

# **2025 ROOF REMEDIATION SPECIFICATIONS**

For

**LIVONIA PUBLIC SCHOOLS:  
CHURCHILL HIGH SCHOOL  
8900 NEWBURGH ROAD  
LIVONIA, MICHIGAN**

Prepared For

**LIVONIA PUBLIC SCHOOLS  
15125 FARMINGTON ROAD  
LIVONIA, MICHIGAN**

RTA PROJECT NO. 24-017  
OCTOBER, 2024

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**LIVONIA PUBLIC SCHOOLS**  
**15125 FARMINGTON ROAD**  
**LIVONIA, MI 48154-5474**  
**(734) 744-2500**

The Livonia Public Schools Board of Education, Livonia, Michigan, hereby invites the submission of **sealed bids** for the purchase of: **Central Offices, Churchill High School, Webster Elementary School, and Warehouse Roof Replacement**

**(See Attached Specifications)**

Request for Proposal (RFP) documents can be obtained at the Livonia Public School Website, [www.livoniapublicschools.org](http://www.livoniapublicschools.org) under the section titled DISTRICT, Purchasing Bids, 2023-24 school year, Open Bids OR the SIGMA Website, [www.michigan.gov/SIGMAVSS](http://www.michigan.gov/SIGMAVSS). Please feel free to include additional pages of information if necessary. For bids to be considered they must meet or exceed all specifications herein.

Sealed bids marked **“Central Offices, Churchill High School, Webster Elementary School, and Warehouse Roof Replacement”** will be received until **10:00 a.m. on the 24<sup>th</sup> day of October 2024, at the Board of Education complex, 15125 Farmington Road, Livonia, Michigan**. Mailed bids should be sent to the attention of: Phillip Francis, Assistant Superintendent of District Services, Livonia Public School, 15125 Farmington Road, Livonia, Michigan, 48154. **Livonia Public Schools is not liable for any delivery or postal delays.**

A **walk-through** will be held at **Churchill High School, 8900 Newburgh Road, Livonia, MI 48154, on October 10, 2024, at 10:00 a.m.** Please meet on the east side of the building - door #36.

The **Bid Opening will take place at LPS Central Office Complex on October 24<sup>th</sup>, 2024, at 10:00am**, at Livonia Public Schools Board of Education complex, 15125 Farmington Road, at which time all bids will be publicly opened and read. No bids will be accepted after the date and time specified and will not be opened. Oral, telephone, fax, or electronic mail bids are invalid and will not receive consideration.

All bids must be accompanied by a sworn and notarized statement of disclosing any familial relationship that exists between the owner and any employee of the bidder and any member of the Livonia Board of Education, the Livonia Public Schools Superintendent or Chief Financial Officer, any member of the Wayne RESA Board of Education or the Superintendent of Wayne RESA. **No bid shall be accepted that does not include this sworn and notarized disclosure statement.**

All bids must be accompanied by a sworn and notarized Affidavit of Compliance – Iran Economic Sanctions Act. **No bid shall be accepted that does not include this sworn and notarized statement.**

All bids must be accompanied by the Equal Opportunity Statement. **No bid shall be accepted that does not include this statement.** All bids must include a Treasury listed bid bond or certified check made payable to Livonia Public Schools for not less than five percent (5%) of the contract for each bid over \$29,500.00 and must be submitted with the bid forms furnished with specification.

All bids must be submitted on the forms provided in the bid packet and all sheets must be returned for the bid. All proposals shall remain firm for a period of ninety (90) days.

The Board of Education reserves the right to accept or reject any or all bids, either in whole or in part: to award to other than the low bidder: to waive any irregularities and/or informalities: and, in general, to make awards in any manner deemed to be in the best interests of the district, including awarding by line item, with rationale to support such a decision. Livonia Public Schools local preference resolution will be followed for all proposals.

Prices bid are to be **F.O.B. Destination**. All purchases are to be exempt from all taxes, including state and federal taxes. Exemption certificates will be furnished upon request.

**Any bid submitted will be binding for ninety (90) days subsequent to the date of the bid submission.** All bids must be submitted on the attached bid form and signed by the bidder. Two (2) signed copies of the bid package are to be addressed to the attention of:

Phillip Francis, Assistant Superintendent of District Services  
Livonia Public Schools  
15125 Farmington Road  
Livonia, MI 48154-5474

**“Central Offices, Churchill High School, Webster Elementary School, and Warehouse Roof Replacement”**

One (1) copy of the bid package should be retained for your files. Any questions **regarding bid specifications** should be referred to Harry Lau, Administrator of Facilities and Operations, [hlau@livoniapublicschools.org](mailto:hlau@livoniapublicschools.org), 734.744.2537, between 8 a.m. and 2:00 p.m. EDT. **All samples should be sent to Harry Lau, 15125 Farmington Road, Livonia, MI 48154.**

**LATE BIDS WILL NOT BE ACCEPTED**

**OFFICIAL BID REQUIREMENTS**

**Central Offices, Churchill High School, Webster Elementary School, and Warehouse Roof Replacement**

**NAME OF COMPANY** \_\_\_\_\_

**REPRESENTATIVE** \_\_\_\_\_

**BUSINESS ADDRESS** \_\_\_\_\_

**CITY, STATE, ZIP** \_\_\_\_\_ **DATE** \_\_\_\_\_

*The bidder above-mentioned declares and certifies:*

- A. That said bidder is of lawful age and the only one interested in this bid; that no one other than said bidder has any interest herein.
- B. That this bid is made without any previous understanding, agreement, or connection with any other person, firm or corporation making a bid for the same purpose, and is, in all respects, fair and without collusion or fraud.
- C. Bid prices **MUST** include ALL delivery charges.
- D. Specifications: Any deviation from the specifications set forth must be clearly identified and detailed on the bid proposal form; otherwise, it will be considered that items offered are in strict compliance with these specifications, and successful bidder will be held responsible. In the event that a supplier wishes to bid a voluntary alternate in addition to the base bid (and as a cost savings consideration for the District), such alternate shall be submitted with the bid, on separate sheets and labeled as such with a brief description of the difference and rationale. However, if any substitution or departure is not clearly noted and described, it will be understood that the bid intends to exactly meet the specifications.
- E. That the prices quoted herein are net and exclusive of all federal, state, and municipal sales and excise taxes. **TAXES-** The successful company within this context is considered to be providing a service in which the company is the consumer of all equipment, supplies and materials used in providing this service. The company must pay tax on all equipment, supplies and materials used. When it comes to the affixation of materials to real property or the purchasing of services from a company, the school district's exemption does not flow through to the company who is the consumer of material for tax purposes. Any questions regarding this issue of tax, please contact the Michigan Department of the Treasury at 517.339.1123.
- F. All price proposals and delivery terms shall remain firm for ninety days after the date of bid opening and pricing should be based on current market value with agreement to invoice according to any price **reduction** that may occur prior to final delivery.
- G. District reserves the right to award this bid separately or in total, or for reasons of establishing uniformity, to other than the low bidder.
- H. No member of Livonia Public Schools Board of Education, or any officer, employee, or person whose salary is payable in whole or in part from the treasury of said Board of Education is directly or indirectly interested in this bid or in the supplies, materials, equipment, work, services or any portion of the profits thereof to which it relates.
- I. The bid **MUST** be signed by an authorized company agent and submitted on the attached forms (**School District designed form**).
- J. Under penalty of perjury, the vendor bidding certifies that this bid has not been arrived at collusively or otherwise in violation of Federal or State anti-trust laws. The bidder also certifies that their bid is made without any previous understanding, agreement, or connection with any other person, firm or corporation making a bid for the same purpose, and is, in all respects, fair and without collusion or fraud.

**OFFICIAL BID REQUIREMENTS (continued):**

K. All bids must be accompanied by the following three statements:

- 1) Familial Disclosure Statement – **sworn and notarized.**
- 2) Affidavit of Compliance – Iran Economic Sanctions Act – **sworn and notarized.**
- 3) Equal Opportunity Statement.

**No bid shall be accepted that does not include all of these statements.**

L. A bid bond executed by a U.S. Treasury listed surety company acceptable to the owner, or a cashier's check in the amount of 5% of the sum of the proposal payable to Livonia Public Schools shall be submitted with each proposal in excess of \$29,500.00.

M. Any error or omission found within this specification packet shall be communicated to all bidders as soon as possible. Bidders will not be allowed to take advantage of any errors or omissions in the specifications of this bid. Full instructions shall be given regarding any errors and omissions if called to the attention of Livonia Public Schools within two working days of the bid date.

N. Bidder must be a firm established not less than three (3) years in the field for which this bid is solicited.

O. Additional references may be requested after the bids are submitted. When requested, references are to be furnished as called for. Failure to honor this request will cause the bidder to be subject to rejection.

P. The undersigned certifies that the bid contained herein meets or exceeds specifications.

Signature \_\_\_\_\_ Print Name \_\_\_\_\_

Title \_\_\_\_\_ Date \_\_\_\_\_

**LIVONIA PUBLIC SCHOOLS  
SWORN AND NOTARIZED FAMILIAL DISCLOSURE STATEMENT**

**Central Offices, Churchill High School, Webster Elementary School, and Warehouse Roof Replacement**

All bidders must complete the following disclosure in compliance with MCL 380.1267 and attach this information to the bid. The bid proposal will be accompanied by a sworn statement disclosing any familial relationship that exists between the owner or any employee of the bidder and any member of the Livonia Public Schools Board of Education, the Livonia Public Schools Superintendent or the Chief Financial Officer, any member of the Wayne RESA Board of Education or the Superintendent of Wayne RESA. The District will not accept a bid proposal that does not include this sworn and notarized disclosure statement.

The members of the Livonia Public Schools Board are: Madeline Acosta, Karen Bradford, Tammy Bonifield, Colleen Burton, Crystal Frank, Liz Jarvis, and Mark Johnson. The Livonia Public Schools Superintendent is Andrea Oquist and the Chief Financial Officer and Board Treasurer is Alison Smith.

**The following are the familial relationship(s):**

	<b>Owner/Employee Name</b>	<b>Related to:</b>	<b>Relationship:</b>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____

Attach additional pages if necessary to disclose familial relationships

BIDDER'S FIRM NAME \_\_\_\_\_  
BY (SIGNATURE \_\_\_\_\_  
PRINTED NAME AND TITLE \_\_\_\_\_

STATE OF MICHIGAN )  
                                  )SS  
COUNTY OF            )

Subscribe and sworn before me on this \_\_\_\_\_

Day of \_\_\_\_\_, 20\_\_ , a Notary Public

In and for \_\_\_\_\_ county,

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

My Commission expires \_\_\_\_\_



**EQUAL OPPORTUNITY STATEMENT**

**Central Offices, Churchill High School, Webster Elementary School, and Warehouse Roof Replacement**

Livonia Public Schools:

It is the publicly stated policy of \_\_\_\_\_ not to discriminate against any employee, applicant for employment, contractor, or material supplier, because of race, religion, national origin, ancestry, or sex. With regards to employment, such non-discrimination includes, but not limited to, our (my) policies of recruitment, recruitment advertising, selection for apprenticeships or other training, rates of pay, promotion, transfer, lay-off or termination.

In all advertising for employment, subcontractors, or suppliers we (I) shall state all applicants or respondents will receive consideration without regard to race, religion, color, national origin, ancestry, or sex.

We ( I ) understand that any contract for the Livonia Public Schools shall be in consideration of our maintaining the above mentioned non-discrimination policy.

We ( I ) understand that we ( I ) may be required to submit further information covering the race, color and work classification for our employees and those of subcontractors to be employed on this project.

NAME OF BIDDER (COMPANY): \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

NAME: \_\_\_\_\_

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



**VENDOR PROFILE:**

Livonia Public Schools requests that vendors participating in the **LPS Central Office Paving Phase 1 Updates Bid**, provide specific information about their company. This information will be taken into consideration when the bids are evaluated.

**CONTACT INFORMATION:**

NAME OF COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

SALES MANAGER: \_\_\_\_\_

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

NO. YEARS IN BUSINESS: \_\_\_\_\_ TOTAL NUMBER OF EMPLOYEES: \_\_\_\_\_

**CLIENT CONTACTS:**

Please provide a list of the five (5) or more references of school districts and/or companies using the products or services recommended in this bid proposal:

**NAME OF SCHOOL DISTRICT/COMPANY:** \_\_\_\_\_

Contact/position: \_\_\_\_\_

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

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

City: \_\_\_\_\_ PHONE: \_\_\_\_\_

Estimated volume of business per year: \$ \_\_\_\_\_

**NAME OF SCHOOL DISTRICT/COMPANY:** \_\_\_\_\_

Contact/position: \_\_\_\_\_

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

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

City: \_\_\_\_\_ PHONE: \_\_\_\_\_

Estimated volume of business per year: \$ \_\_\_\_\_

**NAME OF SCHOOL DISTRICT/COMPANY:** \_\_\_\_\_

Contact/position: \_\_\_\_\_

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

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

City: \_\_\_\_\_ PHONE: \_\_\_\_\_

Estimated volume of business per year: \$ \_\_\_\_\_

CLIENT CONTACTS (continued):

**NAME OF SCHOOL DISTRICT/COMPANY:** \_\_\_\_\_

Contact/position: \_\_\_\_\_

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

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

City: \_\_\_\_\_ PHONE: \_\_\_\_\_

Estimated volume of business per year: \$ \_\_\_\_\_

**NAME OF SCHOOL DISTRICT/COMPANY:** \_\_\_\_\_

Contact/position: \_\_\_\_\_

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

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

City: \_\_\_\_\_ PHONE: \_\_\_\_\_

Estimated volume of business per year: \$ \_\_\_\_\_

**NAME OF SCHOOL DISTRICT/COMPANY:** \_\_\_\_\_

Contact/position: \_\_\_\_\_

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

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

City: \_\_\_\_\_ PHONE: \_\_\_\_\_

Estimated volume of business per year: \$ \_\_\_\_\_

**SECTION 00 2114  
INSTRUCTIONS TO BIDDERS**

**PART 1 GENERAL**

**1.01 THE PROJECT**

- A. In accordance with these instructions, the bidder is requested to submit a Bid for project and Contract work indicated in the Roof Replacement Specifications.
- B. Each bidder is referred to the Bid Solicitation for this project, which includes instructions and requirements for bidders in addition to those included in this section.

**1.02 CONTRACTS**

- A. The Owner will enter into a single lump sum Contract with the selected bidder.

**1.03 SUBMISSION OF BIDS**

- A. Place for Receiving Bids
  - 1. Sealed Bids for performing the work pertaining to this project will be received by Livonia Public Schools, 15125 Farmington Road, Livonia, Michigan 48154.
  - 2. All copies of the Bid Form and any other documents required to be submitted with the Bid, shall be enclosed in a sealed opaque envelope.
  - 3. The sealed Bid envelope shall be properly and clearly addressed and shall be identified with the project name, the Bidder's name and address, and the project description for which the Bid is submitted.
  - 4. If the Bid is sent by mail, the sealed envelope shall be enclosed in a mailing envelope with notation "SEALED BID - ROOF REPLACEMENT, Livonia Public Schools" on the face of the envelope.
- B. Date for Receiving Bids
  - 1. Bids shall be mailed or otherwise delivered on time to reach the designated location on or before the time and date of receipt of Bids indicated in the Bid Solicitation, unless extension is made by Addendum. Bids received after time and date for receipt of Bids will remain unopened.
  - 2. Bidders shall assume full responsibility for timely delivery at location designated for receipt of Bids.
  - 3. Oral, telephone, or facsimile Bids are invalid and will not receive consideration.

**1.04 BIDDERS REPRESENTATIONS**

- A. Each bidder by making his Bid represents that:
  - 1. He has read, understands, and makes his Bid in accordance with the Bidding Documents.
  - 2. He has visited the site, has familiarized himself with the local conditions under which the Work is to be performed and has correlated his observations with the requirements of the proposed Bidding Documents.
  - 3. His Bid is based upon the materials, systems, and equipment required by the Bidding Documents without exception.

**1.05 INSPECTION OF SITE**

- A. Before submitting his Bid, each bidder shall personally inspect the site of the proposed work to arrive at a clear understanding of the conditions under which the work is to be done.
- B. Each bidder shall be held to have compared the premises and the site with the Drawings and Specifications, and to have satisfied himself as to the conditions of the premises, the existing obstructions, and any other conditions affecting the completion of his work, all before the delivery of his proposal.
- C. No allowances or extra considerations on behalf of any bidder will be permitted subsequently by reason or error or oversight on the part of the bidder, or on account of interferences by the activities of the Owner.

### **1.06 BIDDING DOCUMENTS**

- A. Bidding Documents which will be issued for the use of bidders and upon which all proposals are to be based, consist of those listed in these specifications.
  - 1. Documents consist of: Plans and specifications prepared by Roofing Technology Associates, Ltd.
- B. In the event that additional documents are required to explain revisions which are made during the bidding period or to give additional information to the bidders, the Roof Consultant will prepare such documents in the form of an Addendum with accompanying drawings, if required, and will send copies of the same to all bidders, prior to the date for receipt of proposals. All proposals are to include the work described and indicated on such additional documents.
- C. Interpretation or Correction of Bidding Documents
  - 1. Bidders shall promptly notify the Roof Consultant of any ambiguity, inconsistency or error which they may discover upon examination of the bidding documents or of the site and local conditions of the work.
  - 2. Any interpretation, correction or change of the documents will be made by the Roof Consultant by Addendum. Interpretations, corrections or changes of the bidding documents made in any other manner will not be binding and bidders shall not rely upon such interpretations, corrections and changes.
  - 3. All questions or inquiry relative to this project shall be directed to: Alex Wisney, Project Manager, Roofing Technology Associates, Ltd. at (734)-591-4444.

### **1.07 BIDDER'S OPTIONS**

- A. For products specified only by reference standard, select product meeting that standard by any manufacturer.
- B. For products specified by naming several products or manufacturers, select any one of the products and manufacturers named which comply with the technical specifications.
- C. For products specified by naming several products or manufacturers and stating "or approved equal" or similar wording, submit a request for approval for review and approval by the Roof Consultant.
- D. For products specified by naming only product and manufacturer, there is no option and no substitutions will be allowed.

