifying that the materials furnished for this project are the same as represented in tests and supporting data.
- D. Mill production reports certifying that the steel thicknesses are within allowable tolerances of the nominal or minimum thickness or gauge specified.
- E. Certification of work progress inspection. Refer to Quality Assurance Article below.
- F. Certifications.
  - 1. Submit roof manufacturer's certification that metal fasteners furnished are acceptable to roof manufacturer.
  - 2. Submit roof manufacturer's certification that metal furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

#### 1.6 CONTRACT CLOSEOUT SUBMITTALS

- A. General: Comply with Requirements of Section 01 78 00 – Closeout Submittals
- B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C. Roofing Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.
- D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

#### 1.7 QUALITY ASSURANCE

- A. Engage an experienced roofing contractor specializing in sheet metal flashing work with a minimum of five (5) years experience.
- B. Maintain a full-time supervisor/foreman who is on the job-site at all times during installation. Foreman must have a minimum of five (5) years experience with the installation of similar system to that specified.

- C. Source Limitation: Obtain components from a single manufacturer. Secondary products which cannot be supplied by the specified manufacturer shall be approved in writing by the primary manufacturer prior to bidding.
- D. Upon request fabricator/installer shall submit work experience and evidence of financial responsibility. The Owner's representative reserves the right to inspect fabrication facilities in determining qualifications.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.
- B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials which may cause discoloration or staining.

#### 1.9 PROJECT CONDITIONS

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for pre-formed metal edge system.

#### 1.10 DESIGN AND PERFORMANCE CRITERIA

- A. Thermal expansion and contraction:
  - 1. Completed metal edge flashing system, shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

#### 1.11 WARRANTIES

- A. Owner shall receive one (1) warranty from manufacturer of roofing materials covering all of the following criteria. Multiple warranties are not acceptable.
  - 1. Pre-finished metal material shall require a written thirty (30)- year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D2244 or chalking excess of 8 units per ASTM D659. If either occurs material shall be replaced per warranty, at no cost to the Owner.
  - 2. Changes: Changes or alterations in the edge metal system without prior written consent from the manufacturer shall render the system unacceptable for a warranty.
  - 3. Warranty shall commence on date of substantial completion or final payment, whichever is agreed by contract.
  - 4. The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of two years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop, and make good any damage to other work or equipment caused by such leaks or the repairs thereof.
  - 5. Installing roofing contractor shall be responsible for the installation of the edge metal system in general accordance with the membrane manufacturer's recommendations.
  - 6. Installing contractor shall certify that the edge metal system has been installed per the manufacturer's printed details and specifications.
  - 7. One manufacturer shall provide a single warranty for all accessory metal for flashings, metal edges and copings, along with the warranty for metal roof areas, membrane roof areas, and any transitions between two different material types.

### PART 2 – PRODUCTS

#### 2.1 PRODUCTS, GENERAL

- A. Refer to Division 01 Section “Common Product Requirements.”
- B. Basis of Design: Materials, manufacturer’s product designations, and/or manufacturer’s names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer’s standard specification section.
  - 2. Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner’s Representative.
  - 3. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
  - 4. The Owner’s decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

## 2.2 MATERIALS

- A. Materials: Minimum gauge of steel or thickness of Aluminum to be specified in accordance with Architectural Sheet Metal Manual, Sheet Metal and Air Conditioning Contractor’s National Association, Inc. recommendations.
- B. Snap-On Fascia Cover and Splice Plate
  - 1. Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 24 gauge, 22 gauge or 20 gauge, 36” to 48” by coil length, chemically treated, commercial or lock-forming quality.
  - 2. Aluminum, ASTM B209, alloy 3105-H14, in thickness of .032” nom. or .040” nom. or .050” nom.
- C. Coping Cap Cover and Splice Plate
  - 1. Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 24 gauge, 22 gauge or 20 gauge, 36” to 48” by coil length, chemically treated, commercial or lock-forming quality.
  - 2. Aluminum, ASTM B209, alloy 3105-H14, in thickness of .040” nom. or .050” nom.
- D. Coping Chairs
  - 1. Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 0.0635 nom./ 16 gauge, 36” to 48” by coil length, chemically treated, commercial or lock-forming quality.
- E. Finishes
  - 1. Exposed surfaces for coated panels:
  - 2. Steel Finishes: fluorocarbon finish. Epoxy primer backed both sides, .2-.25 mils thickness as approved by finish coat manufacturer. Weathering finish as referred by National Coil Coaters Association (NCCA)

PROPERTY	TEST METHOD	FLUOROCARBON*
Pencil Hardness	ASTM D3363 NCCA II-2	HB-H
Bend	ASTM D-4145 NCCA II-19	O-T
Cross-Hatch Adhesion	ASTM D3359	no loss of adhesion
Gloss (60° angle)	ASTM D523	25+/-5%

Reverse	ASTM D2794	no cracking or loss of Impact adhesion
Nominal Thickness	ASTM D1005	
Primer		0.2 mils
Topcoat		0.7 mils min
Clear Coat (optional, only to be used with 22 gauge steel)		0.3 mils

\*Subject to minimum quantity requirements

a. Color shall be as specified

1. Exposed and unexposed surfaces for mill finish flashing, fascia, and coping cap, shall be as shipped from the mill

## 2.3 RELATED MATERIALS AND ACCESSORIES

- A. Metal Primer: Zinc chromate type.
- B. Plastic Cement: ASTM D 4586
- C. Sealant: Specified in Section 07900 or on drawings.
- D. Underlayment: ASTM D2178, No 15 asphalt saturated roofing felt.
- E. Self-Adhering Underlayment, one of the following:
  1. 60 mil minimum transition strip
  2. 45 mil high temperature underlayment with cross laminated polymer surface
- F. Slip Sheet: Rosin sized building paper.
- G. Fasteners:
  1. Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.
  2. Fastening shall conform to Factory Mutual requirements or as stated on section details, whichever is more stringent.
- H. Gutter and Downspout Anchorage Devices: Material as specified for system

## PART 3 – EXECUTION

### 3.1 EXECUTION, GENERAL

- A. Refer to Division 07 Section Common Work Results for Thermal and Moisture Protection.

### 3.2 PROTECTION

- A. Isolate metal products from dissimilar metals, masonry or concrete with bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive reactions.

### 3.3 GENERAL

- A. Secure fascia to wood nailers at the bottom edge with a continuous cleat.

- B. Fastening of metal to walls and wood blocking shall comply with building code standards.
- C. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.
- D. Allow sufficient clearances for expansion and contraction of linear metal components. Secure metal using fasteners as required by the system. Exposed face fastening will be rejected.

#### 3.4 INSPECTION

- A. Verify that curbs are solidly set and nailing strips located.
- B. Perform field measurements prior to fabrication.
- C. Coordinate work with work of other trades.
- D. Verify that substrate is dry, clean and free of foreign matter.
- E. Commencement of installation shall be considered acceptance of existing conditions.

#### 3.5 MANUFACTURED SHEET METAL SYSTEMS

- A. Furnish and install manufactured fascia and coping cap systems in strict accordance with manufacturer's printed instructions.
- B. Provide factory-fabricated accessories including, but not limited to, fascia extenders, miters, scuppers, joint covers, etc. refer to Source limitation provision in Part 1.

#### 3.6 SHOP FABRICATED SHEET METAL SYSTEMS

- A. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.
- B. Hem exposed edges.
- C. Angle bottom edges of exposed vertical surfaces to form drip.
- D. Lap corners with adjoining pieces fastened and set in sealant.
- E. Form joints for gravel stop fascia system, coping cap with a 3/8" opening between sections. Back the opening with an internal drainage plate formed to the profile of fascia piece.
- F. Install sheet metal to comply with referenced ANSI/SPRI, SMACNA and NRCA standards.

#### 3.7 FLASHING MEMBRANE INSTALLATION

- A. Scupper Through Roof Edge
  - 1. Install scupper box in a one fourth (1/4) inch bed of mastic. Assure all box seams are soldered and have minimum four (4) inch flange. Make sure all corners are closed and soldered.
  - 2. Prime metal edge at a rate of one hundred (100) square feet per gallon and allow to dry.
- B. Snap-On Fascia Detail
  - 1. Position base plies of the Built-Up and/or Modified Roofing membrane over the roof edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
  - 2. Install scupper boxes and miters first.
  - 3. Cant Dam: Install Cant Dam with roofing nails twelve (12) inches on center through the top of



- metal flange and outside face.
4. BUR or Modified Flashing: Prime Cant Dam at a rate of one hundred (100) square feet per gallon and allow to dry. Strip in Cant Dam with base flashing membrane extending six (6) inches into roof field, followed with a cap sheet extending nine (9) inches into the roof field. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
  5. Fascia Cover: Install fascia cover with splice plate under one end by pressing downward firmly until "snap" occurs and cover is engaged along entire length of miter. Field cut where necessary with fine tooth saw. Sealant is to be placed between six (6) inch wide splice plates on metal edge pieces, one bead, approximately one (1) inch from fascia cover joint.
- C. Extruded Fascia Detail
1. Position base plies of the Built-Up and/or Modified Roofing membrane over the roof edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
  2. Install scupper boxes and miters first.
  3. Cant Dam: Install Cant Dam with roofing nails twelve (12) inches on center through the top of metal flange and outside face.
  4. BUR or Modified Flashing: Prime Cant Dam at a rate of one hundred (100) square feet per gallon and allow to dry. Strip in Cant Dam with base flashing membrane extending six (6) inches into roof field, followed with a cap sheet extending nine (9) inches into the roof field. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
  5. Place flashing piece into position for installation of the fascia.
  6. Fascia Cover: Insert splice plate at one end of the fascia and engage fascia with flashing piece. Sealant is to be placed between splice plates on metal edge pieces, one bead, approximately one (1) inch from fascia cover joint. Install flashing screws into pre-punched holes in fascia, compressing the flashing.
- D. Snap-On Coping Cap Detail
1. Install Miters first.
  2. Position base flashing of the Built-Up and/or Modified Roofing membrane over the wall edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
  3. Install minimum sixteen (16) gauge, sixteen (16) inch long by specified width anchor chair at [Contact Garland Representative] feet on center.
  4. Install six (6) inch wide splice plate by centering over sixteen (16) inch long by specified width anchor chair. Apply two beads of sealant to either side of the splice plate's center. Approximately two (2) inches from the coping cap joint. Install Coping Cap by hooking outside hem of coping on outside face of anchor chair. Press downward on inside edge of coping until "snap" occurs and hem is engaged on the entire chair.

### 3.8 CLEANING

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

### 3.9 CONSTRUCTION WASTE MANAGEMENT

- A. Remove and properly dispose of waste products generated. Comply with requirements of authorities having jurisdiction.