### **1.08 SUBSTITUTIONS**

- A. Base Bid shall be in accordance with these Bidding Documents.
- B. No substitution of products or roofing systems will be allowed on this project, unless a product or roofing system specified is no longer manufactured.
- C. In the event that a product or roofing system is no longer manufactured, contact the Roof Consultant. An Addendum will be issued with additional documents for acceptable alternate products or roofing systems.

### **1.09 BIDDING PROCEDURES**

- A. Form of Bids
  - 1. Bid forms are furnished within the Project Specifications. Each bidder shall submit his bid in duplicate and retain one copy for his files.
  - 2. Bids must be filled out fully and correctly and submitted only on Bid Forms provided. Bids in any other form will be rejected.
  - 3. All information required to be provided on the Bid Form shall be typewritten or printed manually in ink with a handwritten signature where noted.
- B. Bid Security
  - 1. Bids shall be accomplished by a Bid Security in the form of a bid bond or a certified check made payable to the Owner in the amount of five percent (5%) of the Base Bid lump sum price.

2. Such Bid Security shall be submitted with the following understanding:
  - a. If a Bidder defaults in executing an Agreement or in furnishing and delivering the performance bond and labor and material payment bonds within seven (7) calendar days after receipt of an award of the contract, the Owner will sustain liquidated damages in the amount covered by the Bid Security and the Bid Security will become the property of the Owner.
  - b. If the Bidder executes and delivers the Agreement and the performance bond and labor and material payment bonds within the above time, or if the bid is not accepted within the time stipulated under "Withdrawal of Bid" in the Bid Form, the Bid Security will be returned to the Bidder by the Owner.
  - c. The Bid Security for all except the lowest three Bidders will be returned within ten (10) working days after the opening of bids, unless otherwise agreed upon with the Owner.
  - d. The remaining Bid Securities will be returned to the remaining Bidders with ten (10) working days after an Agreement has been executed. If an Agreement has not been executed within the time stipulated under "Withdrawal of Bid" in the Bid Form, then the Bid Security of any Bidder so desiring will be returned upon his written request, provided such Bidder has not been notified of the acceptance of the Bid prior to the date of such request.
- C. Modification or Withdrawal of Bid
  1. A Bid may not be modified, withdrawn or canceled by the bidder during the stipulated time period following the time and date designated for the receipt of Bids, and bidder so agrees in submitting his bid.
  2. Bidder may withdraw his proposal at any time prior to the time set for opening of proposals.

#### **1.10 CONSIDERATION OF BIDS**

- A. Opening of Bids
  1. The properly identified bids received on time will be opened and publicly read aloud as stated in the Bid Solicitation.
- B. Acceptance of Bid (Award)
  1. The Board of Education reserves the right to accept or reject any total bid, or part thereof, and to award the total Contract or part thereof to other than the low bidder. All decisions regarding Contract award will be final.
  2. The Owner shall have the right to accept Alternates in any order or combination, and to determine the low bidder on the basis of the sum of the Base Bid and the Alternates accepted.
- C. Notice of Award
  1. The Contract shall be deemed as having been awarded when formal notice of acceptance of his Proposal has been duly served upon the intended awardee by an officer or agent of the Owner duly authorized to give such notice. The Contract Date shall be the date of this Notice of Award.
  2. The bidder to whom the Contract is awarded by the Owner shall, within seven (7) days after Notice of Award and/or receipt of Agreement forms from the Owner, sign and deliver to the Owner all required copies.
- D. Time of Starting and Completion
  1. The roofing work shall begin on June 9, 2025 and be fully completed on August 15, 2025.
  2. The successful bidder shall furnish insurance and commence active work on the Project within ten (10) days after receipt of notice of award and shall complete the work within the time stated above.

E. Work Week

1. The bidder, if awarded a Contract, shall be required to establish the work week and hours of work as required to properly man the project, maintain the progress schedule and complete the work within the time stated in the Contract. The Contractor shall provide and pay for any overtime necessary to complete his work within the agreed time, with no change in the Contract Sum or additional costs to the Owner.

**1.11 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND**

A. Time of Delivery and Form of Bonds

1. Bidders, will be required to furnish bonds executed on AIA Document A311, with the amount shown for each if over \$50,000, part equal to 100 percent of the total amount payable by terms in the Contract. Premiums for such bonds shall be included in the Base Bid
2. The Bidder shall deliver the required Bonds to the Owner not later than the date of execution of the Contract, or if the Work is commenced prior thereto in response to a Notice of Award, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be issued.

**1.12 FORM OF CONTRACT BETWEEN OWNER AND CONTRACTOR**

- A. A Contract for the Work will be written on AIA A105 - Standard Form of Agreement Between Owner and Contractor for a Residential or Small Commercial Project; 2007.

**1.13 PERMITS**

- A. Do not include the cost of the building permits in the Base Bide. Provide the Owner with a change order, upon request by the Owner, for the cost of building permits required by the local municipality or the State of Michigan.

**END OF SECTION**

**SECTION 00 4100  
BID FORM**

**PART 1 GENERAL**

**1.01 TO:**

- A. Owner
  - 1. Livonia Public Schools
  - 2. 15125 Farmington Road
  - 3. Livonia, Michigan 48154
  - 4. Attention: Mr. Phillip Francis

**1.02 FOR:**

- A. Roof Replacement of the Designated Roof Areas
- B. Project: Churchill High School
- C. 8900 Newburgh Road
- D. Livonia, Michigan 48150

**1.03 DATE: \_\_\_\_\_ (BIDDER TO ENTER DATE)**

**1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)**

- A. Bidder's Full Name \_\_\_\_\_
  - 1. Address \_\_\_\_\_
  - 2. City, State, Zip \_\_\_\_\_

**1.05 THE UNDERSIGNED IN SUBMITTING THIS PROPOSAL AGREES AS FOLLOWS:**

- A. The entire work shall subject to the requirements of the General Conditions of the Contract contained in and forming a part of AIA Document A105-2007, Standard Form of Agreement Between Owner and Contractor for a Residential or Small Commercial Project.
- B. Prior to execution of the Agreement for this work, the Contractor shall furnish the Owner with copies of Certificates of Insurance.

**1.06 LIABILITY**

- A. The Contractor shall and does assume liability under the terms of the Workmen's Compensation Law of the State in which the work is being performed.
- B. Contractor assumes all liability for injury to persons or damage to, or loss of property of (a) Contractor, his agents or employees, (b) Owner, its agents or employees, or members and (c) any other person, firm or corporation arising in any way directly or indirectly out of the performance of this Contract whether or not such injury, damage, or loss is due to the negligence of the Contractor, its agents or employees. This foregoing assumption of liability by Contractor shall include, without limiting the generality of the foregoing, any injury, damage, or loss arising out of the operation of motor vehicles. This assumption of liability by Contractor shall also include, without limiting the generality of the foregoing, any injury, damage or loss (1) arising out of the negligence of Contractor, (2) arising out of the joint or combined negligence of Contractor and Owner, (3) arising out of the negligence of a third party or parties and Contractor, or (4) without limiting in any way the foregoing, arising in any way, directly or indirectly out of the conduct or occurrence not fully limited to the separate sole negligence of the Owner as proven by Contractor or third party.
- C. Should the Owner or an agent or employee of the Owner or members be made a party to any suit or proceeding, even though such suit or proceeding is groundless, false or fraudulent, arising out of injury, damage, or loss for which the Contractor assumes liability under this Contract, the Contractor will defend such suit or proceeding and shall indemnify and save harmless the Owner, its agents or employees, of and from all liability loss, expenses, judgments (including interest thereon), including Attorney's fees.

- D. Since Contractor hereunder shall be an independent Contractor and not agent, servant, or employee of Owner, Contractor assumes full responsibility for compliance with any and all Federal, State, or municipal laws, ordinances, and regulations, including (but not limited to) those having to do with labor, wages and benefits, or taxes and duties collectible from employees under all applicable provisions of the law.

**1.07 INSURANCE**

- A. Unless otherwise specified, the Contractor shall, before commencing work hereunder, procure and thereafter maintain policies of insurance satisfactory to the Owner covering the liabilities assumed above in the following minimum amounts.
- B. Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than \$1,000,000 each accident, \$2,000,000 general aggregate and \$1,000,000 aggregate for products-completed operations hazard, providing coverage for claims.
- C. Automobile Liability covering vehicles owned by the Contractor and non-owned vehicles used by the Contractor, with policy limits of not less than \$1,000,000 per accident, for bodily injury, death of any persons and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.
- D. Workers' Compensation Insurance: All liabilities imposed by Workers' Compensation statute and Employers Liability Insurance with limit not less than \$1,000,000 per accident for bodily injury or disease.
- E. The following party must be named as additional insured: Churchill High School and Livonia Public Schools.
- F. The Contractor agrees to file with the Owner before commencing work hereunder, copies of policies of such insurance which shall contain by endorsement, the specific liabilities assumed above, together with Certificates of Insurance which shall contain a provision that no change in the amount of said insurance, or termination thereof, shall take place without previous 10 days written notice to the Owner and its written consent to such change or termination.

**1.08 OFFER**

- A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Roofing Technology Associates, Ltd. for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sums of:
- B. BASE BID - CHURCHILL HIGH SCHOOL (AREAS C2-C4, D-D4, E3-E4, F-F2, F4, and F7)
  - 1. \_\_\_\_\_ Dollars
  - 2. (\$ \_\_\_\_\_), in lawful money of the United States of America.
- C. Costs included within the lump sum base bid price to provide pollution insurance as shown within Article 5 of the contract:
  - 1. \_\_\_\_\_ Dollars
  - 2. (\$ \_\_\_\_\_), in lawful money of the United States of America.
    - a. NOTE: This cost will be deducted from the base bid price should the owner elect to remove it from the project, upon award to the lowest responsible bidder(s).
- D. All purchases are to be exempt from all taxes, including state and federal taxes. Exemption certificates will be furnished upon request.

**1.09 ACCEPTANCE**

- A. This offer shall be open to acceptance and is irrevocable for ninety (90) days from the bid closing date.
- B. If this bid is accepted by Owner within the time period stated above, we will:
  - 1. Execute the Agreement within seven days of receipt of Notice of Award.



**1.10 CONTRACT TIME**

- A. Start Date: On \_\_\_\_\_, 2025.
- B. Completion Date: On \_\_\_\_\_, 2025.
- C. Failure to complete the Contract within the specific time parameters shall result in a 1% penalty per week of the total Contract Price.

**1.11 REJECTION OF BID**

- A. The undersigned understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

**1.12 ALTERNATES**

- A. ALTERNATE PRICES - The undersigned agrees that at the Owner's discretion, the Base Bid Sum may be altered as follows if the Alternate Prices indicated and defined in the Alternates Section and elsewhere in the Bidding Documents are to be executed. Failure to bid upon requested Alternated Prices shall indicate no change on the Base Bid Sum.
- B. ALTERNATE NO. 1 - AREAS E, E1, and E2.
  - 1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**1.13 UNIT PRICES**

- A. UNIT PRICES - The undersigned agrees that at the Owner's discretion, the Base Bid Sum may be altered as follows if the Unit Prices indicated and defined in the Unit Prices Section and elsewhere in the Bidding Documents are to be executed. Failure to bid upon requested Unit Prices shall indicate no change in the Base Bid Sum.
- B. UNIT PRICE NO. 1 - WOOD NAILERS & PLYWOOD
  - 1. Add the sum of:
    - 1" x 6" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 1" x 8" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 2" x 4" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 2" x 6" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 2" x 8" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 2" x 10" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 2" x 12" \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per lineal foot
    - 1/2-inch CDX plywood \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per square foot
    - 3/4-inch CDX plywood \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per square foot
- C. UNIT PRICE NO. 2 - 18 GAUGE SHEET METAL PLATE
  - 1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
per square foot

D. UNIT PRICE NO. 3 - ROOF DRAIN REPLACEMENT

1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_ )  
per drain

E. UNIT PRICE NO. 4 - TECTUM ROOF DECK REPLACEMENT

1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_ )  
per square foot

F. UNIT PRICE NO. 5 - STEEL ROOF DECK REPLACEMENT

1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_ )  
per square foot

G. UNIT PRICE NO. 6 - REPLACEMENT 2.0-INCH ISOCYANURATE ROOF INSULATION

1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_ )  
per square foot

H. UNIT PRICE NO. 7 - REPLACEMENT 1.5-INCH ISOCYANURATE ROOF INSULATION

1. Add the sum of:  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_ )  
per square foot

**1.14 ADDENDA**

A. 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.

1. Addendum # \_\_\_\_\_ Dated \_\_\_\_\_.
2. Addendum # \_\_\_\_\_ Dated \_\_\_\_\_.

**1.15 BID FORM SIGNATURE(S)**

- A. The Corporate Seal of
- B. \_\_\_\_\_
- C. (Bidder - print the full name of your firm)
- D. was hereunto affixed in the presence of:
- E. \_\_\_\_\_
- F. (Authorized signing officer, Title)
- G. (Seal)
- H. \_\_\_\_\_
- I. (Authorized signing officer, Title)

**END OF SECTION**

**SECTION 00 5000  
CONTRACTING FORMS AND SUPPLEMENTS**

**PART 1 GENERAL**

**1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT**

- A. The Agreement and General Conditions are based on AIA A10.

**1.02 FORMS**

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- B. Post-Award Certificates and Other Forms:
  - 1. Schedule of Values Form: AIA G703.
  - 2. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
- C. Clarification and Modification Forms:
  - 1. Change Order Form: AIA G701.
- D. Closeout Forms:
  - 1. Certificate of Substantial Completion Form: AIA G704.

**1.03 REFERENCE STANDARDS**

- A. AIA A105 - Standard Form of Agreement Between Owner and Contractor for a Residential or Small Commercial Project; 2007.
- B. AIA G701 - Change Order; 2001.
- C. AIA G702 - Application and Certificate for Payment; 1992.
- D. AIA G703 - Continuation Sheet; 1992.
- E. AIA G704 - Certificate of Substantial Completion; 2017.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# DRAFT AIA® Document A105™ – 2017

## Standard Short Form of Agreement Between Owner and Contractor

**AGREEMENT** made as of the « » day of « » in the year «Two Thousand Nineteen.»  
(In words, indicate day, month and year.)

**BETWEEN** the Owner:  
(Name, legal status, address and other information)

«Livonia Public Schools»  
«15125 Farmington Road  
Livonia, MI 48154 »

and the Contractor:  
(Name, legal status, address and other information)

« »  
« »  
« »  
« »

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

«Livonia Public Schools»  
«Sinking Fund Roofing Projects»  
« »

The Architect:  
(Name, legal status, address and other information)

«Roofing Technology Associates, Ltd. »  
«38031 Schoolcraft  
Livonia, Michigan 48150-1065»  
«734 591-4444 »

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**  
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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

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**ARTICLE 1 THE CONTRACT DOCUMENTS**

**§1.1** The Contractor shall faithfully and competently complete the Work described in the Request for Proposal dated \_\_\_\_\_ including Addendum No. 1 dated \_\_\_\_\_, Addendum No. 2 dated \_\_\_\_\_, and Addendum No. 3 dated \_\_\_\_\_ (collectively “the RFP”), including Advertisement or Invitation to Bid, Instructions to Bidders, Drawings and Specifications and the Contract Documents for the Project, as well as in the Contractor’s Proposal in response to the RFP dated \_\_\_\_\_ including the Post-Bid interview documents dated \_\_\_\_\_ (collectively the “Proposal”), which Proposal is incorporated herein by reference. In the event of any inconsistency or ambiguity between this Agreement and the Contractor’s Proposal, the terms that are more favorable to the Owner shall govern. The Contract Documents consist of

- .1 this Agreement signed by the Owner and Contractor;
- .2 all the Drawings and Specifications prepared by the Architect for construction for the Project, attached hereto by this reference, and including (but not necessarily limited to) the following:  
Drawings:

	Title	Date



Specifications:

Section	Title	Pages
[Redacted]	[Redacted]	[Redacted]

.3 addenda, if any, prepared by the Architect as follows:

Number	Date	Pages
[Redacted]	[Redacted]	[Redacted]

.4 written orders for changes in the Work, pursuant to Article 10, issued after execution of this Agreement; and

.5 other Contract Documents, if any, identified as follows:

- Exhibit A – Schedule of Values
- Exhibit B – Unit Prices
- Exhibit C – Allowances included in the Contract Sum
- Exhibit D - List of Subcontractors and Suppliers whose subcontract value is \$10,000 or above
- Exhibit E – Project Preliminary Major Milestone Schedule

**§1.2** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Work called for on the Drawings and not mentioned in the Specifications, or vice versa, shall be performed as though fully set forth in both. Nothing in this Section 1.2, however, shall relieve the Contractor of any of its obligations under the Contract Documents. Other conflicts between or among the Contract Documents shall be resolved under the following rules of construction:

- .1 the specific shall govern over the general;
- .2 specified dimensions shown on the Drawings shall govern, even though they may differ from dimensions scaled on the Drawings, if any;
- .3 Drawings of larger scale shall govern over those of smaller scale; any special Drawing details shall govern over standard detail;
- .4 Specifications shall govern over Drawings in matters of material or equipment specified; Drawings shall govern over Specifications in matters of construction or installation detail;
- .5 documents of later date shall always govern; except that the Agreement shall govern over all other documents, regardless of their dates; and
- .6 in the event of any inconsistency or ambiguity between this Agreement and the Contract Documents, the terms that requires a higher standard of performance by the Contractor shall prevail.

**§1.3** Work not particularly detailed, marked or specified shall be the same as similar parts that are detailed, marked or specified. On certain Contract Documents, only a portion of the detail may be fully shown and the remainder indicated in outline, in which case the general detail shall be understood as also applying to other like portions of the Work.

**§1.4** The organization of the Specifications into divisions, sections, and/or articles, and the arrangement of the Drawings, shall not dictate to the Contractor in any way how the Work is to be divided among Subcontractors, or establish the extent of Work to be performed by any trade. Similarly, the organization of the Contractor's duties into different phases or categories in the Agreement is for convenience only and shall not limit the generality of the Contractor's obligation to provide all of the services whenever necessary.

**§1.5** All references in the Contract Documents to standards (such as commercial standards, federal specifications, trade association standards or similar standards), whether for materials, processes, assemblies, workmanship, performance or any other purpose, shall mean, unless otherwise noted, the most recent available published version of such standard as of the date of that part of the Contract Documents bearing the reference. All standards referred to, except as modified in the Contract Documents, shall have the same force and effect as though printed therein. These standards will not be furnished to the Contractor, as the Contractor and all members of the construction team are required to be familiar with their requirements.

**§1.6** Whenever a provision of the Contract Documents conflicts with agreements or regulations in force among members of trade associations, unions or councils, which regulate or distinguish the portions of the Work which shall or shall not be performed by a particular trade, the Contractor shall make necessary arrangements to reconcile the conflict without delay, damage, cost or recourse to the Owner. Delays in the Work resulting from the failure of the Contractor to use its best efforts to reconcile any such conflicts shall not result in an extension of the Project Schedule and shall not result in the increase of the Contract Sum.

**§1.7** The Contractor acknowledges that there may be items of the Work, which the Contractor is responsible to provide under the Agreement that are not drawn or specified in the Design but are necessary for the proper execution and completion of the Work and are consistent with and reasonably inferable from the Drawings and Specifications. All such items shall be provided as part of the Work without delay in its progress and without any increase in the Contract Sum.

## **ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**

**§ 2.1** The Contract Time is the number of calendar days available to the Contractor to substantially complete the Work.

### **§ 2.2 Date of Commencement:**

Unless otherwise set forth below, the date of the commencement of the Work shall be the date of this Agreement.

(Insert the date of commencement if other than the date of this Agreement.)

«Date of Commencement of the Work is \_\_\_\_\_.»

Notwithstanding the foregoing, Contractor may not commence the Work on the Project until after insurance certificates and bonds, if applicable, are delivered to the Owner.

**§ 2.3 Substantial Completion:**

Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion, as defined in Section 12.5, of the entire Work:

(Check the appropriate box and complete the necessary information.)

[  ] Not later than  » (  » ) calendar days from the date of commencement.

[  ] By the following date: «100% Completion for the Project described in this Agreement is to be no later than \_\_\_\_\_.»

**§ 2.4 Liquidated Damages:**

**§ 2.4.1 - § 2.4.4 NOT USED**

**ARTICLE 3 CONTRACT SUM**

**§ 3.1** The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work. Subject to additions and deductions in accordance with Article 10, the Contract Sum is:

«The total Lump Sum amount is \_\_\_\_\_ and No/100 Dollars (\$ \_\_\_\_\_ .00). The total Lump Sum amount includes all Work and cost associated with such Work per this Agreement and as detailed in the RFP, and is broken down as follows:

Bid Work at \_\_\_\_\_ School for the Lump Sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00).

Bid Work at \_\_\_\_\_ School for the Lump Sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00).

Bid Work at \_\_\_\_\_ School for the Lump Sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_ .00).

**§ 3.2** For purposes of payment, the Contract Sum includes the Schedule of Values provided in **Exhibit A** related to portions of the Work.

**§ 3.3** The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and hereby accepted by the Owner.

**§ 3.3.1** The following alternates are included in the Contract Sum:

Item	Price
------	-------

**§ 3.3.2** The Contract Sum does not include the following alternates, which are described in the Contract Documents and may be accepted by the Owner in writing; provided, however, that the Contractor shall furnish the Owner with not less than fourteen (14) days' prior written notice of the date upon which any of the alternates set forth below in this Section 3.3.2 must be accepted by the Owner in order for the Contractor to perform the Work covered by such alternates for the price set forth below in this Section 3.3.2 and without any adjustment to a milestone date or in the Contract Time.

Item	Price
------	-------

**§ 3.4** Allowances, if any, included in the Contract Sum are as follows:

(Identify each allowance.)

Item	Price
------	-------



§ 3.4.1 Use of any Allowance shall be at the sole direction and written approval of the Owner. Costs allocated against an Allowance shall exclude overhead and profit; any overage on an Allowance, shall be calculated by adding the Contractor's Actual Cost for labor and material plus the Contractor's overhead and profit as defined in Section 10.1.

§ 3.5 Unit prices, if any, are set forth in the "Schedule of Unit Prices" attached hereto and made part of this Agreement as **Exhibit B**. Such Unit prices are considered complete and include: (i) all materials, equipment, labor, delivery, installation, overhead, and profit; and (ii) any and all other costs or expenses in connection with, or incidental to, the performance of that portion of the Work to which such unit prices apply.

## ARTICLE 4 PAYMENTS

§ 4.1 Based on Contractor's Applications for Payment certified by the Architect, the Owner shall pay the Contractor, in accordance with Article 12, as follows:

§ 4.1.1 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month

<< >>

§ 4.1.2 Provided that a complete Application for Payment is received by the Architect not later than the «last» day of a month, the Owner shall make payment of undisputed portions of the certified amount to the Contractor not later than the «last» day of the «following» month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than «forty-five» (45) days after the Architect certifies the Application for Payment.

### § 4.1.2.1 NOT USED

§ 4.1.3 **Retainage.** Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of «ten» percent («10»%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of «ten» percent («10»%);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment.

§ 4.1.4 The progress payment amount determined in accordance with Section 4.1.3 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable.

§ 4.2 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.  
(Insert rate of interest agreed upon, if any.)

Zero percent (0%)

## ARTICLE 5 INSURANCE AND BONDS

§ 5.1 The Contractor shall maintain the following types and limits of insurance until the expiration of the period for correction of Work as set forth in Section 14.2, subject to the terms and conditions set forth in this Section 5.1:

§ 5.1.1 Commercial General Liability insurance for the Project, written on an occurrence form, with policy limits of not less than the minimum coverages indicated in Section 5.1.7 below.

§ 5.1.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than the minimum coverages indicated in Section 5.1.7 below along with any other statutorily required automobile coverage.

§ 5.1.3 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 5.1.7 below, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 5.1.4 Workers' Compensation at statutory limits.

§ 5.1.5 Employers' Liability with policy limits not less than the minimum coverages indicated in Section 5.1.7 below.

§ 5.1.6 The Owner shall purchase and maintain a property insurance written on a builder's risk "all-risk" or equivalent form in the amount and with deductibles determined by the Owner. Except as otherwise provided in the Contract Documents, if the property insurance requires deductibles, the Contractor shall be responsible to pay costs, resulting from the acts or omissions of the Contractor and its subcontractors, not covered because of such deductibles.

**§ 5.1.7 Other Insurance Provided by the Contractor**

*(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)*

Coverage	Limits
Workers' Compensation	Statutory
Employer's Liability:	
Bodily Injury by Accident:	\$1,000,000.
Bodily Injury by Disease, Policy Limit	\$1,000,000.
Bodily Injury by Disease, Each Employee	\$1,000,000.
General Liability:	
Each Occurrence (Bodily Injury and Property Damage)	\$1,000,000.
Personal & Advertising Injury	\$1,000,000.
Medical Payments Coverage	\$5,000.
Fire Damage Liability	\$100,000.
General Aggregate	\$2,000,000.
Products & Completed Operations Aggregate	\$2,000,000.
Excess Umbrella Liability:	
Each Occurrence	\$1,000,000.
General Aggregate	\$1,000,000.
Automobile Liability:	
a. Bodily Injury - Each Person	\$1,000,000.
Each Accident	\$1,000,000.
b. Property Damage – Each Accident	\$1,000,000.
or	
c. Combined Single Limit – Each Accident	
(Bodily Injury and Property Damage)	\$2,000,000.
Professional Liability Insurance	

Each Wrongful Act Policy Aggregate	\$2,000,000. \$2,000,000.
Pollution Liability Each Pollution Event Policy Aggregate	\$1,000,000. \$2,000,000.

§ 5.1.8 Contractor shall require all contractors, subcontractor and/or their agents to name Owner, Architect, Plante & Moran Cresa, L.L.C. and their respective directors, officers, and employees as additional insureds on General Liability, Umbrella / Excess Liability, Automobile Liability policies.

§ 5.1.9 Insurance coverage and surety bond required under this Agreement shall be written with insurance and surety carriers authorized to do business in the State of Michigan. Insurance coverage and surety bonds shall be in a form and provided by an insurer acceptable to the Owner with an A.M. Best rating of A, XII or better.

§ 5.1.10 The Contractor shall furnish payment and performance bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source, and the cost thereof shall be included in the Cost of the Work. The amount of each bond shall be equal to one hundred percent (100%) of the Contract Sum. The Contractor shall deliver the required bonds to the Owner at least three (3) days before the commencement of any Work at the Project site. The Contractor shall only subcontract with Subcontractors that are trustworthy, financially able, and have a track record in successfully completing trade works of similar size and complexity.

§ 5.1.11 Except for any applicable Professional Liability Insurance coverages, Insurance coverages, shall be written on an occurrence basis, and shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. If Professional Liability Insurance coverage is required under this Agreement, Contractor shall maintain its Professional Liability Coverage without interruption for a period of not less than the Statute of Limitation and Statute of Repose periods in the state where the Project is located after the Project's relevant Date of Substantial Completion or the last day service is rendered by the Contractor on the Project, whichever shall be the later. The Contractor shall notify the Owner any disruption in coverage occurs and shall provide "tail coverage" at no cost to the Owner.

§ 5.2 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property. The Contractor is entitled to receive an increase in the Contract Sum equal to the insurance proceeds related to a loss for damage to the Work covered by the Owner's property insurance, however, the Contractor shall be responsible to pay costs resulting from the acts or omissions of the Contractor and its subcontractors not covered because of any deductibles.

§ 5.3 The Contractor shall obtain an endorsement to its Commercial General Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12.

§ 5.4 Prior to commencement of the Work, the Contractor shall provide certificates of insurance showing its coverages. The Owner may require additional proof of coverage in the form of a true and accurate copy of the policies of insurance, themselves. The maintenance of the insurance in strict compliance with the requirement of this Agreement shall be condition precedent to Owner's Obligation to make any payment under this Agreement.

**§ 5.5 NOT USED**

§ 5.6 The Contractor and each member of the construction team shall be solely responsible for insuring against any loss or damage to all owned, borrowed or rented property, including but not limited to tools, materials, supplies, equipment, forms, scaffolding, towers, staging, bunkhouses and other temporary structures including their contents, which do not form a permanent part of the Project. The Owner shall in no event be liable for any loss or damage to any of the aforementioned items, or the Work connected with the Contractor, or employees, agents or servants of same, which is not to be included in and remain a permanent part of the Project.

## ARTICLE 6 GENERAL PROVISIONS

### § 6.1 The Contract

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

### § 6.2 The Work

The term "Work" consists of all goods and services, such as labor, transportation, materials, tools, and equipment (i) to be incorporated into the Project (or the Contractor's portion of the Project if the Contractor is not responsible for the entire Project), (ii) required of the Contractor under the Contract Documents, or (iii) necessary or appropriate to fully construct, fixture, operate and maintain the Project (or the Contractor's portion of the Project if the Contractor is not responsible for the entire Project). The Work shall be performed in accordance with the Contract Documents. The Work may constitute the whole or a part of the Project. The term "Work" also shall include labor, materials, equipment and services provided or to be provided by Subcontractors, Sub-Subcontractors, material suppliers or any other entity for whom the Contractor is responsible under or pursuant to the Contract Documents.

### § 6.3 Intent

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

### § 6.4 Consent, Approve, Satisfactory, Proper, and As Directed

The words "consent," "approved," "satisfactory," "proper," "as directed," any derivatives of them, or similar terms, mean written approval by the Owner, and may include approval of the Architect if the Owner so directs. Except where a different standard is specifically established, the Owner has the right to grant or withhold such approval in its sole discretion.

### § 6.5 Provide

The word "provide" and any derivatives thereof, and similar terms, mean to properly fabricate, complete, transport, deliver, install, erect, construct, test and furnish all labor, materials, equipment, apparatus, appurtenances, and all items and expenses necessary to properly complete in place, ready for operation or use under the terms of the Contract Documents.

### § 6.6 Knowledge

The terms "known," "knowledge," "recognize," "believe," and "discover," and any derivatives thereof and similar terms, when used in reference to the Contractor, shall mean that which the Contractor knows or should reasonably know, recognizes or should reasonably recognize, and discovers or should reasonably discover in exercising the care, skill, and diligence required of the Contractor by the Agreement. The expression "reasonably inferable" and similar terms mean reasonably inferable by a Contractor familiar with the Work and exercising the care, skill and diligence required of the Contractor by the Agreement.

### § 6.7 Including

The word "including" shall not be a word of limitation, but instead shall be construed as introducing one or more nonexclusive examples.

### § 6.8 Abbreviations

Words or abbreviations that are not defined but have well-known technical, trade or construction industry meanings, shall have those meanings ascribed to them. The singular shall include the plural and vice versa. Pronouns are interchangeable. The word "person" includes human beings and recognized legal entities. Unless the context clearly requires otherwise, reference to a Section shall include all subsections beneath it bearing identical introductory numbers.

## § 6.9 Ownership and Use of Architect's Drawings, Specifications and Other Documents

Documents prepared by the Architect are instruments of the Architect's service for use solely with respect to this Project. All plans, drawings, specifications, computations, sketches, data, surveys, models, photographs, renderings, and other like materials relating to the services ("Documents") shall become the property of the Owner at the conclusion of the project, or termination of the services of the Contractor, whichever is earlier, and shall be delivered to the Owner clearly marked and identified in good order. The Owner may use the Documents in connection with the Project, including maintenance, repair, or expansion of the Project or as a reference for other projects, but the Contractor and the Contractor's Architect shall incur no liability for the Owner's use of the Documents other than in connection with the Project, and the Owner hereby releases the Contractor from any loss or damage, including attorneys' fees, incurred solely as a result of Owner's use of the Documents other than in connection with the Project, or as a reference for other projects, if and only if the Contractor and/or its Architect is not involved in such use.

## § 6.10 Access and Cooperation

**§6.10.1** The Owner shall cooperate with the Contractor and shall provide the Contractor reasonable access to the premises for the performance of the Contractor's Work and duties under this Agreement. Owner shall not intentionally interfere with the Work of the Contractor or any of its subcontractors.

**§6.10.2** Contractor shall provide the Owner in writing critical dates when Owner supplied materials and equipment are to be on the job site when Contractor is to install such materials and equipment. The Owner shall provide such materials on the job site by such dates. The Owner is responsible for the condition, performance, and warranty of Owner supplied materials. The Contractor shall be responsible for properly installing such materials and equipment in accordance with the manufacturer's specifications. The Contractor shall be responsible for the condition, performance and warranty of the materials and equipment if the Contractor damages or improperly installs such materials and equipment.

**§6.10.3** If the Contractor will require use of the Owners' utilities during construction. The Owner shall bear the cost of utilities. The Contractor shall exercise reasonable care to protect and use of such utility services; and shall bear full responsibilities to damages caused due to Contractor's acts or omissions.

**§6.10.4** The Contractor will place construction Project and safety signs at the Project to provide identification for resident and occupant safety, deliveries and subcontractors. The signs will meet OSHA and MIOSHA requirements and be removed upon completion and Owner taking occupancy of the Project.

**§6.11 Deliveries.** Contractor shall protect and secure materials and equipment delivered to and stored at the Project site and Work that are completed from theft, vandalism, fire etc. Contractor shall carry insurance for loss due to Contractor's failure to protect and secure materials and equipment on the job site or due to Contractor's acts or omissions.

**§6.12 Subcontractors.** At times Contractor may employ trade specialists, laborers, vendors, and other forces (Subcontractors) to perform various aspects of the Work. The Contractor shall, at all times, be fully responsible for the Work, conduct and acts or omissions of its Subcontractors.

**§6.12.1** By written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Subcontracts shall include the following sentence: "Owner is an intended third-party beneficiary of this Subcontract." Sub-Subcontracts and Supply Contracts shall be subject to identical conditions, except: (i) suppliers that are not performing any Work on the Project Site are not subject to the insurance requirements described in Article 11; and (ii) Subcontractors and Sub-Subcontractors may satisfy the insurance requirements described in Article 5 by being named as an additional insured under the Contractor's insurance policies or, in the case of a Sub-Subcontractor, by being named as an additional insured under a Subcontractors' insurance policies.



§ 6.12.2 Upon request, the Contractor shall deliver a copy of any Subcontract, Sub-Subcontract or Supply Contract to the Owner.

## ARTICLE 7 OWNER

### § 7.1 Information and Services Required of the Owner

§ 7.1.1 If requested by the Contractor, the Owner shall furnish required surveys and a legal description of the site.

§ 7.1.2 Except for permits and fees under Section 8.7.1 that are the responsibility of the Contractor under the Contract Documents, the Owner shall obtain and pay for other necessary approvals, easements, assessments, and charges.

### § 7.1.3 NOT USED

### § 7.2 Owner's Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the Contract Documents, or fails to carry out the Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order is corrected, or correct the deficiencies with the Owner's own forces; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity. This right shall be in addition to and not in restriction or derogation of any other rights of the Owner under this Agreement. The Owner's right to stop the Work shall not relieve the Contractor of any of the Contractor's responsibilities or obligations under or pursuant to the Contract Documents.

### § 7.3 Owner's Right to Carry Out the Work

If the Contractor fails, defaults, or neglects to carry out the Work in accordance with the Contract Documents and fails within a three (3) day period after receipt of written notice from the Owner to commence and continue correction of such failure, default, or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, including any claim against the Contractor's Performance Bond, correct such deficiencies. In such case, the Contract Sum shall be adjusted to deduct the cost of correction from payments due the Contractor.

### § 7.4 Owner's Right to Perform Construction and to Award Separate Contracts

§ 7.4.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.

§ 7.4.2 The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.