### 3.10 FINAL INSPECTION

- A. At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.

- B. Inspect work and flashing of roof penetrations, walls, curbs, and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- D. Notify the [Contractor] [Architect] [Owner] upon completion of corrections.
- E. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- F. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

### 3.11 DEMONSTRATION AND TRAINING

- A. At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
  - 1. Troubleshooting procedures
  - 2. Notification procedures for reporting leaks or other apparent roofing problems
- B. Maintenance
  - 1. The Owner's obligations for maintaining the warranty in effect and force
  - 2. The Manufacturer's obligations for maintaining the warranty in effect and force.

**END OF SECTION 07 6200**

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## SECTION 07 9200 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Nonstaining silicone joint sealants.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

#### 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

### PART 2 - PRODUCTS

#### 2.1 JOINT SEALANTS, 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. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range unless indicated otherwise.
  - 1. Provide custom colors to match Architect's samples for silicone sealant with less than 20 color selections available.
  - 2. Provide multiple sealant colors for each material that the sealant is adjacent to.

**2.2 NONSTAINING SILICONE JOINT SEALANTS**

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 756 SMS.
    - b. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 295 FPS NB.
    - c. Tremco Incorporated; Spectrem 3.
- C. Silicone, Nonstaining, M, NS, 50, NT: Nonstaining, multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. Tremco Incorporated; Spectrem 4-TS.

**2.3 JOINT-SEALANT BACKING**

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and 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), 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: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

**PART 3 - EXECUTION**

**3.1 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 laitance and form-release agents from concrete.
  - 2. 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.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

**3.2 INSTALLATION OF JOINT SEALANTS**

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. 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.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. 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.
- E. 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.

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3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

**3.3 JOINT-SEALANT SCHEDULE**

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces JS-1.

1. Joint Locations:
  - a. Joints in sheet metal flashing and trim.
  - b. Joints between dissimilar materials.
  - c. Other joints as indicated on Drawings.
2. Joint Sealant: One of the following:
  - a. Silicone, nonstaining, S, NS, 50, NT.
  - b. Silicone, nonstaining, M, NS, 50, NT.

**END OF SECTION 07 9200**

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## SECTION 32 9200 - TURF AND GRASSES

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Lawn restoration at all areas of removal and or all disturbed areas

#### 1.2 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- E. Topsoil: Topsoil to be provided by contractor from off-site sources with the specified minimum quality specifications herein. Topsoil proposed for use to be processed and shall meet tested criteria results specified and conform to adjustments as recommended by the soil testing laboratory.
- F. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- G. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- H. Surface Soil: Whatever soil is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Source of topsoil
- B. Seed Mix.
- C. Qualification Data: For qualified landscape Installer.
- D. QUALITY ASSURANCE

- E. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.

#### 1.5 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
  - 1. Seeded Turf: 60 days from date of planting completion.
    - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

### PART 2 - PRODUCTS

#### 2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species as follows:
  - 1. Sun and Partial Shade: Proportioned by weight as follows:
    - a. 50 percent Kentucky B bluegrass, 2 varieties.
    - b. 25 percent Creeping Red Fescue
    - c. 25 percent Turf Type Perennial Rye

#### 2.2 FERTILIZERS

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Composition: 10 percent nitrogen, 20 percent phosphorous, and 10 percent potassium, by weight.
  - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

**2.3 TOPSOILS**

- A. Import topsoil or manufactured topsoil from off-site or on-site sources; do not obtain from agricultural land, bogs or marshes. Verify suitability of soil to produce viable planting soil. Soil to be fertile, friable and representative of local production soil, capable of sustaining vigorous plant growth and screened free of roots, plants, sod, stones, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Remove all stones 1/2 inch and larger. On average, no more than 3 stones, 1/4 inch and larger should be visible with in a 6 inch by 6 inch area.
- B. ASTM D 5268 topsoil from the top surface horizon layer.
- C. Topsoil shall have a pH range of 5.5 to 7.5, adjusted to not more than 7.0 by additives as required by soils test.
- D. Topsoil shall be not less than 2% and not greater than 5% native organic matter, not compost material, as determined by a loss by ignition test at 360 degrees C.
- E. Topsoil to have a soil textural classification of Sandy Loam.
- F. Topsoil clay content as determined by Bouyoucous Hydrometer Test shall range between 5% and 20%
- G. Topsoil sand content shall be not less than 40% and not greater than 80%, as determined by a mechanical analysis.

**2.4 MULCHES**

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

**2.5 PESTICIDES**

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways. Installation to occur prior to any earth excavation.

### 3.2 TURF AREA PREPARATION

- A. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 12 inches. Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
  - 1. Spread topsoil to a depth of 6 inches (150 mm) but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if topsoil or subgrade is frozen, muddy, or excessively wet.
- B. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
  - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
  - 2. Loosen surface soil to a depth of at least 12 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches (100 mm) of soil. Till soil to a homogeneous mixture of fine texture.
  - 3. Remove stones larger than ½ inch in any dimension and sticks, roots, trash, and other extraneous matter.
  - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- C. Hand Rake: Hand rake topsoil areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- D. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- E. Before planting, obtain Architect's acceptance of hand raking; restore planting areas if eroded or otherwise disturbed after finish grading.

### 3.3 TURF WATERING AND MAINTENANCE

- A. Establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches (100 mm).
  - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  - 2. Water turf with fine spray at a minimum rate of 1 inch (25 mm) per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain height appropriate for species without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings.

- D. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

### **3.4 SATISFACTORY TURF**

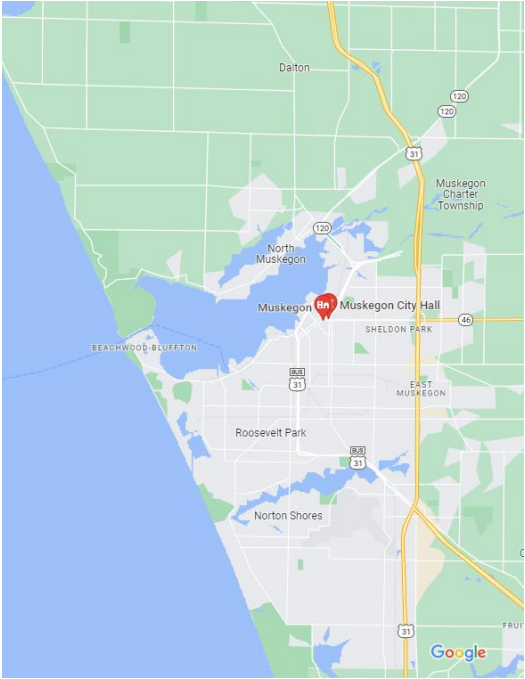



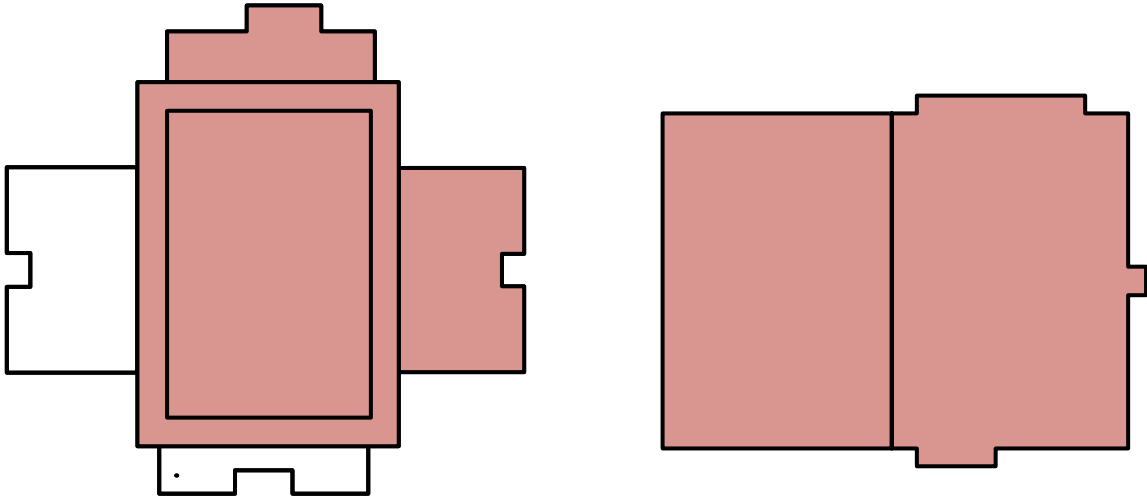


- A. Turf installations shall meet the following criteria as determined by Architect:
  - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.
- C. Watering: Install and maintain temporary piping, hoses, and meadow-watering equipment to convey water from sources and to keep meadow uniformly moist.
  - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