### § 7.5 Owner's Approval

Notwithstanding anything to the contrary contained in this Agreement, Owner's review and/or approval of any documents or other matters required herein shall be for the purpose of providing the Contractor or Architect with information as to Owner's objectives and goals with respect to the Project and not for the purpose of determining the accuracy and completeness of the Work. In no way should any review and/or approval Owner alter the Contractor's responsibilities under this Agreement.

## ARTICLE 8 CONTRACTOR

### § 8.1 Review of Contract Documents and Field Conditions by Contractor

§ 8.1.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, and correlated its observations with requirements of the Contract Documents.

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the Architect and the Owner.

## § 8.2 Contractor's Construction Schedule

The Contractor, promptly, but not more than thirty (30) days, after being awarded the Contract shall prepare and submit for the Owner's and Architect's information and acceptance Contractor's construction schedule or Project Schedule for the Work. The Project Schedule is the Critical Path Method ("CPM") schedule for construction of the Work submitted as part of the Contractor's Contract Sum Proposal, prepared by the Contractor and accepted by the Owner. The Project Schedule can be modified only by Change Order. Following any such modification, the term "Project Schedule" shall mean the most recent Owner-approved version.

## § 8.3 Supervision and Construction Procedures

§ 8.3.1 The Contractor shall employ and assign to the Project a competent and experienced superintendent to be on-site at all times to supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work. The Contractor shall inspect the Work of the trade contractors on the Project as it is being performed until final completion and acceptance of the Project by the Owner to ensure that the Work performed and the materials furnished are in accordance with the Contract Documents and that Work on the Project is progressing on schedule. In the event that the quality control testing should indicate that the Work, as installed, does not meet the requirements of this Project, including the Contract Documents, the Owner shall determine the extent of the Work that does not meet the requirements and the Contractor shall direct the trade contractors(s) to take appropriate corrective action, and advise the Owner of the corrective action.

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the Architect, the names of Subcontractors or suppliers for each portion of the Work. The Contractor shall not contract with any Subcontractor or supplier to whom the Owner or Architect have made a timely and reasonable objection.

## § 8.4 Labor and Materials

§ 8.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

§ 8.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

## § 8.5 Warranty

§ 8.5.1 The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

§ 8.5.2 The Contractor shall provide a two (2) year limited warranty for all materials, equipment and work performed by the Contractor and/or its Subcontractors. Within the terms of the limited warranty, the Contractor shall remedy any defects due to faulty materials, workmanship, or negligence of the Contractor which are made known to the Contractor in writing, within two (2) years of the completion of the job. All materials are guaranteed for a minimum of two (2) years, or longer as specified, and all materials are warranted by the manufacturer and will be replaced according to the terms of their warranty by the Contractor without charge.

§ 8.5.3 Money being withheld for a warranty or disputed item shall not exceed twice the value of the warranty item (material and labor).

§ 8.5.4 Upon completion of any remedial work, the two (2) year warranty period in this Article 8 shall begin anew with respect to the materials, equipment and/or work requiring remedy.

## § 8.6 Taxes

The Contractor shall pay, and include in the Contract Sum, all sales, consumer, use, franchise, commercial activities, and similar taxes that are legally required when the Contract is executed. The Contractor shall pay all state and

federal taxes levied on its business, income or property and shall make all contributions for social security and other wage or payroll taxes. The Contractor shall be solely responsible for such payments and shall indemnify the Owner and hold it harmless from any assessment and payment of the same.

### **§ 8.7 Permits, Fees, Licenses, and Notices**

**§ 8.7.1** The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work or as required by the Contract Documents. The Contractor, and all its Subcontractors of any tier, shall maintain at all time the required licenses and registrations required to perform the Work.

**§ 8.7.2** The Contractor shall strictly comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Architect and the Owner in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

### **§ 8.8 Submittals**

The Contractor shall promptly review, approve in writing, and submit to the Architect shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents.

### **§ 8.9 Use of Site**

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.

### **§ 8.10 Cutting and Patching**

**§8.10.1** The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

**§ 8.10.2** Only tradespersons skilled and experienced in cutting, fitting, and patching shall perform such Work. An appropriate member of the construction team shall do all cutting, fitting, or patching on the Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors shown by, or reasonably implied by, the Contract Documents for the completed Project. An appropriate member of the construction team shall repair or otherwise make good all such cutting, fitting, or patching after the required Work has been completed as the Architect may direct.

**§ 8.10.3** The Contractor shall not cut or otherwise alter any portion of any structure of which the Work is a part or to which the Work is attached without in each instance having first submitted to the Owner Shop Drawings accurately locating each such cut or alteration. The Architect's approval of such Shop Drawings must be obtained prior to making any such cut or alteration.

### **§ 8.11 Cleaning Up**

**§ 8.11.1 General Clean Up.** The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials.

#### **§ 8.11.2 Final Clean Up.**

**§ 8.11.2.1** Unless the Contract Documents require a higher standard, the Contractor shall leave all Work installed or modified under the Agreement and all existing materials and surfaces affected by the Work and each area of the Project Site clean to the satisfaction of the Owner. This shall include at a minimum: complete dusting, sweeping, vacuuming, mopping, polishing, and other activities as necessary to remove all dust, dirt and other construction residues, and removal of all tools and equipment, construction debris, rubbish, and surplus materials.

**§ 8.11.2.2** Immediately before turning any portion of the Project over to the Owner, the Contractor shall have all glass cleaned by professional window washers. Care shall be taken not to scratch any glass. Acid or other cleaning material which will injure or mar the surface or adjacent Work will not be allowed. Any damage resulting from glass



cleaning shall be corrected by the Contractor, including the furnishing of new glass of same character and quality or the replacement of other Work damaged or disturbed.

### **§ 8.12 Indemnification**

To the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the Owner, its Board of Education, its Board Members, in their official and individual capacities, its administrators, employees, agents, contractors, successors and assignees, from and against any and all claims, suits, debts, demands, actions, judgments, liens, costs, expenses, damages, losses, injuries and liabilities, expenses, including but not limited to actual attorneys' fees and actual expert witness fees, arising out of or in connection with Contractor's resulting from performance of the Work pursuant to this Agreement and/or from Contractor's violation of any of the terms of this Agreement, including, but not limited to: (i) the negligent acts or willful misconduct of the Contractor, its officers, directors, employees, successors, assignees, subcontractors, consultants and agents; (ii) any breach of the terms of this Agreement by the Contractor, its officers, directors, employees, successors, assignees, subcontractors, consultants and agents; (iii) any violation or breach of any applicable Federal, State or local law, rule, regulation, ordinance, policy and/or licensing and permitting requirements applicable to providing the services; or (iv) any breach of any representation or warranty by the Contractor, its officers, directors, employees, successors, assignees, subcontractors, consultants and agents under this Agreement. The Contractor shall notify the Owner by certified mail, return receipt requested, immediately upon actual knowledge of any claim, suit, action, or proceeding for which the Owner may be entitled to indemnification under this Agreement. This Section shall survive the expiration or earlier termination of this Agreement and shall not be limited by the Contractor's Insurance obligations contained in this Agreement.

In addition, to the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the Owner its Board of Education, its Board Members, in their official and individual capacities, its administrators, employees, agents, contractors, successors and assignees, from any claim, damage, loss, injury or expense, including but not limited to actual attorney fees, incurred by the Owner related to any Hazardous Material or potentially Hazardous Material, waste, toxic substance, pollution or contamination brought into the Project Site or caused by the Contractor or used, handled, transported, stored, removed, remediated, disturbed or dispersed of by Contractor.

## **ARTICLE 9 ARCHITECT**

**§ 9.1** The Architect will provide administration of the Contract as described in the Contract Documents. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

**§ 9.2** The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

**§ 9.3** The Architect will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

**§ 9.4** Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor.

**§ 9.5** The Architect shall make timely recommendations to the Owner regarding the rejection of Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect may require inspection or testing of the Work in accordance with the provisions of the Contract Document, whether or not such Work is fabricated, installed, or completed.

**§ 9.6** The Architect will promptly review and approve or take appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

**§ 9.7** On written request from either the Owner or Contractor, the Architect will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents.

**§ 9.8** Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from the Contract Documents, and will be in writing or in the form of drawings. When making such interpretations

and decisions, the Architect will endeavor to secure faithful performance by the Contractor and will not be liable for results of interpretations or decisions rendered in good faith.

§ 9.9 The Architect's duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

## **ARTICLE 10 CHANGES IN THE WORK**

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum and Contract Time shall be adjusted by Change Order accordingly, in writing. If the Owner changes the Contract Sum, the Owner shall pay the Contractor its actual cost plus reasonable overhead and profit as mutually agreed to by both parties in writing. Changes in the Work shall not be performed by Contractor without the Owner's authorization to proceed.

§ 10.2 The Architect will have authority to order minor changes in the Work not involving changes in the Contract Sum or the Contract Time and not inconsistent with the intent of the Contract Documents. Such orders shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall carry out such orders promptly.

### **§ 10.3 Materially Different Conditions**

§ 10.3.1 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to reasonable adjustment as mutually agreed to by both parties in writing.

§ 10.3.2 As a professional familiar and accustomed to Project complexity of the type of Work, the Contractor has inspected the Owner's premises and the Contract Documents prior to submitting its proposal and agreeing to the terms of this Agreement (including, but not limited to, terms regarding time and compensation). Upon discovery of conditions the Contractor believes materially differ from those in the Contract Documents, Contractor shall immediately notify the Architect and the Owner, in accordance with Article 10, if additional cost or time is required to remedy such conditions. Owner shall have the right to inspect the discovered hidden conditions, to determine if the Contractor should have reasonably anticipated such conditions before agreeing to a change order for additional work. Contractor will not be entitled to compensation for differing conditions that are removed which the Contractor failed to notify the Owner and offered the Owner opportunities to inspect/verify the condition.

§ 10.4 The Contractor shall not be entitled to any extension of time change to the Contract Sum unless it is included in an authorized change order signed by the Owner and Architect. The Contractor shall submit a written change order request within lesser of twenty-one (21) days after the Contractor discovers or the time the Contractor should have discovered, with the exercise of appropriate diligence, the cause giving rise to the potential change. The Contractor's failure to strictly comply with this Section 10.4 shall constitute a waiver of and shall forever bar any recover for additional time or compensation for the circumstances giving rise to the potential change.

§ 10.5 In no event shall the Contractor be entitled to receive, and the Contractor hereby waives the right to receive any payment or any extension of time for additional or changed work, whether partially or fully completed or simply proposed, unless such additional work is authorized by a written Change Order or Construction Change Directive signed by the Owner, nor shall the Contractor be obligated to proceed with any such Work. Only the Owner shall have the right to issue a written Change Order or Constructive Change Directive to the Contractor authorizing an addition, deletion or other revision in the scope of the Work and/or an adjustment in the Contract Sum or Contract Time.

## **ARTICLE 11 TIME**

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment as mutually agreed to by both parties in writing.

§ 11.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the responsible party.

**§ 11.4** The Contractor shall provide notice in writing to the Owner of a potential claim for a delay related adjustment to the Contract Sum or Contract Time within five (5) days of start of any delay and shall request in writing all changes to the Contract Time and Contract Sum within twenty-one (21) days after cessation of the delay. Changes to the Contract Sum shall be limited to Owner caused delays that impact the Project's Critical Path and limited to the costs set forth in Sections 11.5 and 11.6 resulting from the delay. The Contractor's failure to strictly comply with this Section 11.4 shall constitute a waiver of and shall forever bar any recover for additional time or compensation for the delay.

**§ 11.5 No Damage for Delay.** Except only as provided in Section 11.4, in no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any delay. In no event shall the Contractor be entitled to recover special, incidental, or consequential damages including without limitation, loss of anticipated profits, revenue, or use of capital.

**§ 11.6** In the event of Owner Delay, the Contractor may be entitled to an equitable adjustment in the Contract Sum. This adjustment shall be based solely upon and limited to additional direct out-of-pocket expenses to the extent they are incurred directly as a result of the Owner Delay. Without limiting the generality of the foregoing, such out-of-pocket expenses shall be calculated on an "actual cost" basis, and shall exclude home office expense and other overhead, profit and the value of lost opportunities. However, the Contractor shall use its best efforts to avoid or reduce delay damages caused by Owner Delay.

**§ 11.7** All float time in the Construction Schedule shall be shared by the Owner and Contractor or otherwise used for the benefit of the Project.

## **ARTICLE 12 PAYMENTS AND COMPLETION**

### **§ 12.1 Contract Sum**

The Contract Sum stated in this Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

### **§ 12.2 Applications for Payment**

**§ 12.2.1** At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for Work completed in accordance with the values stated in this Agreement. The Application shall be supported by data substantiating the Contractor's right to payment as the Owner or Architect may reasonably require, such as evidence of payments made to, and waivers of liens from, Subcontractors and suppliers. Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing. Payment to Contractor for materials stored off site is discouraged. Contractor shall prepare the Application for Payment using AIA Standard Form G-702 and G-703 accompanied by required conditional and unconditional lien releases from the Contractor, Subcontractors, suppliers, and delivered to the Architect for review and approval.

**§ 12.2.2** The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or other encumbrances adverse to the Owner's interests.

**§ 12.2.3** Contractor's first Application of Payment is considered incomplete unless in addition to the requirements described in Sections 12.2.1 through 12.2.2, all of the following completed items are also included with the Application of Payment: (1) Performance and Payment Bonds, if required; (2) Certificate of Insurance, as required; (3) Affidavits that the surety and insurance company or companies meets the requirements in Article 5; (4) Construction schedule for the Project; (5) Completed Schedule of Value for the Project.

**§ 12.2.4** In addition to the requirements described in Section 12.2.1 through 12.2.2, all Applications for Payment shall also include:

- .1 a Schedule of Values that updated all approved Change Order amounts added and deducted, if applicable, since the last Application for Payment;

- .2 an updated Project construction schedule that shows actual progress of the Work through the period covered by the current Application for Payment, and clearly identifying any portion of the Work that is behind schedule (if any portion of Work that is behind schedule, the Contractor shall also include with the Application for Payment a schedule recovery plan to bring the Work back on schedule in the next thirty (30) days);
- .3 a duly executed and acknowledged sworn statement in statutory form and acceptable to the Owner with all information provided, together with properly notarized sworn statements, current through the previous draw, from the Contractor and all of the Subcontractor; and
- .4 except as otherwise provided, duly executed unconditional releases in the form required by the Owner establishing payment or satisfaction of all obligations as reflected on the sworn statements, provided, however, that the Contractor may furnish with each Application for Payment applicable waivers of lien or releases and properly notarized sworn statements covering the immediately preceding Application for Payment, as opposed to the current Application for Payment, (i.e., thirty (30) day lag), provided Final Payment shall not be forthcoming until final construction lien waivers, if applicable, or releases from all members of the Construction Team have been delivered.

§ 12.2.5 The Owner shall have the right to withhold sufficient amount from the Application for Payment for unacceptable, defective, deficient, or non-conforming Work (“Disputed Work”) after notifying the Contractor. The Contractor shall promptly remedy the Disputed Work. Owner shall promptly render payment for such Disputed Work after the Contractor has cured and the Owner has accepted the remedied Disputed Work.

### § 12.3 Certificates for Payment

The Architect will, within seven (7) days after receipt of the Contractor’s Application for Payment, either issue to the Owner a Certificate for Payment with a copy to the Contractor for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect’s reasons for withholding certification in whole or in part.

### § 12.4 Progress Payments

§ 12.4.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment for undisputed sums in the manner provided in the Contract Documents.

§ 12.4.2 The Contractor shall promptly pay each Subcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders.

§ 12.4.3 Neither the Owner nor the Architect shall have responsibility for payments to a Subcontractor or supplier.

§ 12.4.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the requirements of the Contract Documents.

§ 12.4.5 Except with the Owner’s prior approval the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 12.4.6 Whenever the Owner reasonably determines, after notice to the Contractor, that there is a basis for concern that payments properly owing to any Subcontractor of any tier, supplier or laborer are not being made on a timely basis, the Owner may elect, but shall not be obligated, to make payments to the joint order of the Contractor and such Subcontractor, supplier or laborer with any such payments satisfying any payment obligation otherwise owing by the Owner to the Contractor. The Owner may also elect at any time to require that payments be made through a construction escrow, in which event the Contractor shall supply all customary forms and indemnities as may be required to satisfy the conditions to disbursement established by the applicable escrowee. All requirements relating to payments and retainages, and applicable submittals to be made by the Contractor, shall be subject to reasonable modification and approval of any lender of the Owner supplying funds to the Project.

### § 12.5 Substantial Completion

§ 12.5.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 12.5.2 When the Contractor believes that the Work or designated portion thereof is substantially complete, it will notify the Architect and the Architect will make an inspection to determine whether the Work is substantially complete. When the Architect determines that the Work is substantially complete, the Architect shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, establish the responsibilities of the Owner and Contractor, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

### § 12.6 Final Completion and Final Payment

§ 12.6.1 Upon receipt of a final Application for Payment, the Architect will inspect the Work. When the Architect finds the Work acceptable and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment.

§ 12.6.2 Final payment shall not become due until the Contractor submits to the Architect releases and waivers of liens, if applicable, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests, or encumbrances arising out of the Contract.

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

§ 12.6.4 Amounts withheld from the final payment to cover any incomplete work are not considered retainage and shall not be paid to the Contractor until the Work is actually completed and accepted by the Owner. Such withholdings shall not be less than 150% of the estimated cost to complete the Work.

§ 12.6.5 The Owner shall have the right to deduct from the Final Payment due the Contractor all costs, including additional fees paid to Owner's consultants, which the Owner incurred as result of and attributed to Contractor's failure to fully complete and/or closeout the Project within sixty (60) days following Substantial Completion.

§ 12.6.6 Unless otherwise agreed to by the Owner, in writing, the Owner shall not be responsible for costs incurred by the Contractor beyond sixty (60) days following Substantial Completion for the Contract Sum that is based on the Cost of the Work plus Contractor's Fee.

## ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY

§13.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

§13.2 The Contractor shall take all necessary precautions to guard against and eliminate all possible fire hazards and to prevent fire damage to any construction work, building materials, equipment, temporary field offices, storage sheds, and all other property. The Contractor shall provide necessary personnel and fire-fighting equipment to effectively control fires resulting from welding, flame cutting, or other operations involving the use of flame, sparks, or sparking devices. During such operations, all highly combustible or flammable materials shall be removed from the immediate working area. If removal is impossible the same shall be protected with fire blankets or suitable non-combustible shields. The Contractor shall maintain free access to the building areas for fire-fighting equipment and shall at no time block off main roadways or fire aisles without providing adequate auxiliary roadways and means of entrance for fire-fighting equipment, including heavy fire department trucks, where applicable. The Contractor shall at all times cooperate with the Owner and keep the municipal fire department informed of the means of entrance and changes to roadways or fire aisles as needed to provide fire department access to or around to Project site. The Contractor shall maintain during construction an appropriate number of fire extinguishers to meet Factory Mutual (FM) requirements. Fire extinguishers shall be in good working order, conveniently located, clearly visible, and readily accessible for proper protection of the Work.



## ARTICLE 14 CORRECTION OF WORK

§ 14.1 The Contractor shall promptly correct Work rejected by the Architect as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

§ 14.2 In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of two (2) years after Substantial Completion, correct work not conforming to the requirements of the Contract Documents.

§ 14.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

## ARTICLE 15 MISCELLANEOUS PROVISIONS

### § 15.1 Assignment of Contract

§15.1.1 Neither party to the Contract shall assign the Contract as a whole without written consent of the other, except that the Owner may, without consent of the Contractor, assign the Contract to Owner's parents, subsidiaries, successor, affiliates, or lenders providing construction financing for the Project, if the assigned assumes the Owner's rights and obligations under the Contract Document. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 15.1.2 The Contractor shall not assign the whole or any part of the Agreement, or any monies due or to become due, without the express written consent of the Owner. If the Contractor, with the Owner's consent, assigns all or any part of the Agreement or any monies due or to become due, the instrument of assignment shall contain a clause satisfactory to the Owner and stating that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to the prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in the Agreement.

### § 15.2 Tests and Inspections

§ 15.2.1 At the appropriate times, the Contractor shall arrange and bear cost of tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 15.2.2 If the Architect requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear cost of tests, inspections, or approvals that do not become requirements until after the Contract is executed.

### § 15.3 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules.

§ 15.4 **Program Management Software.** The Owner plans to utilize a web-based collaborative program management project software to assist in the efficient communication of all Project information to pertinent team members. The selected e-Builder platform will be utilized for storage of all pertinent Project correspondence (Meeting Minutes, RFIs, Submittals, Drawing set issuances, Bulletins, etc.), as well as for payment application and invoice processing, and change management approvals. The Contractor will be required to participate in e-Builder platform training and subsequent utilization of the software for their role and information transfer throughout the Project. The Owner will pay for up to two (2) collaborative licenses for the Contractor.

## ARTICLE 16 TERMINATION OF THE CONTRACT

### § 16.1 Suspension by the Owner and Termination by the Contractor

The Owner may suspend the Work at anytime for any reason. If the Work is suspended for more than twenty one (21) consecutive days, the Contractor shall be entitled to an equitable adjustment in the Contract Sum, subject to mutual agreement of the parties. If the Architect fails to certify payment as provided in Section 12.3 for a period of thirty (30) days through no fault of the Contractor, or if the Owner fails to make payment as provided in Section 12.4.1 for a period of thirty (30) days, the Contractor may, upon seven thirty (30) additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit on the portion of the Work completed to the date of termination.

**§ 16.2 Termination by the Owner for Cause**

**§ 16.2.1** The Owner may terminate the Contract if the Contractor

- .1 refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 is otherwise guilty of substantial breach of a provision of the Contract Documents.

**§ 16.2.2** When any of the above reasons exist, the Owner, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may

- .1 take possession of the site and of all materials thereon owned by the Contractor, and
- .2 finish the Work by whatever reasonable method the Owner may deem expedient.

**§ 16.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished and determination of the sum due pursuant to Section 16.2.4.

**§ 16.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of this Agreement.

**§ 16.2.5** If the Owner erroneously or improperly terminates the Contractor for cause, then the Owner's action shall be deemed to be a termination for convenience, subject to the provisions of Section 16.3.

**§ 16.3 Termination by the Owner for Convenience**

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work properly executed prior to termination.

**§16.4** In the event of any termination, the Contractor's and Subcontractor's obligations related to insurance, indemnity, and confidentiality shall survive.

**ARTICLE 17 OTHER TERMS AND CONDITIONS**

*(Insert any other terms or conditions below.)*

**§ 17.1** The Contractor shall inspect the Work as it is being performed until final completion and acceptance of the Project by the Owner to assure that the Work performed and the materials furnished are in accordance with the Contract Documents and that Work on the Project is progressing on schedule. In the event that the quality control testing should indicate that the Work, as installed, does not meet the requirements of this Project, the Architect shall determine the extent of the Work that does not meet the requirements and the Contractor shall direct the trade contractors(s) to take appropriate corrective action, and advise the Owner of the corrective action.

**§ 17.2** The Contractor shall provide daily full-time, on-site field supervision during the entire construction phase. The Contractor agrees to assign the following listed Project team members, as listed in their respective capacities to the Project:

Staff Name	Assignment	Contact Information – Mobile Phone & e-Mail
------------	------------	---

Contractor shall promptly notify the Owner if services of any one of the listed team members become unavailable due to circumstances beyond the Contractor's control – e.g., extended illness or disability, death, or termination of employment, etc. No substitution of any of the above listed project team members shall be made without the prior written consent of the Owner; and before any such substitution the Contractor shall submit to the owner a detailed justification supported by the qualification of any proposed replacement. Owner shall have the right to interview and select alternate team member(s) employed by the Contractor to replace the unavailable team member. Contractor shall agree to provide the services of the alternate team member(s) selected by Owner. Contractor is not entitled to additional compensation for any such substitution(s) of the project team members. The Owner reserves the right to

require the replacement of any or all of the above listed team members for cause; and the Contractor shall provide suitable replacement or replacements upon two (2) weeks' notice, subject to interview and acceptance by the Owner.

**§ 17.3** As part of Contract Sum, the Contractor shall conduct a post-occupancy audit eleven (11) months following the Date of Substantial Completion and thereafter provide call-back services for a period of twenty three (23) months.

**§ 17.4** Notwithstanding anything regarding hazardous materials, the Contractor acknowledges and fully understands that the scope of this Work includes the proper removal and proper disposal of all hazardous materials, including but not limited to any construction debris containing asbestos, PCBs, etc., as required by applicable federal, state, and local laws, rules, regulations and directives by governmental agencies having jurisdiction over the Project and Project site.

**§ 17.5** If any provision of this Agreement shall be held to be illegal, invalid or otherwise unenforceable by law, the remainder of this Agreement shall not be affected thereby and each provision, term, covenant or condition of this Agreement shall be enforced to the fullest extent permitted.

**§ 17.6** The Contractor shall comply with the Owner's Policies and Procedures, which will be made available to the Contractor upon request, while on the Project site.

### **§ 17.7 Dispute Resolution**

#### **§ 17.7.1**

For any claim subject to, but not resolved by, pursuant to this Article 17, the method of binding dispute resolution shall be as follows:

*(Check the appropriate box.)*

[  ] Arbitration pursuant to Section 21.6 of this Agreement

[  ] Litigation in a court of competent jurisdiction, unless otherwise mutually agreed to by the parties.

[  ] Other (Specify)

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, claims will be resolved in a court of competent jurisdiction.

#### **§ 17.7.2 NOT USED**

#### **§ 17.7.3 NOT USED**

**§ 17.7.4** In the event the parties resort to a court, and to the extent permitted by law, the parties hereby:

- .1** Irrevocably consent and submit to the jurisdiction of any Federal, state, county or municipal court sitting in the State of Michigan, County of Wayne, in respect to any action or proceeding brought therein concerning any matters arising out of or in any way relating to this Agreement;
- .2** Expressly waive any rights pursuant to the laws of any other jurisdiction by virtue of which exclusive jurisdiction of the courts of any other jurisdiction might be claimed;
- .3** Irrevocably waive all objections as to venue and any and all rights it may have to seek a change of venue with respect to any such action or proceeding;
- .4** Agree that any final judgment rendered in any such action or proceeding shall be conclusive and may be entered in any other jurisdiction by suit on the judgment or in any other manner provided by law and expressly consent to the affirmation of the validity of any such judgment by the courts of any other jurisdiction so as to permit execution thereon.

### **§ 17.8 Notice**

**§ 17.8.1** All notices or other communications hereunder to either party shall be (1) in writing, and, if mailed, shall be deemed to have been given on the earlier of actual receipt by the intended recipient or on the third business day after the date when deposited in the United States mail by registered or certified mail, postage pre-paid, or by personal



delivery, Federal Express or other recognized and reputable overnight courier, addressed as hereinafter provided, and (2) addressed as follows:

**§ 17.8.2** If to the Owner:

The Owner's Designated Representative:

*(Name, address, email address, and other information)*

«Phillip Francis, Director of Operations  
«Livonia Public Schools»  
«15125 Farmington Road  
Livonia, MI 48154 »

With a copy to the Owner's Representative Consultant:

The Owner has engaged Plante & Moran Cresa, L.L.C. (PMC) as an Owner's Representative Consultant and on the Project. The Contractor shall keep the Owner and PMC informed in matters regarding the Project. Unless otherwise provided in this Agreement specifically authorized by the Owner, the Owner's Representative Consultant is not authorized to commit the Owner in matters regarding the Work, regarding changes in the Work, Construction Schedule, or grant approval on behalf of the Owner. The Owner reserves for itself the sole right to make decisions in matters regarding the Project. The following individual, subject to change upon written notification to the Contractor, shall be primary contact for the Owner's Representative Consultant:

«Scott Smith »  
«Plante Moran Cresa »  
«27400 Northwestern Hwy »  
«Southfield, MI 48034 »

**§ 17.8.3** If to the Contractor:

The Contractor's representative:

*(Name, address, email address, and other information)*

« »  
« »  
« »  
« »

**§ 17.8.4** Neither the Owner's nor the Contractor's representative shall be changed without ten (10) days' prior notice to the other party.

**§ 17.9** The Contractor shall notify the Owner in the event of a potential or actual: (a) material change in ownership of the Contractor; (b) intent to dissolve; or (c) intent to otherwise cease active participation in the Project's local marketplace (collectively a "Material Change in Circumstances"). A Material Change in Circumstances shall include any other change that could reasonably give rise to concern on behalf of the Owner regarding the Contractor's ability or willingness to fulfill any of its obligations under this Agreement. In the event of a Material Change in Circumstances, the Contractor shall provide any reasonable assurance or guarantee requested by Owner. Owner shall have the right to terminate this agreement for cause in the event of a Material Change in Circumstances.

**§ 17.10 NOT USED**

**§ 17.11** The Owner, being a public body, shall render required decisions within a reasonable time after being requested to do so by the Contractor. The Contractor, assisted by the Architect, shall prepare and submit all recommendations for which approval is required by Owner as soon as reasonably possible unless another schedule is agreed to by the Owner, in writing. The Contractor shall not cause unreasonable delays in the orderly progress of Work.

**§ 17.12** The Contractor shall develop a plan and to administer an effective labor relations program for the Project in order to ensure labor harmony and to avoid labor disputes during construction. The Owner does not and cannot require the Contractor to employ union labor on the Project. Therefore, if it is necessary that the Contractor enters into a project labor agreement to ensure labor harmony and avoid labor dispute during construction, the Contractor shall have the discretion to do so.

**§ 17.13 NOT USED**

**§ 17.14 NOT USED**

**§ 17.15 GOVERNMENT AGENCY'S IMMUNITY FROM TORT LIABILITY.** Notwithstanding any provisions within the Contract Documents, no provisions shall be deemed a waiver of any immunity granted the Owner, being a governmental unit, by statute, including, without limitation. (MCL 691.1407 / ORC 2743.02)

This Agreement entered into as of the day and year first written above.

*(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)*

**LIVONIA PUBLIC SCHOOLS,**

**OWNER** *(Signature)*

«Phillip Francis, Director of Operations»«

*(Printed name and title )*

**CONTRACTOR** *(Signature)*

« »« »

*(Printed name and title )*

**SECTION 01 1000  
SUMMARY**

**PART 1 GENERAL**

**1.01 REQUIREMENT**

- A. This section is a part of the entire set of Contract Documents and shall be coordinated with the applicable provisions of the other parts.
- B. All bidders shall be held to have thoroughly examined all of the drawings and specifications and to have visited the site to determine the extent of reroofing and alteration work required. All measurements are the responsibility of the bidder.
- C. It is the declared and acknowledged intention and meaning of these specifications to repair, reroof and to alter the existing premises as required to provide a watertight roofing system.
- D. The work will include the furnishing of all materials and equipment and the performing of all labor required, whether or not specifically indicated by the drawings and specifications, to provide a watertight roofing system.

**1.02 PROJECT**

- A. Project Name: Churchill High School Roof Replacement.
- B. Owner's Name: Livonia Public Schools.
- C. Owner's Representative: Mr. Phillip Francis, Assistant Superintendent of District Services, Livonia Public Schools.
- D. Roof Consultants Name: Roofing Technology Associates, Ltd., Contact: Mr. Alex Wisney, (734)591-4444.
- E. The Project consists of reroofing the designated roof areas at Churchill High School in Livonia, Michigan.

**1.03 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5000 - Contracting Forms and Supplements.

**1.04 DESCRIPTION OF ALTERATIONS WORK**

- A. Scope of alterations work is indicated on drawings and described in the individual specification sections.
- B. Remove existing roof systems down to the structural decks. NOTE: Save the existing isocyanurate insulation on Area F4 as well as Areas E, E1, and E2 if Alternate No. 1 is accepted.
- C. Section 07 5300 - Elastomeric Membrane Roofing
  - 1. Demolition and substrate preparation requirements for the low slope roof areas.
  - 2. Install wood nailers as shown in the RTA Details and at locations required in the written specifications.
  - 3. Install flat stock isocyanurate insulation and/ or tapered isocyanurate insulation.
  - 4. Install tapered isocyanurate insulation saddles.
  - 5. Fully adhered 60 mil reinforced EPDM membrane and flashing on the low-slope roof areas in accordance with the selected membrane manufacturer's specifications.
- D. Section 07 6200 - Sheet Metal Flashing and Trim
  - 1. Install prefinished sheet metal coping at designated locations
  - 2. Install premanufactured fascia cap at designated locations.
  - 3. Install prefinished galvanized counterflashing at roof curbs and walls.
  - 4. Install expansion joints and area dividers at designated locations.
  - 5. Install new gutters on Area E1 if Alternate No. 1 is accepted.

#### **1.05 SEQUENCE OF OPERATIONS**

- A. The various parts of the work shall be carried on in a manner which will best serve in providing for the continuous operations of all necessary functions of the existing building and to cause as little inconvenience to the public as practicable in their occupancy and use of the facilities.

#### **1.06 WORKMANSHIP AND MATERIALS**

- A. All materials and equipment shall be furnished, installed and completed in a first class, workmanlike manner as indicated in the Conditions of the Contract, on the accompanying drawings and in the technical specifications.

#### **1.07 FIELD CONDITIONS AND DIMENSIONS**

- A. The dimensions, details and other information provided relative to the existing work are furnished subject to verification by the Contractor. The Contractor shall verify all existing conditions and dimensions. No additional compensation will be granted for the Contractor's failure to comply with the above requirements.

#### **1.08 MATERIALS AND SUBSTITUTIONS**

- A. Whenever an article, material or item of equipment is defined by describing a proprietary product, or by using the name of the manufacturer or vendor, the term "or equivalent," if not inserted, shall be implied. The specific article, material or item of equipment mentioned shall be understood as indicating the minimum requirements of fulfilling contract obligations in regard to type, function, standard of design and efficiency.
- B. Materials of manufacturers, other than those which may be named, will be given equal consideration, provided that written approval for the substitution is obtained from the Roof Consultant, and further provided that the Contractor shall be totally responsible for all costs incurred by dimension changes and weight changes occasioned by this substitution. No approvals concerning any phase of the Contract shall be valid unless given in writing by the Roof Consultant.

#### **1.09 SHOP DRAWINGS AND PRODUCT DATA**

- A. Prior to the delivery of any material or equipment to the job site, the Contractor shall check and verify all field measurements and existing conditions. Thereafter, the Contractor shall submit to the Roof Consultant, with such promptness as to cause no delay in the work, a minimum of three copies of shop drawings, product data catalogs, material schedules, etc. Following examination by the Roof Consultant, two copies will be retained for the Owner's use and remaining copies will be returned to the Contractor with indication of approval or with notations for correction.

#### **1.10 TIME OF COMPLETION**

- A. All work specified in the Contract Documents shall be completed within the specified time period. If, at any time during the life of this Contract, the Contractor finds that for reasons beyond his control it is impossible to complete the work within the specified time period fixed by the Contract, a written request for a change to the Contract extending the time of completion shall be submitted. Such a request shall set forth in precise detail the reasons believed to justify an extension and shall be in such format as The Owner may require.

#### **1.11 MIOSHA SAFETY STANDARDS**

- A. All work must be accomplished in accordance with all applicable Construction Safety Standards rules and regulations for Construction Operations, as set forth by the Michigan Department of Labor (MIOSHA).

### **1.12 SAFETY**

- A. The Contractor shall furnish, install and maintain as long as necessary and remove when no longer required, adequate barriers, warning signs and lights at all dangerous points throughout the work for protection of staff, workmen, and the public. The Contractor shall hold the Owner harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the work under the Contract. The Contractor shall hold the Owner harmless from fines resulting from the Contractor's failure to provide all required safety protection required by the Michigan Department of Labor (MIOSHA).

### **1.13 STRUCTURAL PROTECTION**

- A. The Contractor shall furnish, install, and maintain adequate protection of existing building elements and finishes and adjacent structures from damage caused by his operations. The Contractor shall repair or replace any damaged building element or finish to match its condition prior to the start of the work and remove all protections when the work is complete.
- B. Protect the roof areas used to access the designated areas of roof removal and replacement. Protect the existing roofs (inside the areas designated for removal and replacement) by placing 1/2-inch plywood over 1.5-inch insulation and fastened together. Any damage to the existing roofs shall be repaired immediately to prevent leakage into the roof and the building interior.