### **3.5 PESTICIDE APPLICATION**

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

**END OF SECTION 32 9200**

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<div>SCOPE OF WORK</div> <div><div>SUMMARY OF WORK: CITY HALL</div><div>1.) REMOVE ANY AND ALL EXISTING ROOFING MATERIAL FROM SECTIONS EXPOSING THE DECKING SUBSTRATE. 2.) PRIME EXISTING CONCRETE DECK WITH GARLA-PRIME ASPHALT PRIMER AND INSTALL A TORCH APPLIED SBS VAPOR BARRIER. 3.) INSTALL 2-LAYERS OF 2" POLYISOCYANURATE INSULATION IN HIGH-RISE FOAM ADHESIVE. 4.) INSTALL 1/8:12 TAPERED SYSTEM TO ENSURE POSITIVE DRAINAGE IS ACHIEVE WITH ¼:12 SADDLES AND CRICKETS. 5.) INSTALL ¼" PRIMED DENS DECK RECOVERY BOARD OVER NEWLY INSTALLED INSULATION. 6.) INSTALL HPR TORCH BASE SHEET OVER ENTIRE ROOFING SURFACE AND FLASHINGS. 7.) INSTALL STRESSPLY IV MINERAL CAP SHEET OVER ENTIRE ROOFING SURFACE AND FLASHINGS. 8.) ALL SECTIONS ARE TO GET NEW ANSI-SPRI ES1 EDGE METAL. 9.) ON THE UPPER ROOF MANCERED ROOF AREA, THE MEMBRANE IS TO BE CLEANED AND PREPED. INSTALL LIQUITEC OVER EXISTING EPDM AT A RATE OF 2 GAL./SQ. MULTIPLE COATS WILL NEED TO BE REQUIRED AS TO ENSURE COATING DOES NOT DRIP OFF THE SIDE OF THE BUILDING.</div><div>SUMMARY OF WORK: FIRE STATION #5</div><div>1.) REMOVE ANY AND ALL WET INSULATION AND REPLACE WITH SAME KIND AND THICKNESS. 2.) MECHANICALLY FASTEN A ½" PRIMED DENS DECK OVER THE EXISTING ROOFING SYSTEM. 3.) ADD NEW NAILERS AROUND PERIMETER TO MATCH OR EXCEED THE NEW ROOFING HEIGHT. 4.) INSTALL HPR TORCH BASE SHEET OVER THE ENTIRE ROOFING SURFACE AND FLASHINGS. 5.) INSTALL STRESSPLY IV MINERAL CAP SHEET OVER ENTIRE ROOFING SURFACE AND FLASHINGS. 6.) ALL SECTIONS ARE TO GET NEW ANSI-SPRI ES1 EDGE METAL.</div></div>	<div>LOCATION MAP</div> <div></div>	<div><div>CITY OF MUSKEGON</div><div>2023 ROOFING</div><div><div>CITY HALL</div><div>933 TERRACE ST.</div><div>MUSKEGON, MI 49440</div></div><div><div>FIRE STATION #5</div><div>1477 MARQUETTE AVE.</div><div>MUSKEGON, MI 49442</div></div></div> <div></div>	<div></div> <div>DETAILS AND DRAWINGS</div> <div><div>CITY OF MUSKEGON</div><div><div>CITY HALL</div><div>933 TERRACE ST.</div><div>MUSKEGON, MI 49440</div></div><div><div>FIRE STATION #5</div><div>1477 MARQUETTE AVE.</div><div>MUSKEGON, MI 49442</div></div></div>
<div>SITE MAP</div> <div><div> ROOFING SECTIONS INCLUDED</div><div></div></div>	<div>NOTES</div> <div></div> <div>DRAWING INDEX</div> <div>A1 - COVER SHEET A2 – ROOF PLAN – SYSTEM OVERVIEW A3 – ROOF PLAN – SCHEDULE A4 – ROOF PLAN – SOLUTION OVERVIEW A5 – CITY HALL DRAWINGS A6 – FIRE STATION #5 DRAWINGS T1 – CITY HALL CORES T2 – FIRE STATION #5 THERMAL &amp; CORES D1 – DETAILS D2 – DETAILS</div>	<div>BUILDING OVERVIEW</div> <div></div>	<div>SHEET TITLE:</div> <div>COVER SHEET</div> <div>SHEET NO.</div> <div>A1</div>

CITY OF MUSKEGON  
ROOF SECTION OVERVIEW

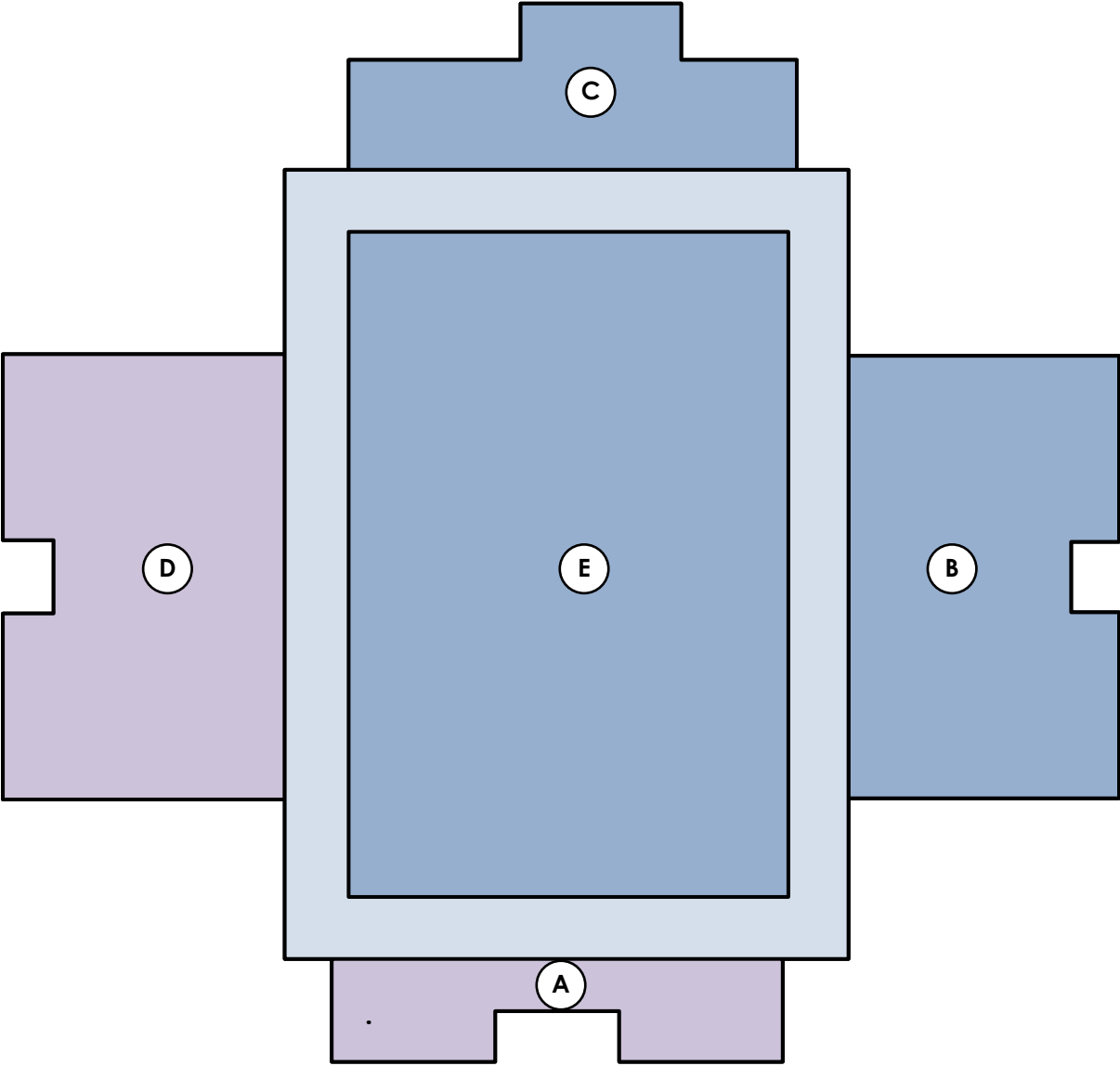
BALLASTED EPDM

COATED MOD BIT

MOD BIT F&G

EPDM

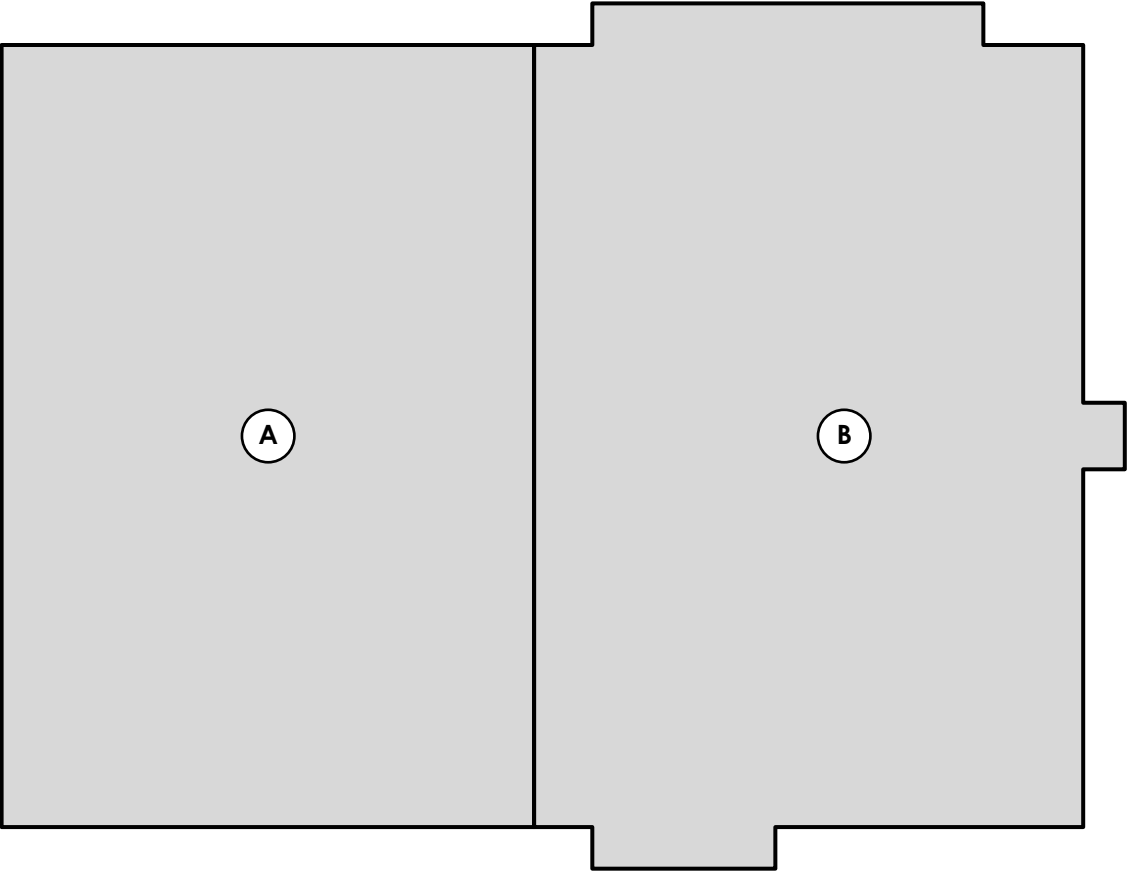
CITY HALL



CITY HALL

SECTION A:	1,600 SF
SECTION B:	4,500 SF
SECTION C:	2,100 SF
SECTION D:	3,700 SF
SECTION E:	9,200 SF
TOTAL:	21,100 SF

FIRE STATION #5



FIRE STATION #5

SECTION A:	1,600 SF
SECTION B:	1,600 SF
TOTAL:	3,200 SF



DETAILS AND  
DRAWINGS

CITY OF MUSKEGON  
CITY HALL  
933 TERRACE ST.  
MUSKEGON, MI 49440

FIRE STATION #5  
1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

SHEET TITLE:

ROOF  
PLAN

SHEET NO.

A2



CITY OF MUSKEGON  
2023 ROOFING SCHEDULE

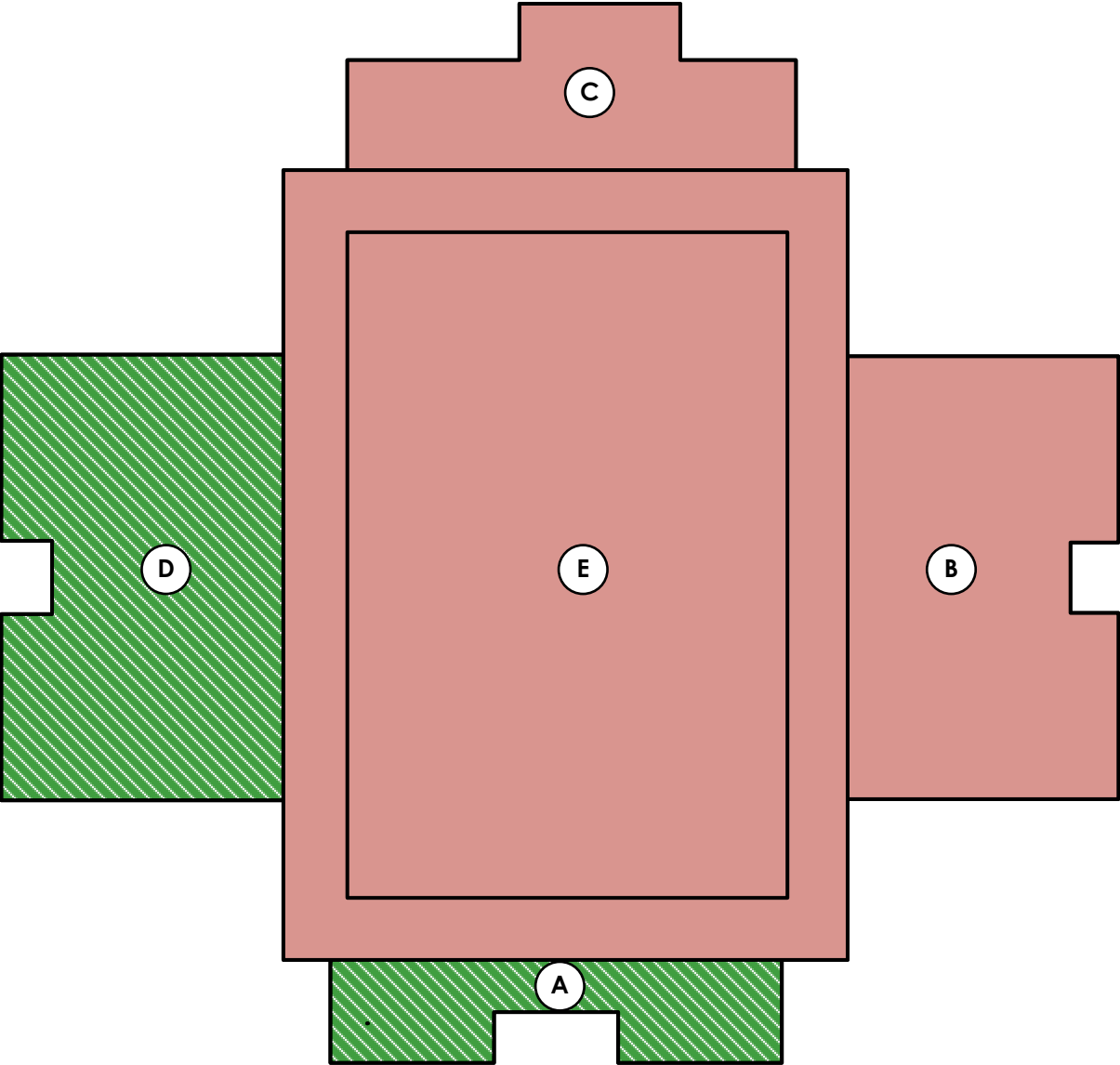
2023 ROOFING

19,000 SF

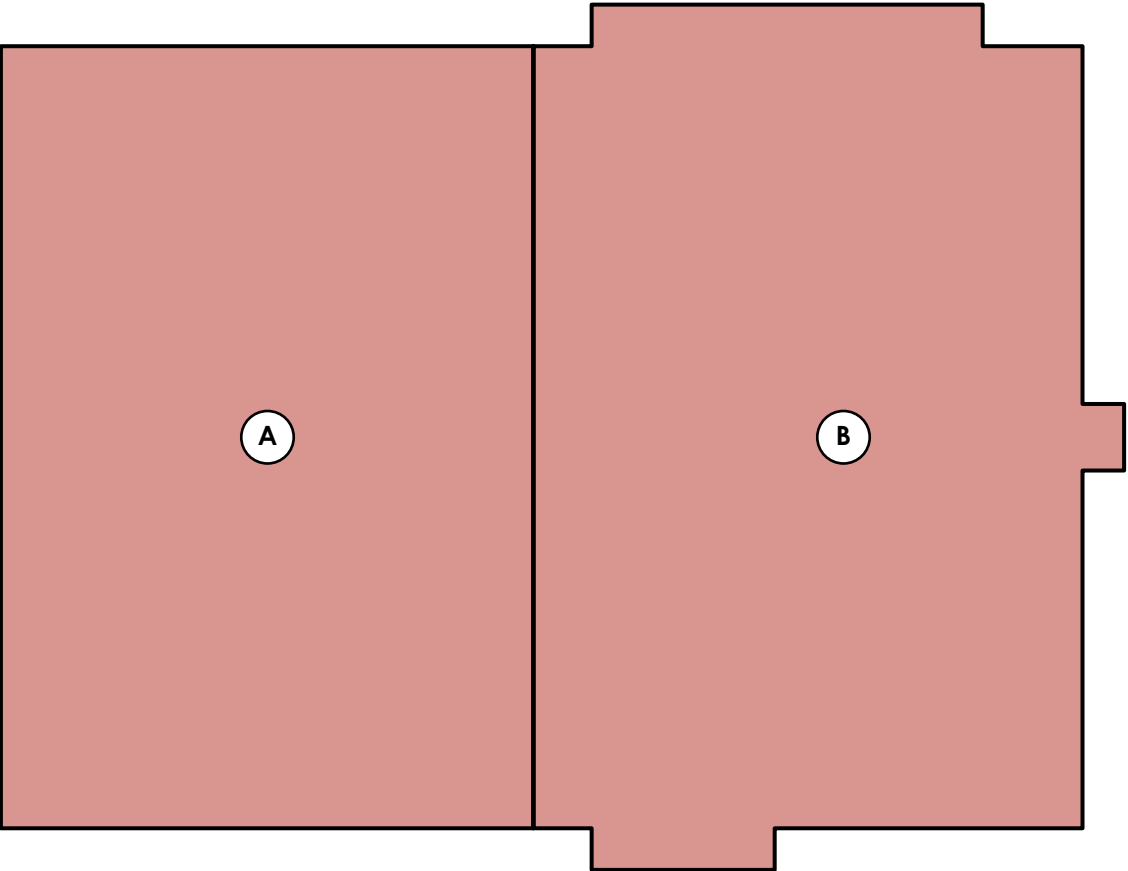
NOT IN SCOPE

5,300 SF

CITY HALL



FIRE STATION #5



DETAILS AND  
DRAWINGS

**CITY OF MUSKEGON**  
**CITY HALL**  
933 TERRACE ST.  
MUSKEGON, MI 49440

**FIRE STATION #5**  
1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

SHEET TITLE:

**ROOF  
PLAN**

SHEET NO.