### **1.14 TEMPORARY UTILITIES**

- A. Water and electricity will be available in the area where work will be performed. The Contractor will not be charged for reasonable use of these services for construction operation. The Contractor shall pay costs for installation and removal of any temporary connections including necessary safety devices and controls.

### **1.15 REPAIRS AND FINISHES**

- A. Existing disturbed materials and equipment resulting from the construction operations shall be repaired and finished to match existing or adjacent finishes.
- B. The Contractor shall replace any glass that may be broken in the existing structure, resulting from and/or related to construction operations. All new glass shall match the existing construction.

### **1.16 REMOVAL OF DEBRIS AND CLEANING**

- A. The Contractor shall continuously remove from the site all material and debris. No storage of removed items or debris will be permitted on the site unless so directed by the Owner.
- B. The premises shall be kept as clean as practical, consistent with the neatness required for the Owner's normal operations.

### **1.17 EXISTING MATERIAL AND EQUIPMENT REMOVED**

- A. Contractor shall remove all fixed equipment designated to be removed.
- B. Items of existing equipment which are to be reused, shall be carefully removed, stored and protected, and later reinstalled in original or new locations as required.
- C. Certain materials, particularly specified, shall be reused in the work, such material shall be in good usable condition and shall be cleaned and conditioned as required for reuse.
- D. All existing material and equipment which is to remain in place or to be reused and has been damaged or defaced during the progress of the work, shall be restored to a condition equal to that which existed prior to the start of the work, or shall be replaced with new materials and equipment equal in all respects, and finished so as to be uniform in appearance to adjacent existing work.

### **1.18 SALVAGED MATERIALS**

- A. Salvaged materials which are not to be reused will, unless otherwise specified, or verbally requested by the Owner's Representative, become the property of the Contractor and will be removed from the premises by him and legally disposed of off-site by him.

### **1.19 PROGRESS MEETINGS**

- A. The Owner will schedule meetings to be held on the job site whenever needed, supply information necessary to prevent job interruptions, to observe the work or to inspect completed work. The Contractor shall be represented at each progress meeting by persons with full authority to act for the Contractor in regard to all portions of the work.

### **1.20 APPLICABLE CODES**

- A. The Contractor shall comply with all applicable state and local rules and regulations relating to buildings, employment, the preservation of public health and safety, use of streets, and the performance of the work of this Contract.
- B. Should the Contractor perform any work knowing it to be contrary to existing laws, rules and regulations, and fail to give notice of such fact to the Owner, he shall bear all costs arising there from and hold the Owner harmless for such violation.
- C. Where the contract documents require the work or parts of the work to be done in accordance with a particular standard or code recognized in the building industry, and that cited code includes requirements above the standards required by state or local law, such work shall be completed in accordance with the requirements of the Contract.

### **1.21 CONSTRUCTION SIGNS**

- A. No signs regarding advertisement of any kind may be erected or displayed on the site. The Contractor shall provide all signs, barricades, etc. to alert, warn and/or protect the general public, building employees and their own personnel against the on-going reroofing operations in accordance with all applicable Construction Safety Standards (MIOSHA).

### **1.22 EXISTING CONDITIONS**

- A. The Contractor shall check all dimensions and verify all conditions shown on the drawings at the site in relation to his work.
- B. Information as shown on the plans is given solely for the convenience of the Contractor, and use of such dimensions, elevations, sizes or information is made at his own risk.
- C. Conditions other than those which are described in these specifications shall be identified in writing to the Roof Consultant before proceeding with the work. The Roof Consultant will provide approved alternate details as required by changed conditions. The Contractor shall be responsible for any unauthorized changes he incorporates in the work.

### **1.23 OWNER OCCUPANCY**

- A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

### **1.24 CONTRACTOR USE OF SITE AND PREMISES**

- A. Arrange use of site and premises to allow:
  - 1. Owner occupancy.
  - 2. Use of site and premises by the public.
- B. Provide access to and from site as required by law and by Owner:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Existing building spaces may not be used for storage.
- D. Time Restrictions:
  - 1. Limit conduct of especially noisy exterior work to the hours established by local municipality ordinances 7am to 11pm.

LIVONIA PUBLIC SCHOOLS  
CHURCHILL HIGH SCHOOL  
RTA PROJECT NO. 24-017

SUMMARY  
SECTION 01 1000 - 5

E. Utility Outages and Shutdown:

1. Prevent accidental disruption of utility services to other facilities.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2000  
PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Correlation of Contractor submittals based on changes.
- C. Procedures for preparation and submittal of application for final payment.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Section 01 2200 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

**1.03 SCHEDULE OF VALUES**

- A. Submit a printed schedule on AIA Form G703 - Continuation Sheet. Contractor's standard form or electronic media printout will be considered.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Roof Consultant for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- E. Revise schedule to list approved Change Orders, with each Application For Payment.

**1.04 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Roof Consultant for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
  - 1. Item Number.
  - 2. Description of work.
  - 3. Scheduled Values.
  - 4. Previous Applications.
  - 5. Work in Place and Stored Materials under this Application.
  - 6. Authorized Change Orders.
  - 7. Total Completed and Stored to Date of Application.
  - 8. Percentage of Completion.
  - 9. Balance to Finish.
  - 10. Retainage.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- I. Submit one electronic and three hard-copies of each Application for Payment.
- J. Include the following with the application:
  - 1. Transmittal letter on Contractor's letterhead.



2. Partial release of liens from major subcontractors and vendors.
  3. Notorized Sworn Statements.
- K. When Roof Consultant requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

#### **1.05 MODIFICATION PROCEDURES**

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Roof Consultant will issue instructions directly to Contractor.
- C. For other required changes, Roof Consultant will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
  1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
  2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Roof Consultant will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.
- E. Contractor may propose a change by submitting a request for change to Roof Consultant, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
  1. For change requested by Roof Consultant for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
  2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Roof Consultant.
  3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
  4. For change ordered by Roof Consultant without a quotation from Contractor, the amount will be determined by Roof Consultant based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
  1. On request, provide the following data:
    - a. Quantities of products, labor, and equipment.
    - b. Taxes, insurance, and bonds.
    - c. Overhead and profit.
    - d. Justification for any change in Contract Time.
    - e. Credit for deletions from Contract, similarly documented.
  2. Support each claim for additional costs with additional information:
    - a. Origin and date of claim.
    - b. Dates and times work was performed, and by whom.
    - c. Time records and wage rates paid.
    - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
  3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

- H. Execution of Change Orders: Roof Consultant will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

**1.06 APPLICATION FOR FINAL PAYMENT**

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
  - 1. All punchlist items have been satisfactorily completed as determined by the Roof Consultant.
  - 2. Contractor's and Manufacturer's warranties have been issued.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2200  
UNIT PRICES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- C. Defect assessment and non-payment for rejected work.

**1.02 COSTS INCLUDED**

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

**1.03 UNIT QUANTITIES SPECIFIED**

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

**1.04 MEASUREMENT OF QUANTITIES**

- A. Take all measurements and compute quantities. Measurements and quantities will be verified by Roof Consultant.
- B. Measurement by Area: Measured by square dimension using mean length and width or radius.
- C. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

**1.05 PAYMENT**

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Roof Consultant, multiplied by the unit price.
- B. Payment will not be made for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products remaining on hand after completion of the Work.
  - 4. Loading, hauling, and disposing of rejected Products.

**1.06 DEFECT ASSESSMENT**

- A. Replace Work, or portions of the Work, not complying with specified requirements.
- B. If, in the opinion of Roof Consultant, it is not practical to remove and replace the Work, Roof Consultant will direct one of the following remedies:
  - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Roof Consultant.
  - 2. The defective Work will be partially repaired to the instructions of the Roof Consultant, and the unit price will be adjusted to a new unit price at the discretion of Roof Consultant.
- C. The authority of Roof Consultant to assess the defect and identify payment adjustment is final.

**1.07 SCHEDULE OF UNIT PRICES**

- A. Unit Price No. 1 - Wood Nailers and Plywood - Replace, as necessary and designated by the Owner's Representative, deteriorated wood nailers and plywood. Quote a per lineal foot price for dimensional lumber and a per square foot price for plywood on the Bid Form for the following sizes:
  - 1. 1" x 6"
  - 2. 1" x 8"
  - 3. 2" x 4"

4. 2" x 6"
  5. 2" x 8"
  6. 2" x 10"
  7. 2" x 12"
  8. 1/2-inch CDX plywood
  9. 3/4-inch CDX plywood
- B. Unit Price No. 2 - Repair isolated roof deck damage or openings not exceeding 6-inches x 6-inches with galvanized 18-gauge flat stock extending a minimum of 6-inches beyond the damaged area in all directions. Install No. 12 self-drilling screws at 6-inch on center along the perimeter of the plate. The price quoted shall be per square foot.
- C. Unit Price No. 3 - Roof Drain Replacement - Replace deteriorated drain bowls, if necessary and as directed by the Owner's Representative, to provide watertight drain assemblies. Install in accordance with state and local plumbing codes. This work is to be accomplished by a licensed plumbing sub-contractor hired by the Contractor. The price quoted shall be per roof drain bowl removed and replaced, including labor and material.
- D. Unit Price No. 4 - Tectum Roof Deck Replacement - Replace the Tectum Roof Deck, if necessary and as directed by the Owner's Representative, to provide a structurally sound deck matching the existing Tectum Roof Deck in type. The price quoted shall be a per square foot cost, including removal and replacement labor. Quote a price on the Bid Proposal Form.
- E. Unit Price No. 5 - Steel Roof Deck Replacement - Replace deteriorated steel roof deck, if necessary and as directed by the Owner's Representative, with compatible materials to provide a structurally sound deck matching existing deck type and thickness. The price quoted shall be a per square foot of decking replaced including labor.
- F. Unit Price No. 6 - Replacement Roof Insulation - Replace, as necessary and designated by the Owner's Representative, wet, warped, delaminated or damaged roof insulation. Replacement insulation is to be 2.0-inch thick isocyanurate roof insulation with non-asphaltic fiber reinforced felt facers. Roof insulation board replacement shall be bid as a Unit Price Extra. The price quoted shall be per square foot.
- G. Unit Price No. 7 - Replacement Roof Insulation - Replace, as necessary and designated by the Owner's Representative, wet, warped, delaminated or damaged roof insulation. Replacement insulation is to be 1.5-inch thick isocyanurate roof insulation with non-asphaltic fiber reinforced felt facers. Roof insulation board replacement shall be bid as a Unit Price Extra. The price quoted shall be per square foot.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2300  
ALTERNATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Description of Alternates.
- B. Procedures for pricing Alternates.
- C. Documentation of changes to Contract Price and Contract Time.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 4100 - Bid Form.

**1.03 ACCEPTANCE OF ALTERNATES**

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

**1.04 SCHEDULE OF ALTERNATES**

- A. Alternate No. 1 - Roof Areas E, E1, and E2: Provide the Owner with a price to remove the existing PVC roof membrane on Areas E, E1, and E2 and replace with 60-mil reinforced EPDM membrane. Existing insulation is to remain except at east roof drains on Area E, install additional isocyanurate insulation on all roof areas as described in Section 07 5300 - Elastomeric Membrane Roofing. Provide 6-mil plastic sheets to cover the gym floor and as directed by the Owner. Remove and discard plastic sheets when completed on a daily basis as instructed by the Owner. Quote a lump sum price on the Bid Form in the space provided.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 ROADWAYS, DRIVES, PARKING AREAS AND SIDEWALKS**

- A. The Contractor is responsible for the condition of all existing roadways, sidewalks, etc., used during construction operations and shall repair same as required and leave same in good condition at the completion of the job.

**1.02 BARRICADES AND PROTECTION**

- A. The property on which work is to be done is in use. This means that employees and other general public may be adjacent to and below the construction operations.
- B. The Contractor will provide and maintain in good repair all barricades, guard railings and temporary protection as required by law and/or to suit job conditions.
- C. The Contractor shall do everything possible to protect the public, the workmen, the premises and adjoining property from injury or damage.
- D. Properly protect all sidewalks, pavements, existing building areas, building facades, windows and skylights. Replace or repair all parts of same which become damaged or defaced during or as a result of construction operations. Repairing of damaged parts shall be done in strict accordance with all local codes and ordinances and the Owner as conditions require.

**1.03 VANDALISM**

- A. The Contractor shall pay for all damage by vandalism to material or equipment that occurs to items finished or installed under this Contract. The Contractor shall be responsible for the work under this Contract during the construction period from the start until the final acceptance of the entire project by the Owner.

**1.04 PROTECTION**

- A. Provide and erect all required barricades and safety precautions in accordance with local, State and Federal Codes and other legal requirements.
- B. Provide secure, weatherproof protection for existing buildings, finishes, walks, drives, landscaping, lawns, etc., to remain. Repair any damage to the satisfaction of the Owner.
- C. Remove all protection and guards when work is completed and restore disturbed areas.
- D. Whenever lifting materials or equipment over or near existing or occupied buildings, give advance notice and arrange to have any potentially endangered spaces vacated.
- E. Protect the roof areas used to access the designated areas of roof removal and replacement. Protect the existing roofs (inside the areas designated for removal and replacement) by placing 1/2-inch plywood over 1.5-inch insulation and fastened together. Any damage to the existing roofs shall be repaired immediately to prevent leakage into the roof and the building interior.

**1.05 TEMPORARY WEATHER PROTECTION**

- A. The Contractor shall provide, maintain and pay for all temporary weather protection as required to properly protect all parts of the work from damage. This shall include temporary protective coverings.

**1.06 RUBBISH DISPOSAL, FIRE SAFETY**

- A. During non-construction hours, trash containers shall be covered and sealed to prevent wind blown debris and access into trash containers.
- B. The location of the trash containers shall be subject to the approval of the Owner.
- C. All rubbish and debris shall be removed from the site daily or more often if directed by the Owner's Representative. Burning of trash on-site shall not be allowed.
- D. No open fire shall be permitted on the building site at any time.

**1.07 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Use of existing facilities is not permitted.
- C. Maintain daily in clean and sanitary condition.

**1.08 REMOVAL OF TEMPORARY WORK**

- A. All temporary structures, barricades, protection and similar work shall be removed by the Contractor at completion of the project or when directed. Any repairs or alterations necessitated by such removal shall be made by the Contractor, and at the Contractor's expense.

**1.09 WORK ACTIVITIES**

- A. Contractors and subcontractors shall direct their employees to conduct themselves so as not to interfere with or disrupt the building activities. The Contractor shall schedule construction operations to minimize interference with operations, and cooperate with Owner's Representative in maintaining public access to existing building facilities.
- B. All construction operations, delivery and storage of material and movement of equipment shall be governed by applicable local building codes, traffic regulation and safety and fire regulation of local authorities.
- C. Contractors, subcontractors, and their employees or suppliers shall not use or interfere with existing public access, drives, roads or parking lot, except as specifically indicated or by prior arrangement with the Owner's Representative.
- D. Contractor's employees parking, delivery trucks and other construction vehicle parking shall only be at areas designated by the Owner's Representative.

**1.10 TEMPORARY SERVICES**

- A. Temporary power, as required for the project, shall be provided by the Contractor. The generator and all electrical cords must be maintained in areas approved by the Owner's Representatives.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 07 5300  
ELASTOMERIC MEMBRANE ROOFING**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Section 07 6200 - Sheet Metal Flashing and Trim.

**1.02 SECTION INCLUDES**

- A. Elastomeric roofing membrane, adhered conventional application.
- B. Insulation, flat and tapered.
- C. Roofing stack boots and walkway pads.

**1.03 REFERENCE STANDARDS**

- A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board 2021.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-- Tension 2016 (Reapproved 2021).
- C. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane 2015 (Reapproved 2021).
- D. UL (DIR) - Online Certifications Directory Current Edition.
- E. UL (FRD) - Fire Resistance Directory Current Edition.

**1.04 SUBMITTALS**

- A. Provide Safety Data Sheets (SDS) to the Owner for any materials prior to delivery to the site.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, and fasteners.
- C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, and tapered insulation layout plan.
- D. Safety and Work Schedule
  - 1. Submit copies of your written Safety Plan to the Owner.
  - 2. Submit a written work schedule to the Owner with a detailed time line from Contract Award to project completion.
- E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- F. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

**1.05 PRE-CONSTRUCTION MEETING**

- A. Prior to scheduled commencement of roofing work, the Contractor and representatives of other entities directly concerned with performance of roofing system shall have a pre-construction meeting. Review requirements (Contract Documents), submittals, status of coordinating work, availability of materials and installation facilities and establish preliminary installation schedule. Review requirements for inspections, testing, certifications, forecasted weather conditions, governing regulations, insurance requirements, and proposed installation procedures. The Contractor shall record the items discussed including agreement or disagreement on matters of significance; furnish copy of recorded discussions to each participant. Review foreseeable methods and procedures related to roofing work, including but not necessarily limited to the following:



1. Tour representative areas of roofing substrates, inspect and discuss conditions of substrate.
2. Review roofing system requirements (drawings, specifications and other Contract Documents).
3. Review required submittals.
4. 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.
5. Review required inspection, testing, certifying and material usage accounting procedures.
6. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.
- B. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
- C. Store and handle roofing materials in a manner which will prevent moisture damage. Store adhesives and flashings in a dry, warm, well-ventilated, weather-tight place. Handle and store materials or equipment in a manner to avoid significant or permanent deflection of deck.

#### **1.07 PROJECT CONDITIONS**

- A. Coordinate the work with installation of associated flashings and counterflashings installed by other sections as the work of this section proceeds.