**A3**

CITY OF MUSKEGON  
2023 ROOFING SCOPE OF WORK

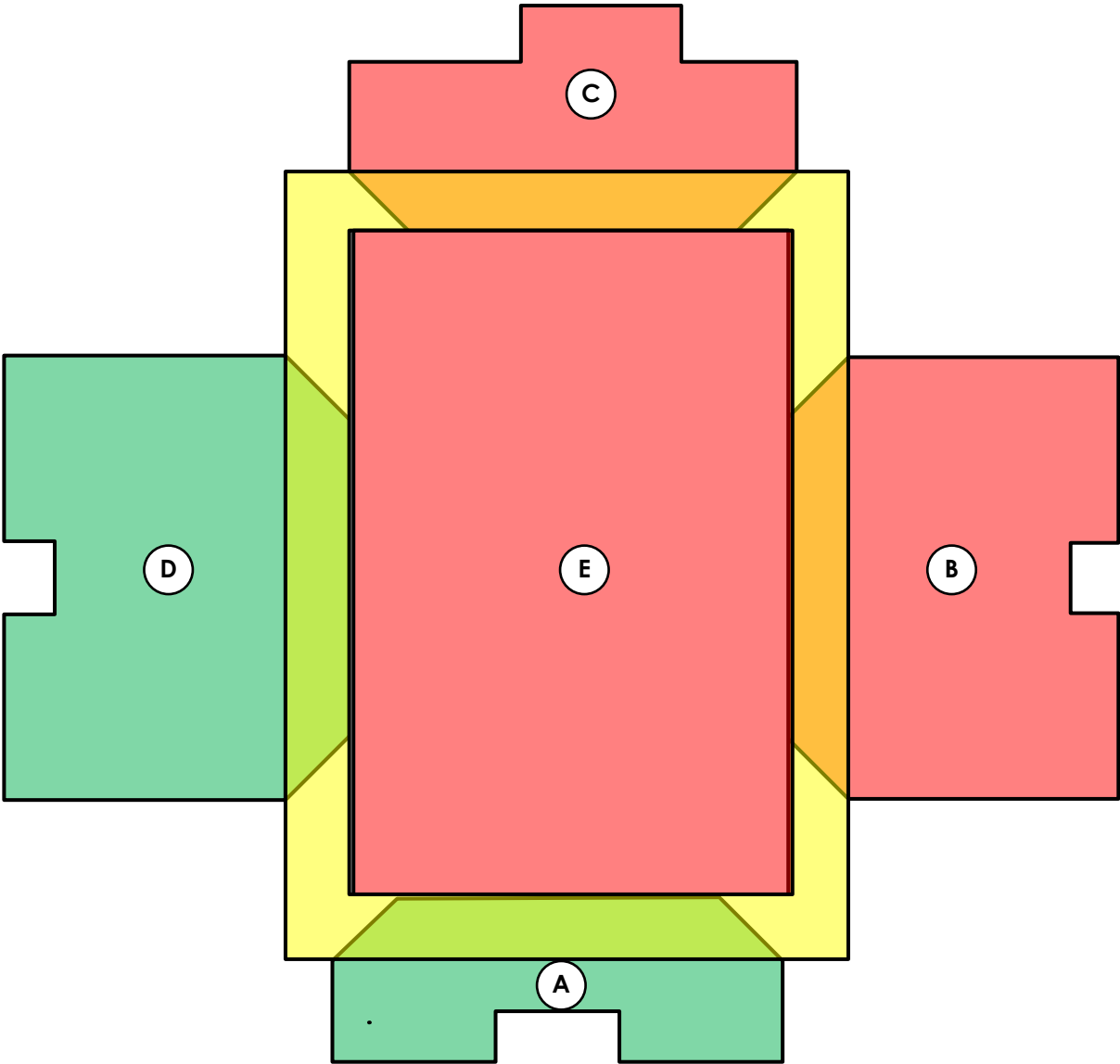
NO WORK

RESTORATION

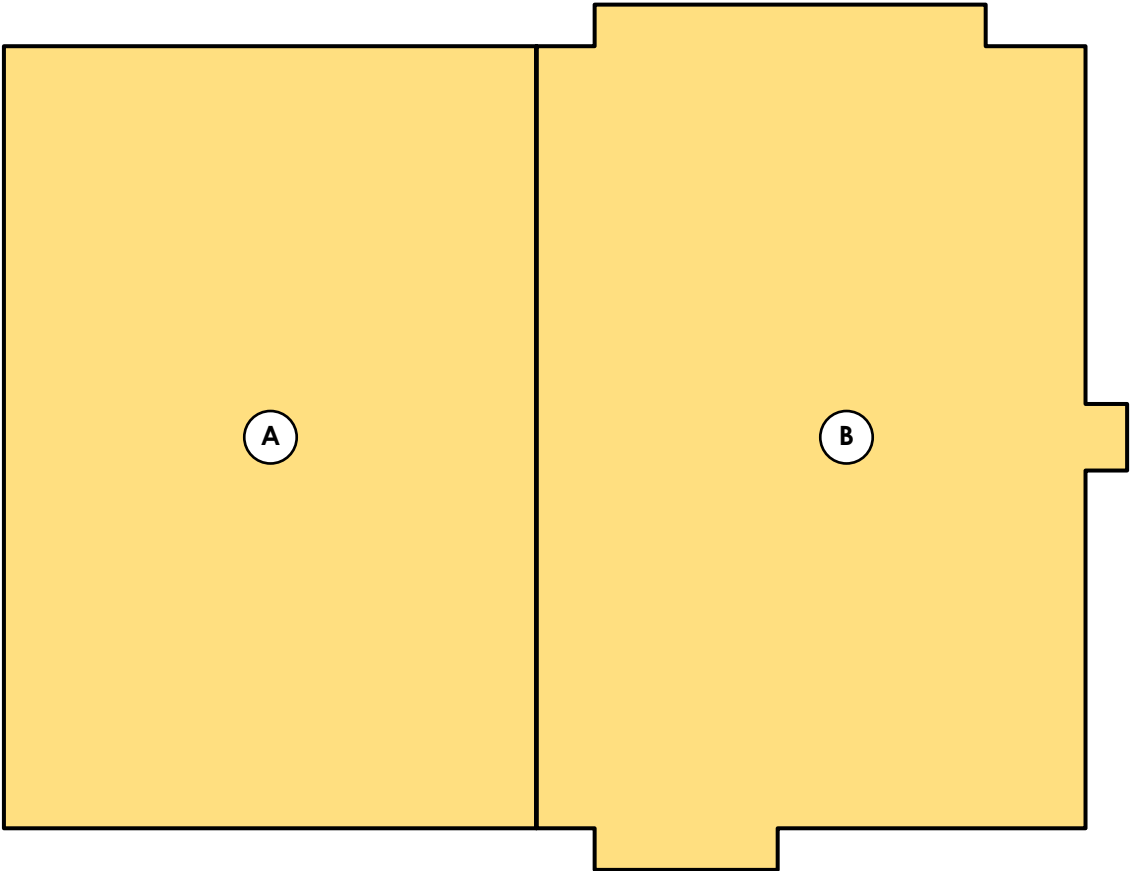
RETROFIT

REPLACEMENT

CITY HALL



FIRE STATION #5



DETAILS AND  
DRAWINGS

CITY OF MUSKEGON

CITY HALL  
933 TERRACE ST.  
MUSKEGON, MI 49440

FIRE STATION #5  
1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

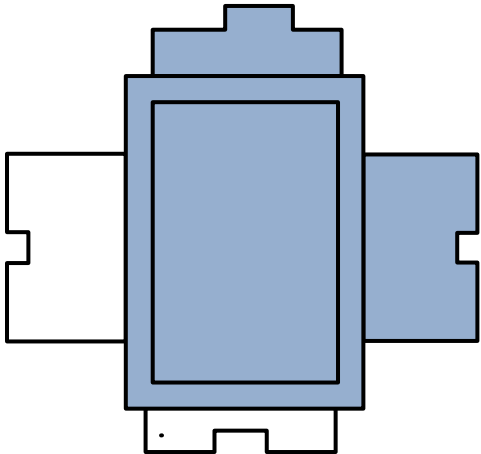
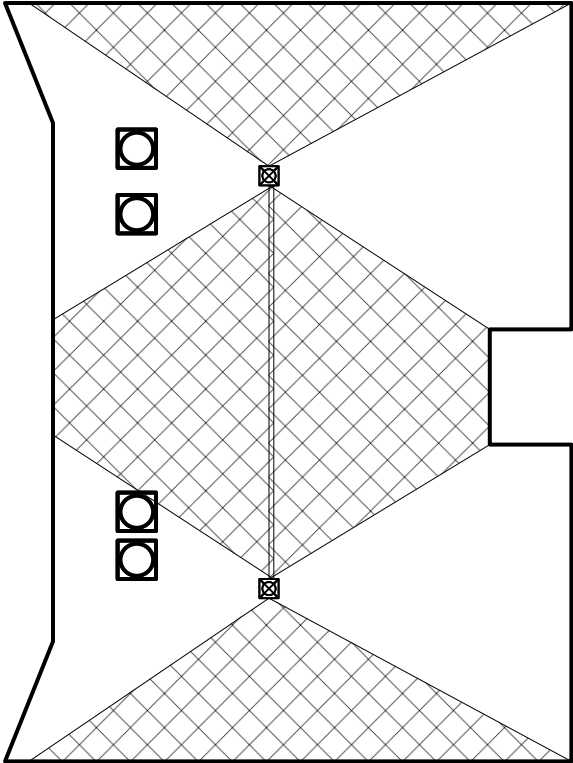
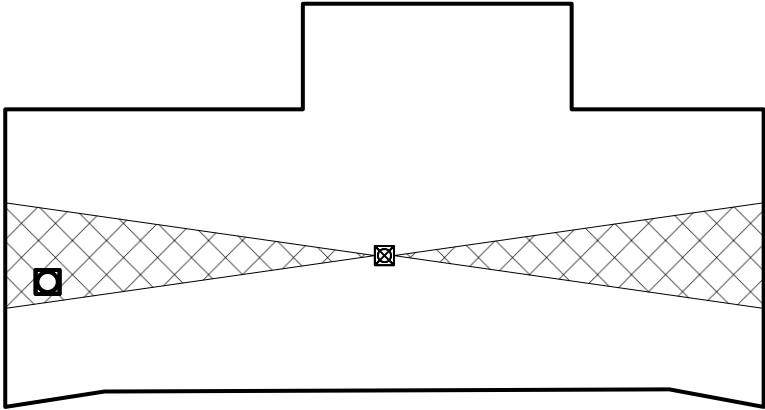
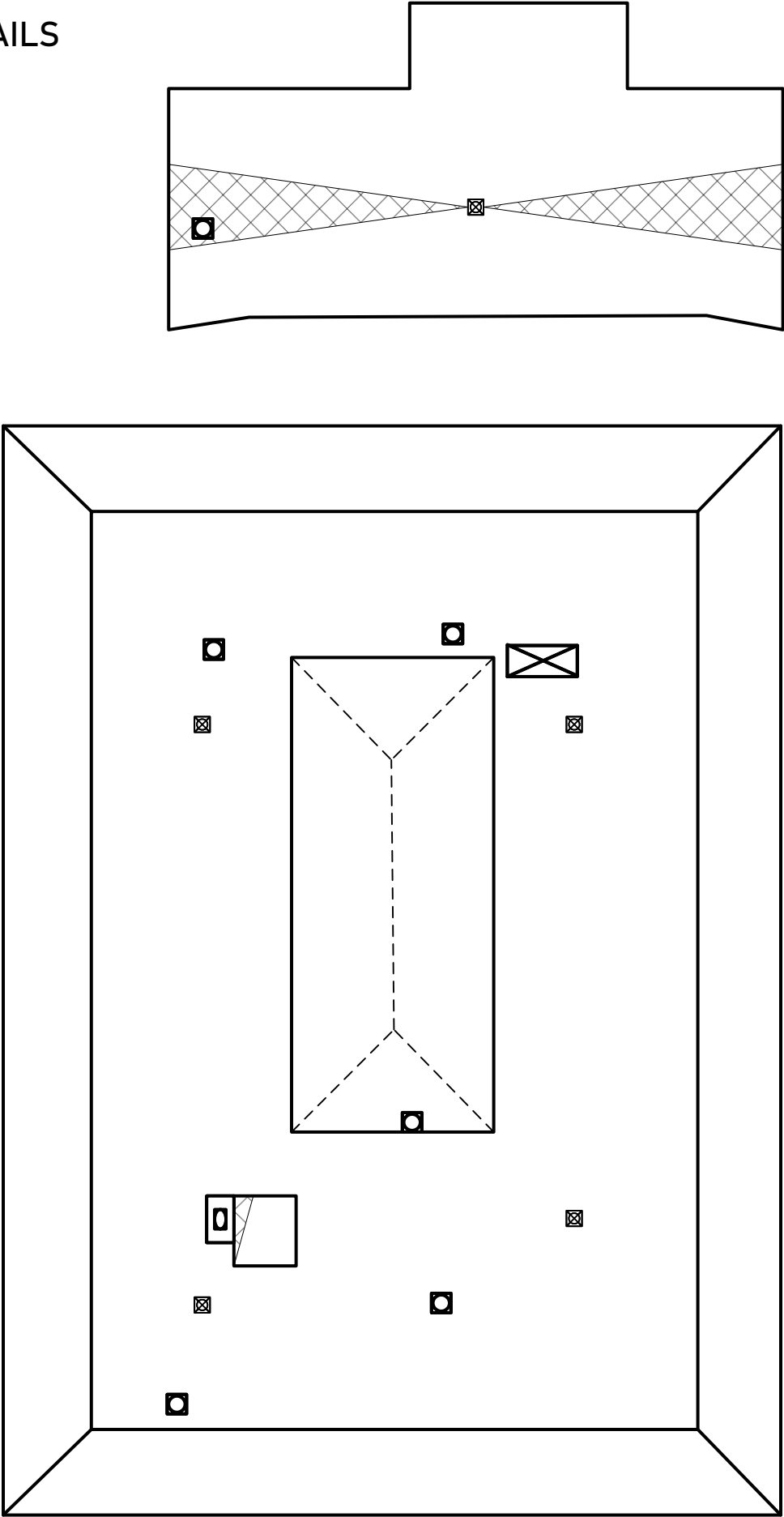
SHEET TITLE:

ROOF  
PLAN

SHEET NO.