#### **1.08 WARRANTY**

- A. Furnish the Owner with a Contractor's written warranty covering all materials and workmanship for a 2-year period after Date of Substantial Completion.
- B. Manufacturer's Warranty: Furnish Owner with the selected roofing manufacturer's 20-year total system warranty covering all materials and labor.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Performance: Provide roofing materials recognized to be of generic type indicated and tested to show compliance with indicated performances, or provide other similar materials certified in writing by roofing manufacturer to be equal or better than specified in every significant respect and acceptable to the Owner.
- B. Compatibility: Provide products which are recommended by the roofing manufacturer to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.
- C. EPDM Membrane Materials:
  1. Carlisle SynTec Incorporated; Sure-Tough EPDM Reinforced Membrane Roofing System, Design "A" - Fully Adhered: [www.carlisle-syntec.com](http://www.carlisle-syntec.com).
  2. Holcim Elevate Roofing Systems; RubberGard Max Fully Adhered System: [www.holcimelevate.com](http://www.holcimelevate.com).

#### **2.02 ROOFING MEMBRANE AND ASSOCIATED MATERIALS**

- A. Membrane: Ethylene-propylene-diene-monomer (EPDM); externally reinforced with fabric; complying with minimum properties of ASTM D4637/D4637M.
  1. Thickness: 60 mil, 0.060 inch (1.5 mm).
  2. Membrane shall be .060-inch thick, reinforced, EPDM (Ethylene Propylene Diene Monomer) compounded elastomer. Membrane sheet size shall be the largest sheet possible as determined by the job conditions.

- B. Base Flashing: Flashing shall be a .060-inch thick semi-cured, self-adhering EPDM flashing sheet as furnished by the roofing manufacturer.
- C. All materials used in the roofing system shall be as furnished by a single roofing manufacturer. Seam tape, adhesives, sealants, water cut-off mastic and other required items shall be as furnished or recommended by a single roofing manufacturer.
- D. All details relating to the installation of the roof system shall be approved by the roofing manufacturer and installed in such a manner that the roofing manufacturer will furnish its 20-year total system warranty for the installation.

### 2.03 VAPOR RETARDER

- A. Self-adhering, 40-mil, SBS modified sheet with a polyethylene or polyolefin surfacing and a plastic release film. ASTM D 1970. Roll width: 3.3-feet. Approved manufacturers:
  - 1. Carlisle SynTec Incorporated: 725 Air and Vapor Barrier.
  - 2. Holcim Elevate: V-Force Vapor Barrier Membrane.
- B. Self-Adhering Sheet Primer: Solvent based substrate primer designed for use prior to the application of self-adhering vapor retarder membrane. Approved manufacturers:
  - 1. Carlisle SynTec Incorporated: CAV GRIP Primer.
  - 2. Holcim Elevate: SA Solvent Based Primer.

### 2.04 INSULATION

- A. Manufacturers: Match the roofing manufacturer. Subject to compliance with requirements:
  - 1. Carlisle SynTec Incorporated, InsulBase Polyiso and InsulBase Tapered Polyiso.
  - 2. Holcim Elevate, ISOGARD GL Flat and ISOGARD GL Tapered.
- B. Insulation Materials:
  - 1. Flat Stock Roof Insulation: Closed-cell polyisocyanurate foam core with non-HCFC blowing agent, integrally laminated to heavy non-asphaltic fiber reinforced felt facers; conform to ASTM C 1289-13e1, Type II, Grade 2.
    - a. Thermal Resistivity (R-value): 15.0 at 75 degrees F for 2.6-inch thick insulation board.
    - b. Thermal Resistivity (R-value): 11.4 at 75 degrees F for 2.0-inch thick insulation board.
    - c. Thermal Resistivity (R-value): 8.5 at 75 degrees F for 1.5-inch thick insulation board.
    - d. Compressive Strength: 20 psi.
    - e. Maximum size (mechanically fastened): 4-feet by 8-feet.
    - f. Maximum size (adhered): 4-feet by 4-feet.
    - g. Provide other thicknesses as required.
  - 2. Tapered Roof Insulation: Closed-cell polyisocyanurate foam core with non-HCFC blowing agent, integrally laminated to heavy non-asphaltic fiber reinforced felt facers; conform to ASTM C 1289-13e1, Type II, Grade 2.
    - a. Slope: 1/8-inch per foot.
    - b. Compressive Strength: 20 psi.
    - c. Maximum size: 4-feet by 4-feet.
    - d. Minimum thickness: 1/2-inch.
  - 3. Roofing Saddles and Roof Sumps: Closed-cell polyisocyanurate foam core with non-HCFC blowing agent, integrally laminated to heavy non-asphaltic fiber reinforced felt facers; conform to ASTM C 1289-13e1, Type II, Grade 2.
    - a. Slope: 1/2-inch per foot.
    - b. Maximum size: 4-feet by 4-feet.
    - c. Minimum thickness: 1/2-inch.
  - 4. Roof Sumps (Area D2, E1, E2, and F7): Closed-cell polyisocyanurate foam core with non-HCFC blowing agent, integrally laminated to heavy non-asphaltic fiber reinforced felt facers; conform to ASTM C 1289-13e1, Type II, Grade 2.
    - a. Slope: 1/4-inch per foot.
    - b. Maximum size: 4-feet by 4-feet.

- c. Minimum thickness: 1/2-inch.
- 5. Gypsum Barrier Board: Fiberglass mat faced gypsum, roof board. Fire resistance rating (UL 790 and ASTM E108): Class A. Approved for use with fully adhered roof membrane. Thickness: 1/2-inch. Maximum board size: 4-feet by 4-feet.
  - a. Acceptable product or approved equal: GP Gypsum, DensDeck Prime.
- 6. Tapered Edge Strips: Wood fiber uniform density board complying to ASTM C 208.
  - a. Tapered edge strip: 1-1/2-inches by 18-inches.
- C. Fasteners for securing the roof insulation to steel roof deck shall be a heavy duty screw (self-drilling) and metal plate system approved by the roofing manufacturer for the type of deck being covered. The fasteners shall provide a minimum of 300 pounds of pull-out when tested on the subject deck. Length shall be sufficient to penetrate deck a minimum of 1/2-inch to a maximum of 1-1/2-inch. Minimum insulation plate size: 3-inches.
- D. Fasteners for securing the roof insulation to the Tectum roof deck shall be Polymer fasteners and 3-inch steel plates.
  - 1. Carlisle SynTec Incorporated, Gyptec Fasteners.
  - 2. Holcim Elevate, Polymer Fasteners.
- E. Insulation Adhesive: Two-component, construction grade, insulating polyurethane low-rise adhesive. Approved manufacturers and products:
  - 1. Carlisle SynTec Incorporated, FAST Bag in a Box Adhesive.
  - 2. Holcim Elevate, I.S.O. Stick Adhesive.

## 2.05 WOOD NAILERS AND PLYWOOD

- A. Wood nailers and blocking: PS 20, construction grade lumber.
  - 1. Sizes: Nominal sizes as indicated on drawings, S4S.
  - 2. Moisture Content: S-dry or MC19.
  - 3. Species: SPF.
  - 4. Grade: No. 2.
- B. Plywood Sheathing: PS 1, Grade C-D, Exposure I. Thicknesses: 3/4-inch.
- C. Fasteners in contact with wood blocking and nailers shall be galvanized nails in conformance with ASTM A153 unless otherwise specified.

## 2.06 MISCELLANEOUS

- A. Tectum deck replacement: Match existing roof deck: width, length and thickness.
- B. Steel deck replacement: Match existing roof deck; material, gauge, profile and finish.
- C. Concrete deck repairs: 3/16-inch thick steel plate.
- D. Plates to cover small holes in the various roof deck types and isolated areas of deterioration shall be 18-gauge galvanized steel. Maximum hole size: 6-inches by 6-inches.
- E. Filler for sheet metal penetration pockets shall be non-shrink grout (bottom) and pourable elastomeric sealant (top).
- F. Replacement roof drains and accessories for the low-slope roof areas shall be cast iron as manufactured by J. R. Smith Manufacturing Co., 1000 Series, Size: to match the existing diameter and a bottom outlet to match the existing drain pipe. Acceptable connection: Speedi-Set Gasket. Utilize the drain manufacturer's specified cast iron underdeck clamp, clamping ring and drain strainer.
- G. Replacement roof drain strainers and clamping rings shall be cast iron, sized to fit the existing roof drain bowl.
- H. Expansion Joint Material: 6 mil polyethylene sheeting (vapor retarder), fiber glass batt insulation (unfaced).
- I. Walkway Pads: 30-inch by 30-inch by 0.30-inch thick composite rubber with factory laminated seam tape on the back surface, diamond or button tread.

- J. Closed cell insulating foam for wall closure on Area D2. Acceptable product of approved equal:
  - 1. DUPONT Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant.
- K. New roof hatch shall be Bilco Company Type S-50 aluminum.
- L. Roof Hatch Safety Railing System: OSHA Compliant roof hatch mounted safety rail system. Powder coated steel; color: yellow. As manufactured by or approved equal:
  - 1. Bilco Company, Bil-Guard 2.0 Roof Hatch Safety Rail.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify walls and roof deck are clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify roof deck surfaces are dry and free of snow or ice.
- E. Maintain a daily watertight condition in the existing roof areas. At no time shall the existing roof remain vulnerable to moisture intrusion. Overnight tie-ins are required regardless of the weather forecast.

#### **3.02 DEMOLITION AND SURFACE PREPARATION**

- A. Remove and discard the following components or prepare surfaces as described:
  - 1. The removal and replacement of the existing windows and wall panels on Area D, C2, and C3 will be completed by a separate Contractor hired by the Owner. The Roofing Contractor will verify that the work has been completed prior to beginning construction on Areas D, D1, C2, and C3.
  - 2. Remove and discard built-up roofs, ballast and PVC roofs, base flashing, roof insulation, cant strips, vapor retarders and other miscellaneous existing roofing down to the structural roof deck.
    - a. NOTE: Existing isocyanurate insulation to remain on Areas E, E1, E2, and F4.
    - b. NOTE: PVC membrane seams with mechanical fasteners may be present below the top PVC roof membrane.
    - c. NOTE: Limit the amount of water sprayed on the built-up roof to prevent leaks in the building.
  - 3. Remove and replace wet, deteriorated or damaged existing insulation on Areas E, E1, E2, and F4.
    - a. NOTE: Existing roof insulation replacement shall be bid as a Unit Price Extra.
  - 4. Remove and discard the existing fascia cap, coping, gravel stop/ fascia, counterflashing, gutter, downspout and other sheet metal flashing accessories.
  - 5. Cut or recut the reglets as necessary to a depth of 1-1/2-inches in the existing masonry walls and chimneys in preparation for installing new reglet mounted counterflashing.
  - 6. Save the receiver at the base of the gymnasium walls.
  - 7. Remove and discard the termination bars and fasteners from the walls, chimneys and perimeter edges. Remove and discard the repair materials from the walls, chimneys and perimeter edges.
  - 8. Temporarily displace mechanical ventilator unit covers to facilitate the removal and replacement of the base flashing. Remove and discard existing counterflashing from the roof curbs if present. Prepare to raise roof curbs.
  - 9. Remove and discard roof hatch on Area C3.
  - 10. Remove and discard existing plumbing vent pipe flashings. Clean off all repair materials and caulk from the pipes.
  - 11. Save and reuse the existing sheet metal flange, sleeve and umbrella from the hot vent stacks.
  - 12. Save and reuse the existing duct supports.

13. Remove and discard the existing penetration pocket flashing and filler material. Clean off the penetrations to remain.
14. Remove and discard the obsolete rooftop equipment as shown on the Roof Plan. Prepare to infill the resultant openings in the roof deck with matching roof deck.
15. Temporarily displace supply lines (electrical and gas) to facilitate the removal and replacement of the roof system. Save and reuse the existing pipe supports and clamps.
  - a. NOTE: Modifications required to the conduit and gaslines will be conducted by an electrician or a mechanical contractor hired by the Owner.
16. Remove and discard roof drain inserts. Review the existing roof drain for condition and prepare to replace the roof drain if necessary. If the roof drain can be reused, provide new cast iron clamping ring and roof drain strainer.
  - a. NOTE: Roof drain inserts will not be allowed to be installed in the new roof system at the roof drain locations on this project.
17. Remove and discard plastic or broken roof drain strainers. Provide replacement cast iron roof drain strainers.
18. Closely inspect the existing roof drain bowls for cracks, broken flanges or deteriorated conditions. Remove and replace any damaged drain bowl with a matching cast iron drain bowl. The installation shall be in accordance with local plumbing codes.
  - a. Roof drain replacement shall be bid as a Unit Price extra.
19. Thoroughly clean out the roof drain bowls, clamping rings and roof drain strainers in preparation for reuse.
20. Remove and discard deteriorated wood nailers and plywood.
  - a. NOTE: Wood nailer and plywood replacement shall be bid as a Unit Price extra.
21. Prior to cutting and removing deteriorated roof deck, the area below the required deck replacement area must be cordoned off and monitored by the Contractor's appointed safety coordinator during the entire cutting and patching procedure. The safety coordinator must be in communication with the foreman during removal and replacement and have in his possession a fully charged fire extinguisher.
22. Closely inspect the existing roof deck for deteriorated conditions or holes. Repair isolated deck damage not exceeding 6-inches x 6-inches with 18-gauge galvanized steel plate.
  - a. NOTE: Roof deck repairs shall be bid as a Unit Price Extra.
23. Remove and replace deteriorated steel deck with matching steel deck to provide a structurally sound roof deck.
  - a. NOTE: Steel deck replacement shall be bid as a Unit Price Extra.
24. Remove and replace deteriorated Tectum roof deck with matching Tectum roof deck to provide a structurally sound roof deck.
  - a. NOTE: Tectum roof deck replacement shall be bid as a Unit Price Extra.
25. Closely inspect the existing concrete roof deck for deteriorated conditions or holes. Repair isolated deck damage not exceeding 12-inches x 12-inches with 3/16-inch steel plate.
  - a. NOTE: Concrete deck repairs shall be bid as a Unit Price Extra.
  - b. Significant damage that would require removal and replacement of the concrete roof deck shall be negotiated with the Owner prior to removal and replacement.
28. Remove debris, scrap and rubbish from the roof areas and building grounds daily.
29. The Roofing Contractor is required to follow NESHAP regulations for any asbestos containing material (test results in Appendix).

### **3.03 INSTALLATION - SUBSTRATE**

- A. General: Comply with roofing manufacturer's instructions, except where more stringent requirements are indicated herein.
  1. Details relating to the installation of the new roof system shall be approved by the roofing manufacturer and the Roofing Consultant and installed in such a manner that the roofing manufacturer will furnish the specified warranty for the installation.

2. Do not begin roofing work until all decks, walls, curbs, nailers, accessories, and underlying substrates are ready and acceptable to have roofing materials installed. Deck surfaces must be clean, smooth, dry and free of moisture prior to beginning roof application.
  3. Schedule and supervise work crews so that the area of roofing begun one day is completely finished before leaving the job site that day. Included are all flashings within each day's work area.
  4. Do not install any roofing materials during rain or other inclement weather. One exception is that temporary work may be installed during such weather to protect the building interior and new materials that are already installed. Remove all temporary work and materials that have been exposed to such weather, then install permanent materials as specified during acceptable weather conditions.
  5. At the end of each day's roofing installation, protect edge of incomplete work, including membrane and insulation. Install temporary water cut-offs to provide a weather tight seal to both the roof deck and existing roof membrane. Remove temporary water cut-off materials at the beginning of next day's work.
  6. Materials must be stored dry and protected with tarps and on pallets at all times. Wet or damaged materials will be removed from the job site.
  7. Construct a walkway system from a minimum 1.5-inch thick insulation and 0.5-inch thick plywood to protect the existing roof (inside the areas designated for removal and replacement), where traffic is to cross the roof to the dumpster.
  8. The Contractor will be responsible for cleaning the building interior on a daily basis of any reroofing related debris entering the building as a result of deck repair and reroofing operations. Provide 6-mil plastic sheets to cover the interior as directed by the Owner. Immediately remove and discard the plastic sheets when completed on a daily basis.
- B. Steel Deck
1. Repairs: Install 18-gauge galvanized plates at small holes (less than 6-inches by 6-inches) and/or at isolated areas of deterioration of the steel roof decks. The plates shall extend 6-inches past the deficient area in each direction. Secure the steel plate to sound roof deck with self-drilling screws spaced 6-inches on center along the perimeter edge of the steel plate.
  2. Replacement: Install new steel roof deck to cover resultant openings at obsolete rooftop equipment or where deteriorated steel roof deck was removed.
    - a. The new steel deck shall not span less than three supports when replacing deteriorated decking. The deck may be installed in single spans (two supports) where obsolete curbs are removed, provided the opening is framed with steel and the opening is less than 6-feet wide. The end of each roof deck panel shall be supported for two inches and overlap the purlin a minimum of two inches. Each roof deck panel is to be fastened to the purlins with self-drilling screws drilled through the bottom ribs at intermediate supports at 12-inch centers. Fasteners at end laps and intermediate supports within 6-feet of the building perimeter shall be spaced 6-inch centers. The new roof deck panels shall overlap adjacent panels at the side laps. The side laps shall be mechanically fastened with self-tapping sheet metal screws spaced a maximum of 36-inches on-center. For spans under 6-feet, a single side lap fastener be provided at mid-span. For spans over 6-feet, the side lap fasteners shall be placed at the third points of the span.
- C. Tectum Deck
1. Install matching replacement decking where the existing decking was removed due to deterioration. Install replacement decking with the long dimension engaged with the manufactured tongue and groove. Support the endjoints on the existing structural supports by the maximum dimension possible. The installation shall be in accordance with the deck panel manufacturer's specifications.
  2. Mechanically fasten and solidly grout the deck joints in accordance with the manufacturer's requirements.
- D. Concrete Deck

1. Install 3/16-inch thick steel plate over holes and deterioration (less than 12-inches by 12-inches) in the concrete roof deck. The plate shall extend 6-inches past the deficient area in each direction. Secure the steel plate to sound concrete with Tapcon fasteners installed 12-inches on-center along the perimeter edge of the steel plate.
  2. Holes smaller than 2-inches by 2-inches may be covered with 18 gauge galvanized plate. Secure the steel plate to sound concrete with Tapcon fasteners installed 6-inches on-center along the perimeter edge of the steel plate.
- E. Roof Drain Replacement
1. The Contractor shall hire a licensed plumbing subcontractor to install replacement roof drains as necessary. The Contractor shall coordinate the roof drain installation with the plumber. Temporary roofing work needed at the roof drain location shall be provided by the Contractor at no additional cost to the Owner.
    - a. Install new roof drain assemblies at the deteriorated roof drain locations. Utilize the manufacturer's recommended underdeck clamp to secure the drain bowl in place or to the sump pan.
    - b. The new roof drain shall be connected to the existing drain pipes in accordance with state and local plumbing codes and the drain manufacturers requirements. Insulate the new roof drain and drain pipe to prevent condensation. Water test the new roof drain to verify that the new roof drain functions properly.
    - c. Install new cast iron clamping rings and cast iron roof drain strainers at the new replacement roof drain locations.
- F. Wood Nailers
1. Install new wood nailers as designated on the attached RTA Details. Secure the wood nailers to existing wood nailers with galvanized 16d nails in two staggered rows spaced 12-inches on center.
  2. Resecure all loose existing wood nailers to provide solid securement for the new roof system and perimeter edge sheet metal. Secure the existing wood nailers with appropriate fasteners.
  3. Install wood nailers at roof curbs which are not 8-inches above the new finished roof surface. The wood nailers shall be installed to match the existing opening or inside dimension of the curb. The wood nailers shall be a minimum of 1.5-inches thick and shall be of sufficient width to provide a minimum curb height of 8-inches above the completed roof surface. Secure the wood nailers with appropriate fasteners.
  4. Install replacement wood nailers where the existing wood nailers were removed due to deterioration. The wood nailers shall be secured using the same methods that the originally installed wood nailers were secured and/or in a manner to provide solid securement.
- G. Expansion Joint
1. Install new expansion joint curb in accordance with RTA Details at the locations shown on the Roof Plan. Secure the expansion joint curb to the existing wood deck with heavy duty screws spaced 12-inches on center.
  2. Drape polyethylene sheeting vapor retarder into the expansion joint openings. Extend the vapor retarder until flush with the roof deck underside. Secure the vapor retarder with roofing nails.
  3. Fill the vapor retarder with unfaced fiberglass batt insulation.
  4. Install foam backer rod over the expansion joint opening with tight endjoints and bevel cut, tight corners.
  5. Cover the expansion joint with fully adhered EPDM flashing on the same day. Joints in the EPDM flashing covering the expansion joint shall be seamed with 3-inch seam tape. EPDM flashing must be neatly and professionally installed onto the foam backer rod.