A4

CITY OF MUSKEGON  
CITY HALL  
ROOF OVERVIEW & DETAILS



KEY PLAN - 1" = 20'

- LEGEND**
- DRAIN
  - EXHAUST
  - CHIMNEY
  - LADDER
  - CURB
  - PIPE / PENETRATION
  - ROUND CURB PENETRATION
  - TAPERED INSULATION
  - RTU HVAC UNIT



DETAILS AND  
DRAWINGS

**CITY OF MUSKEGON**  
CITY HALL  
933 TERRACE ST.  
MUSKEGON, MI 49440

**FIRE STATION #5**  
1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

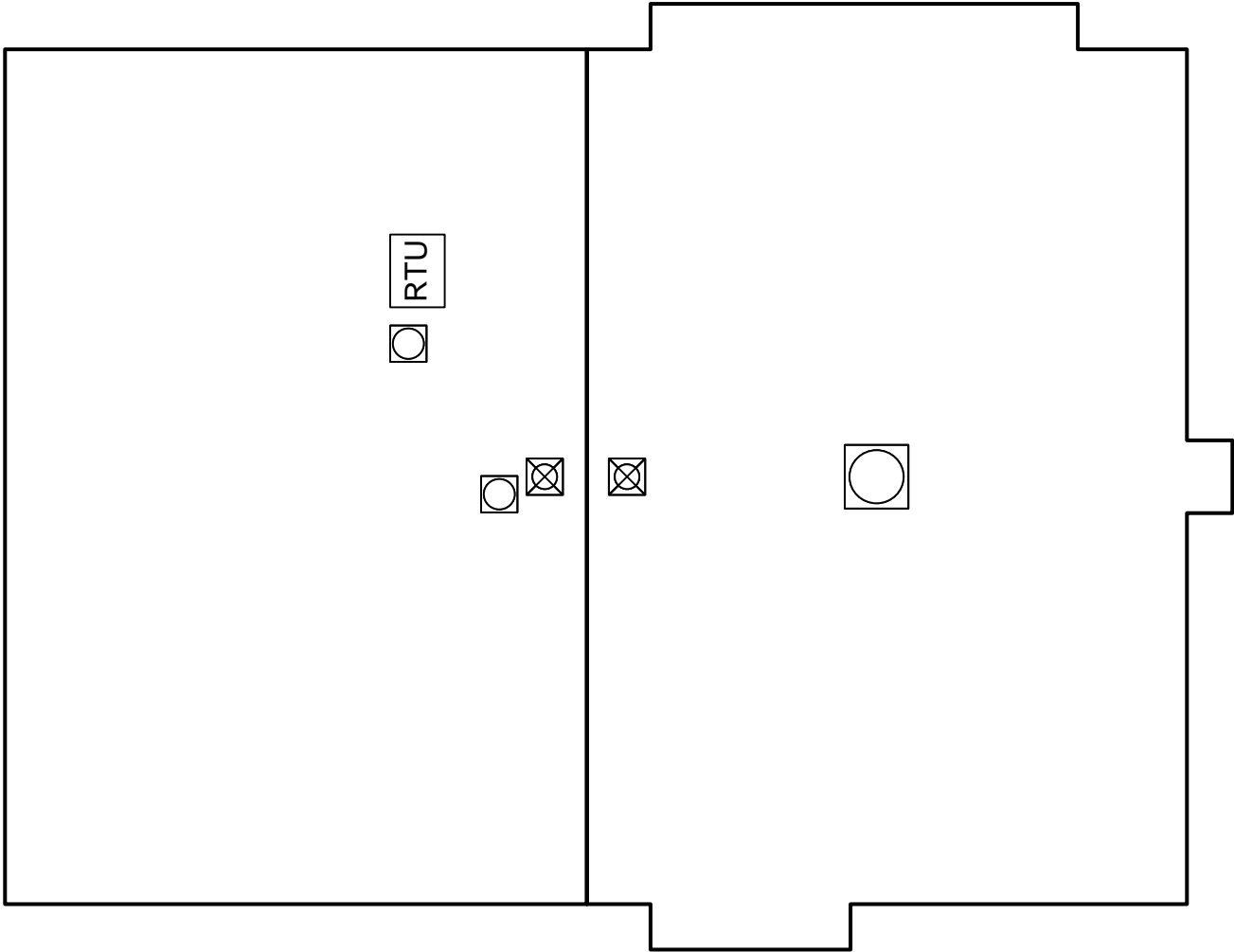
SHEET TITLE:

**ROOF  
PLAN**


SHEET NO.


**A5**


CITY OF MUSKEGON  
FIRE STATION #5  
ROOF OVERVIEW & DETAILS





LEGEND


 DRAIN


 EXHAUST


 CHIMNEY


 LADDER

 CURB

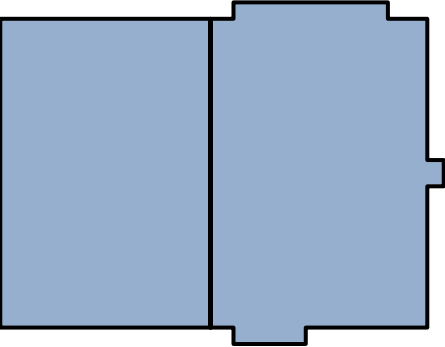
 PIPE / PENETRATION

 ROUND CURB PENETRATION

 TAPERED INSULATION

 RTU HVAC UNIT

KEY PLAN - 1" = 10'





MUSKEGON  
West Michigan's Shoreline City  
www.shorelinecity.com

DETAILS AND DRAWINGS

CITY OF MUSKEGON

CITY HALL  
933 TERRACE ST.  
MUSKEGON, MI 49440

FIRE STATION #5

1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

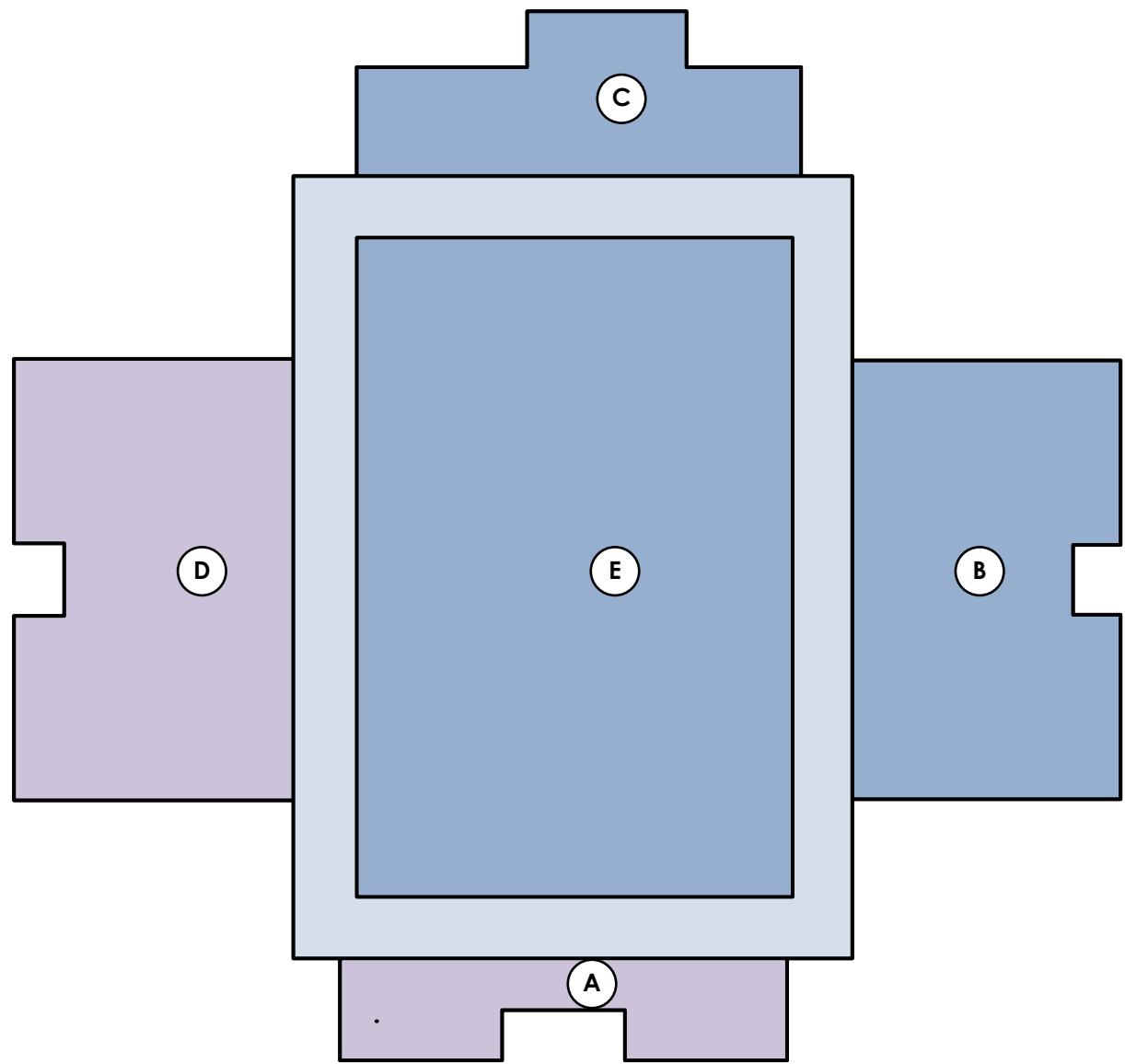
SHEET TITLE:

ROOF PLAN


SHEET NO.

A5

CITY OF MUSKEGON  
CITY HALL  
ROOF SECTION CORE ANALYSIS



A



CONCRETE DECK  
1.5" ISO  
BUR

B

C

D

E



MUSKEGON  
West Michigan's Shoreline City  
www.shorelinecity.com

DETAILS AND  
DRAWINGS

CITY OF MUSKEGON

CITY HALL  
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MUSKEGON, MI 49440

FIRE STATION #5  
1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

SHEET TITLE:

THERMAL &  
CORE  
ANALYSIS

SHEET NO.

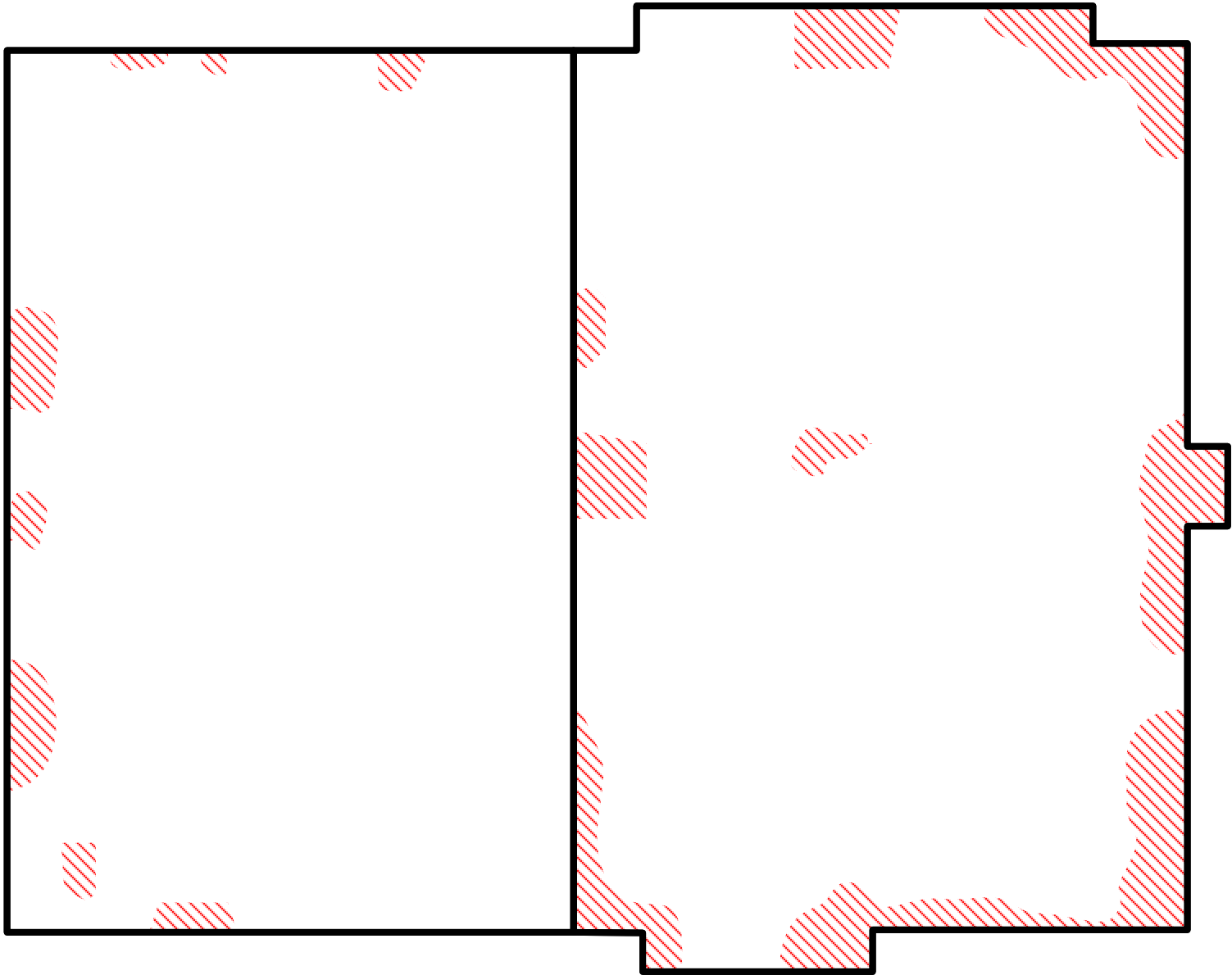
T1

CITY OF MUSKEGON  
FIRE STATION #5  
ROOF SECTION THERMAL & CORE ANALYSIS

THERMAL SCAN INFORMATION:

SECTION:	WET INSULATION SQUARE FOOTAGE
TOTAL:	200 SF
TOTAL:	6.25%

 THERMAL SCAN RESULTS - 2023



A



METAL DECK  
1.5" PERLITE  
MOD BIT  
COATING

B



METAL DECK  
1.5" PERLITE  
MOD BIT  
COATING



DETAILS AND  
DRAWINGS

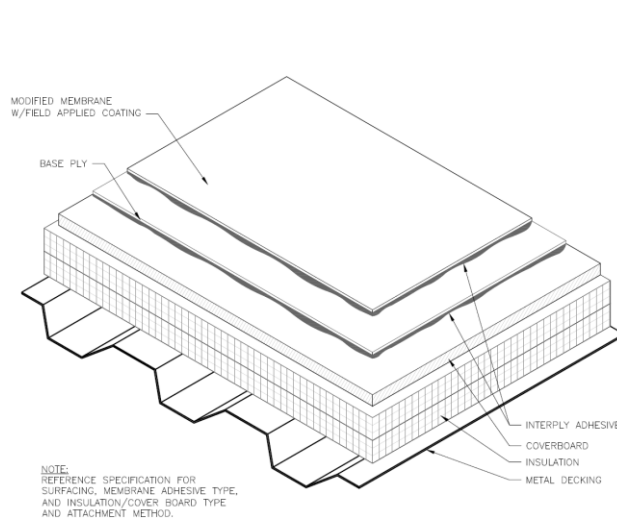
**CITY OF MUSKEGON**  
CITY HALL  
933 TERRACE ST.  
MUSKEGON, MI 49440

**FIRE STATION #5**  
1477 MARQUETTE AVE.  
MUSKEGON, MI 49442

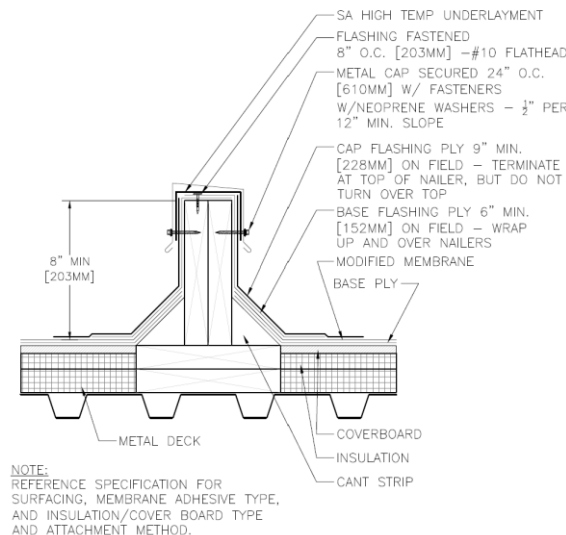
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**THERMAL &  
CORE  
ANALYSIS**

SHEET NO.

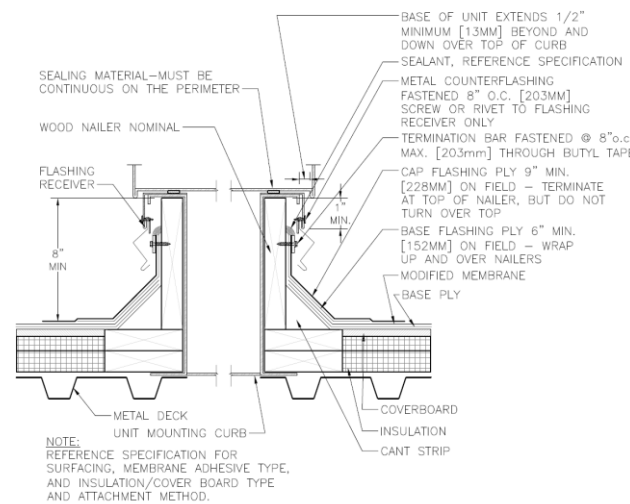
**T2**



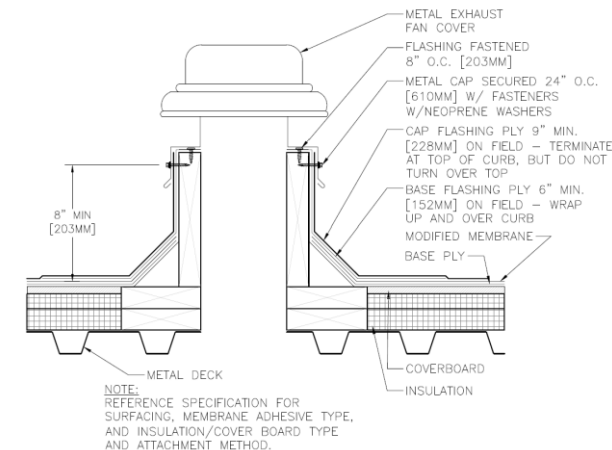
**1**  
**D1** TYPICAL COATED FIELD MEMBRANE DETAIL  
N.T.S.



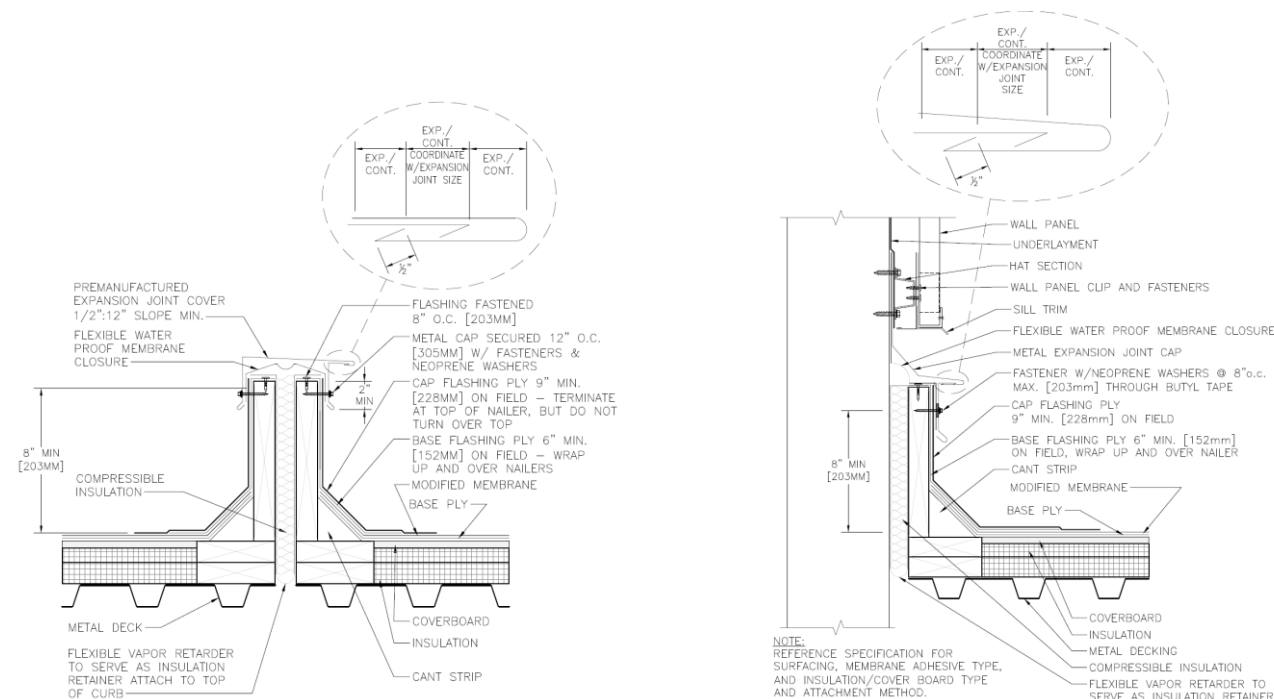
**2**  
**D1** AREA DIVIDER DETAIL  
N.T.S.



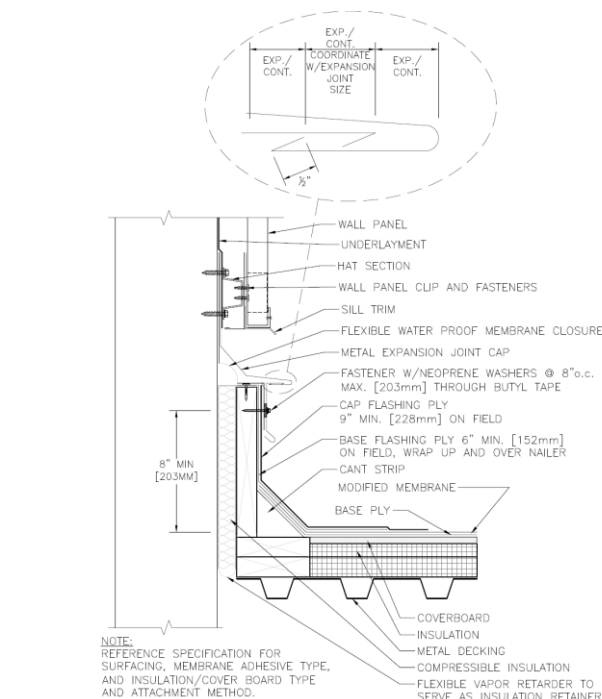
**3**  
**D1** CURB / AIR STATION DETAIL  
N.T.S.



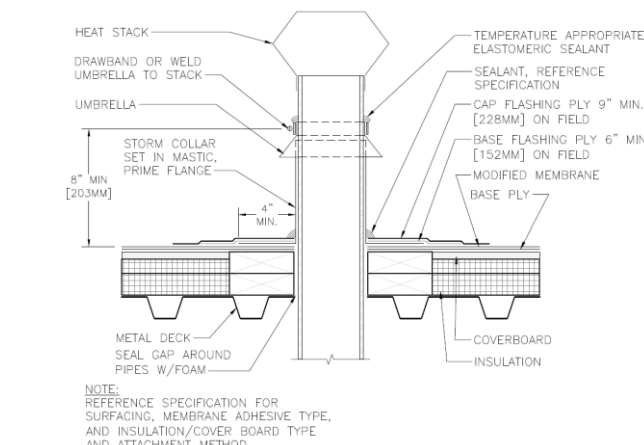
**4**  
**D1** EXHAUST FAN DETAIL  
N.T.S.



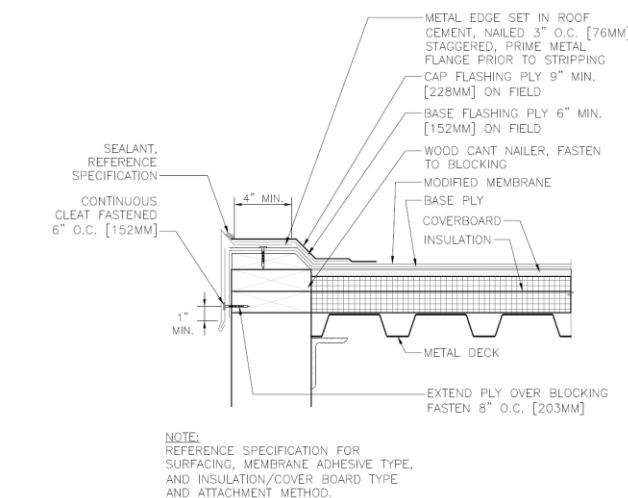
**5**  
**D1** ROOF - ROOF EXPANSION JOINT DETAIL  
N.T.S.



**6**  
**D1** ROOF - WALL EXPANSION JOINT DETAIL  
N.T.S.



**7**  
**D1** HEAT STACK DETAIL  
N.T.S.



**8**  
**D1** RAISED METAL EDGE DETAIL  
N.T.S.

## Detail Requirements

- Details shown are representative of finished details. Contractors shall take into account existing insulation, new insulation, and the new roof system. Wood blocking shall be added to achieve the minimum flashing heights shown.
- Deck types vary between roof areas and buildings. Contractor must verify roof decks and apply details accordingly.



## DETAILS AND DRAWINGS

**CITY OF MUSKEGON**  
**CITY HALL**  
**FIRE STATION #5**  
**1477 MARQUETTE AVE.**  
**MUSKEGON, MI 49442**

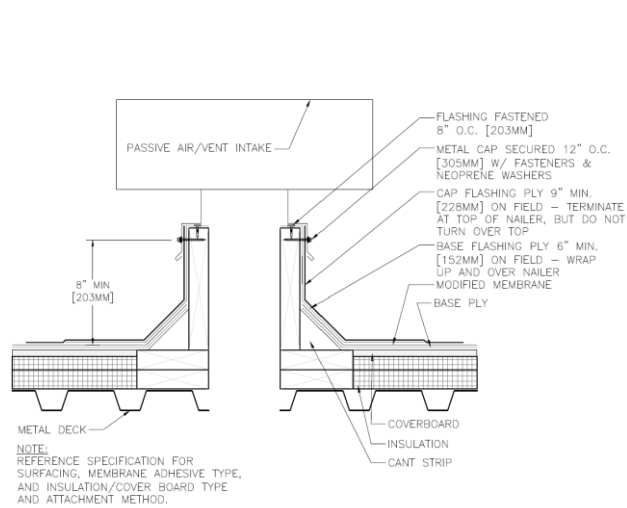
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**DETAILS**

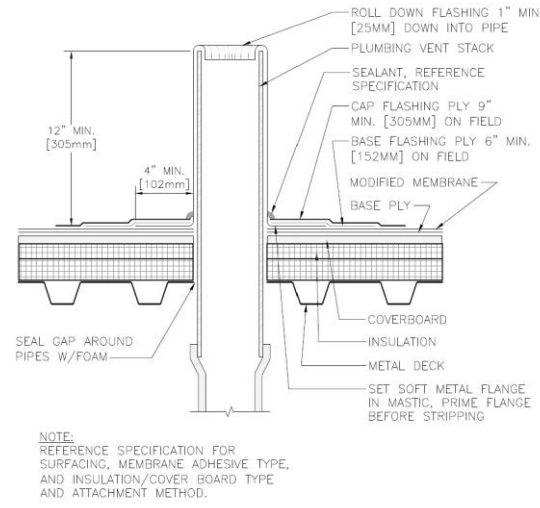
SHEET NO.

**D1**

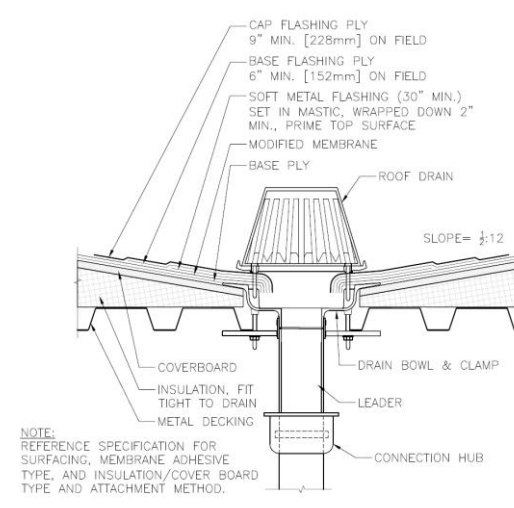




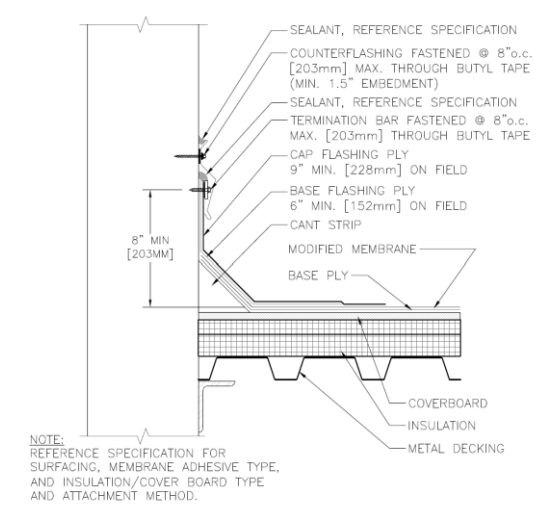
**1**  
**D1** PASSIVE AIR / VENT INTAKE DETAIL  
**N.T.S.**



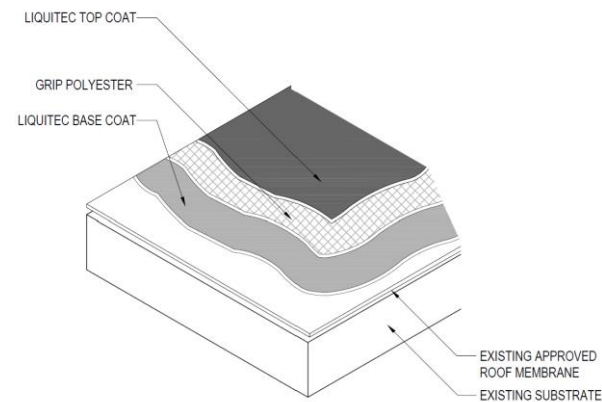
**2**  
**D1** PLUMBING STACK DETAIL  
**N.T.S.**



**3**  
**D1** ROOF DRAIN DETAIL  
**N.T.S.**



**4**  
**D1** WALL FLASHING - SURFACE MOUNTED COUNTERFLASHING DETAIL  
**N.T.S.**



**5**  
**D1** FAS - FIELD DETAIL  
**N.T.S.**

## Detail Requirements

- Details shown are representative of finished details. Contractors shall take into account existing insulation, new insulation, and the new roof system. Wood blocking shall be added to achieve the minimum flashing heights shown.
- Deck types vary between roof areas and buildings. Contractor must verify roof decks and apply details accordingly.



## DETAILS AND DRAWINGS

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**1477 MARQUETTE AVE.**  
**MUSKEGON, MI 49442**

SHEET TITLE:

**DETAILS**

SHEET NO.

**D2**