### **3.04 INSTALLATION - INSULATION SYSTEM**

#### **A. General**

1. Install the specified insulation in accordance with manufacturer's latest printed instructions as shown on the Roof Plan Insulation Schedule.
  2. Install the specified insulation with staggered board joints between boards and layers of insulation.
  3. Stagger board joints by the maximum dimension possible. Neatly cut to fit edges and penetrations. Fill gaps larger than 1/4-inch with matching insulation.
  4. When adhering the insulation in foam adhesive, weigh down each board immediately until the adhesive sets up.
  5. Install tapered edge strips at perimeter edges as needed or in lieu of installing reinforced perimeter attachment strips if height difference will permit. Trim the tapered edge strip as required to provide a smooth transition. Mechanically fasten or foam adhere the tapered edge strip to provide solid securement.
- B. Roof Sump Insulation - Areas C2, C3, C4, D, D3, D4, E3, E4, F1, and F2.
1. Mechanically fasten 2.6-inch base layer of isocyanurate insulation. Adhere 8-foot by 8-foot, 1/2-inch per foot tapered insulation to form roof sumps at the roof drains as shown of the Roof Plan.
    - a. Secure the 2.6-inch isocyanurate insulation to the roof deck as follows:
      - 1) One approved fastener and plate per four square feet (8 fasteners per 4-foot by 8-foot board).
    - b. Adhere the tapered insulation to the 2.6-inch base layer with the approved foam adhesive. Bead spacing: 6-inches on center.
- C. Roof Sump Insulation - Area D2.
1. Install 8-foot by 8-foot, 1/4-inch per foot tapered insulation to form roof sumps at the roof drains as shown on the Roof Plan.
    - a. Adhere the tapered insulation with the approved foam adhesive to the prepared vapor retarder surface. Bead spacing: 6-inches on center.
- D. Roof Sump Insulation - Area E (Alternate No. 1).
1. Install 16-foot by 16-foot, 1/2-inch per foot tapered insulation to form roof sumps at the roof drains as shown on the Roof Plan and RTA Detail No. A6.
    - a. Mechanically fasten the tapered insulation through the existing 1.5-inch base layer and to the steel roof deck with one approved fastener and plate per two square feet (8 fasteners per 4-foot by 4-foot board).
- E. Roof Sump Insulation - Area E1 & E2 (Alternate No. 1).
1. Install 8-foot by 8-foot, 1/4-inch per foot tapered insulation to form roof sumps at the roof drains and at the gutter edge as shown on the Roof Plan.
    - a. Mechanically fasten the tapered insulation through the existing insulation and to the steel roof deck with one approved fastener and plate per two square feet (8 fasteners per 4-foot by 4-foot board).
- F. Roof Sump Insulation - Area F (16-foot by 16-foot).
1. Mechanically fasten 0.5-inch gypsum board 8-foot by 8-foot around the roof drains followed by mechanically fasten 2.6-inch base layer of isocyanurate insulation beyond the gypsum boards. Adhere 16-foot by 16-foot, 1/2-inch per foot tapered insulation to form roof sumps at the roof drains as shown on the Roof Plan and RTA Detail No. 32.
    - a. Secure the gypsum board to the roof deck with on approved fastener and plate per two square feet (16 fasteners per 4-foot by 8-foot board).
    - b. Adhere the tapered insulation to the 0.5-inch gypsum board or 2.6-inch isocyanurate with the approved foam adhesive. Bead spacing: 6-inches on center.
- G. Insulation - Areas C2, C3, C4, D, D1, D3, D4, E3, E4, F, F1, and F2.
1. Install two layers of 2.6-inch thick insulation in the field of the roof. Stagger board joints between rows and layers of insulation. Properly secure the insulation:



- a. Mechanically fasten the base layer of 2.6-inch thick insulation to the roof deck with one approved fastener per four square feet (8 fasteners per 4-foot by 8-foot board) of insulation board. Increase the number of fasteners by 50% at 8-foot wide perimeter edges of the roof. Increase the number of fasteners by 100% at 8-foot by 8-foot building corners.
  - b. Adhere the second layer of 2.6-inch thick insulation to the base layer of insulation with the approved foam adhesive. Maximum board size for adhered insulation is to be 4-foot by 4-foot, per manufacturer requirements. Bead spacing (perimeter): 6-inches on center (8-foot perimeter). Bead spacing (field): 12-inches on center.
  - c. Adhere 0.5-inch thick gypsum board to second layer of 2.6-inch isocyanurate insulation with the approved foam adhesive on Roof Areas C4, D1, D3, and E3.
  - d. Install tapered insulation saddles at the locations shown on the Roof Plan and areas susceptible to ponding water conditions. Adhere the tapered insulation saddles with the approved foam adhesive. Bead spacing: 6-inches on center.
- H. 4-Way Tapered Insulation - Areas D2 & F7.
1. Install a base layer of 2.0-inch thick insulation in the field of the roof. Stagger the board joints between rows and layers of insulation. Properly secure the insulation as follows:
    - a. Area D2: Adhere the insulation with the approved foam adhesive. Bead spacing (Perimeter): 6-inches on center (8-foot perimeter). Bead spacing (Field): 12-inches on center.
    - b. Area F7: Mechanically fasten the insulation with one approved fastener per two square feet (8 fasteners per 4-foot by 4-foot board) of insulation board. Increase the number of fasteners by 50% at 8-foot wide perimeter edges of the roof. Increase the number of fasteners by 100% at 8-foot by 8-foot building corners.
  2. Install tapered insulation in accordance with the approved tapered insulation layout plan. The tapered insulation shall be sloped 1/8-inch per foot. The minimum starting thickness of the tapered insulation shall be 2-1/2-inches. Secure the tapered insulation to the base layer of insulation as follows:
    - a. Adhere the tapered insulation with the approved foam adhesive. Bead spacing (Perimeter): 6-inches on center (8-foot perimeter). Bead spacing (Field): 12-inches on center.
- I. Insulation - Area E (Alternate No. 1).
1. Install two layers of 1.5-inch thick insulation in the field of the roof over the existing insulation. Stagger board joints between rows and layers of insulation. Properly secure the insulation:
    - a. Mechanically fasten the first layer of 1.5-inch thick insulation through the existing insulation and to the roof deck with one approved fastener per 2.67 square feet (12 fasteners per 4-foot by 8-foot board) of insulation board. Increase the number of fasteners by 50% at 8-foot wide perimeter edges of the roof. Increase the number of fasteners by 100% at 8-foot by 8-foot building corners.
    - b. Adhere the second layer of 1.5-inch thick insulation with the approved foam adhesive. Maximum board size for adhered insulation is to be 4-foot by 4-foot, per manufacturer requirements. Bead spacing (perimeter): 6-inches on center (8-foot perimeter). Bead spacing (field): 12-inches on center.
    - c. Install tapered insulation saddles at the locations shown on the Roof Plan and areas susceptible to ponding water conditions. Adhere the tapered insulation saddles with the approved foam adhesive. Bead spacing: 6-inches on center.
- J. Insulation - Areas E1(Alternate No. 1), E2 (Alternate No. 1), and F4.
1. Install one layer of 1.5-inch thick insulation in the field of the roof over the existing insulation. Stagger board joints between rows and layers of insulation. Properly secure the insulation:

- a. Mechanically fasten the 1.5-inch thick insulation through the existing insulation and to the roof deck with one approved fastener per 2.67 square feet (12 fasteners per 4-foot by 8-foot board) of insulation board. Increase the number of fasteners by 50% at 8-foot wide perimeter edges of the roof. Increase the number of fasteners by 100% at 8-foot by 8-foot building corners.
- K. Tapered Saddles and Tapered Edge Strip
1. Install tapered insulation saddles at the locations shown on the Roof Plan. Adhere the tapered insulation saddles with the approved foam adhesive. Bead spacing: 6-inches on center.
  2. At appropriate locations, install tapered edge strip to provide smooth transitions in the insulation system. Adhere the tapered edge strip with the approved foam adhesive. Bead spacing: 6-inches on center.

### 3.05 INSTALLATION - ROOF SYSTEM

- A. Membrane Installation
1. Roofing system shall be installed following the latest printed installation instructions of the roofing manufacturer.
  2. Evenly apply adhesives at rate recommended by the roofing manufacturer to both the underside of the membrane and the insulation. Apply bonding adhesive uniformly, stopping short of the splice areas along the seams and base tie-ins. Allow the adhesive to flash off until tacky.
  3. Reposition the membrane, free of air pockets and wrinkles. Firmly press the sheet into place without stretching. Broom the surface to improve adhesion immediately after installation.
  4. Overlap edges and ends and seal by roofing manufacturer's recommended dimensions.
  5. Shingle lap joints on sloped substrates in the direction of drainage.
  6. Complete the roof membrane seams with the roofing manufacturer's seam tape wherever possible. Apply the seam tape in accordance with the roofing manufacturer's instructions, including seam preparation work, proper seam tape alignment and exposure. Roll the completed seam with a hand roller across and along the seam.
  7. Secure the roof membrane at base tie-ins with the roofing manufacturer's reinforced perimeter attachment strips. Adhere the reinforced perimeter attachment strips to the insulation with bonding adhesive. Fasten the attachment strips with the roofing manufacturer's approved fasteners. After adhering the roof membrane to the reinforced perimeter attachment strip, roll the splice area with a hand roller across the strip over the length of the splice.
  8. Apply T-joint covers, stripping and appropriate sealant where specified by the roofing manufacturer on a daily basis.
- B. Flashing Installation
1. Perimeter edge flashing, wall flashing and roof curbs shall be installed in accordance with the roofing manufacturer's flashing details using the longest pieces practicable. The installed flashing shall be fastened along the top edge 12-inches on-center (maximum). The latest printed flashing instructions must be followed as issued by the roofing manufacturer. Hand roll the flashings to promote adhesion.
    - a. NOTE: ALL FLASHINGS SHALL BE COMPLETED DAILY AS THE PROJECT PROGRESSES WITH THE INSTALLATION OF THE NEW ROOF SYSTEM.
  2. Install a termination bar at the horizontal and vertical ends of the flashing where the flashing is exposed to the weather or as shown on the details. The termination bar shall be mechanically fastened (12-inches on-center, maximum) into slotted holes. The termination bar and fastener heads shall be sealed with the specified sealant.
  3. Secure the top edge of the flashing installed on the roof hatch curb with foam backer rod. Adhere the backer rod in place as required by the roofing manufacturer.

4. Seal roof drains per the roofing manufacturer's required details. Install clamping rings and cast iron drain strainers immediately after placing the membrane. Drain strainers and clamping rings must be securely fastened to the roof drain bowl.
- C. Penetration Flashing
1. Flash all penetrations passing through the membrane and flashing. Factory prefabricated pipe flashing shall be used to flash all penetrations where installation is possible. Where factory prefabricated pipe flashing cannot be installed, field fabricated penetration flashing may be used. All flashings and terminations shall be completed in accordance with the roofing manufacturer's requirements.
  2. Penetration pocket flashings shall be provided at miscellaneous roof penetrations which cannot be flashed with a prefabricated boot or flange, sleeve and umbrella flashing. The pans shall be sheet metal as approved by the roofing manufacturer. Fill the penetration pocket with non-shrink grout (bottom half) and the roofing manufacturer's pourable sealer (top half). Mound the pourable sealer to shed water.
- D. Sheet Metal Installation
1. See Section 07 6200 Sheet Metal Flashing and Trim.
- E. Miscellaneous
1. Return the existing mechanical units to their original positions and secure to the existing roof curb with EPDM-gasketed screws, a minimum of two on each side of the roof curb.
  2. Reinstall the existing pate curb covers to the existing roof curb with EPDM-gasketed screws, a minimum of two on each side of the roof curb.
  3. Install rubber walkpads at the mechanical unit access panels, doors, ladders, downspouts, and beneath equipment on roof surface. Install additional rubber walkpads at the designated locations shown on the roof plan. The walkpads shall be adhered to the roof membrane in accordance with the manufacturer's requirements.
  4. Return the existing supply lines to their original positions. Reinstall the existing pipe supports on the supply lines. Provide membrane protection if required by the roofing manufacturer.

### 3.06 PRECAUTIONS

- A. Do not use oil base or plastic roof cement in conjunction with EPDM materials.
- B. Waste products (petroleum, grease, oil and solvents - vegetable or mineral oil and animal fat - direct contact with steam venting) should not be allowed to come in contact with the EPDM roof membrane system.
- C. Splicing and bonding surface must be dry.
- D. Daily Seal: Care should be exercised to ensure that water does not flow beneath any completed sections of roof by temporarily sealing the loose edge of the membrane when the weather is threatening. The roofing manufacturer's requirements should be followed closely.
- E. An open flame may not be used to dry the roof membrane or to heat the flashing materials.

### 3.07 FIELD QUALITY CONTROL

- A. The Contractor shall coordinate inspection services during roof application. Prior to final payment, and as a condition thereof, the Contractor shall obtain final approval from the Roofing Consultant indicating proper compliance with the Contract Documents.
- B. The Roofing Consultant shall review and approve all shop drawing submittals.
- C. Notify Roofing Consultant whenever roofing work is to be done, in sufficient time to arrange inspections. Provide safe access to roof for monitoring.
- D. Furnish Roofing Consultant with all pertinent job information prior to beginning work in accordance with Roofing Consultant's directions.
- E. The Roofing Consultant may perform any testing required to verify the integrity of the work and confirm that work is in conformance with roofing manufacturer's recommendations.

**3.08 CLEANING**

- A. Remove bituminous markings, adhesives or other markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

**3.09 PROTECTION**

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using rigid insulation and plywood.
- C. Protect the property grounds and building during the course of the project. At set-up locations, protect the pavement, sidewalks, walls, windows, etc. to prevent damage. Repair damage to the areas to match the condition of the area prior to the reroofing project.
- D. Protect the roof areas used to access the designated areas of roof removal and replacement. Protect the existing roofs (inside the areas designated for removal and replacement) by placing 1/2-inch plywood over 1.5-inch insulation and fastened together. Any damage to the existing roofs shall be repaired immediately to prevent leakage into the roof and the building interior.

**END OF SECTION**

**SECTION 07 6200  
SHEET METAL FLASHING AND TRIM**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. This Section is part of the entire set of Contract Documents and shall be coordinated with the applicable provision of the other parts.

**1.02 SECTION INCLUDES**

- A. Premanufactured sheet metal fascia cap, coping, counterflashing and miscellaneous flashing.

**1.03 RELATED REQUIREMENTS**

- A. Section 07 5300 - Elastomeric Membrane Roofing.

**1.04 REFERENCE STANDARDS**

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- B. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.
- C. ANSI/SPRI ES-1-2003 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

**1.05 SUBMITTALS**

- A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- B. Samples: Submit selection and verification samples for finishes, colors and textures. Color to be selected by the Owner.

**1.06 QUALITY ASSURANCE**

- A. Perform work in accordance with SMACNA (ASMM) requirements and standard details, except as otherwise indicated.
- B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience. Engage an experienced installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.
- C. Do not expose to direct sunlight or extreme heat trim material with factory applied strippable film.

**PART 2 PRODUCTS**

**2.01 SHEET METAL FLASHING AND TRIM**

- A. Sheet Materials
  - 1. Galvanized Steel for Continuous Cleat: ASTM A 653, with G90 zinc coating; minimum 0.034 inch (22 gauge) thick base metal.
  - 2. Galvanized Steel Base Metal: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch (0.61 mm) thick base metal.
- B. Prefinished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch (0.61 mm) thick base metal, shop pre-coated with PVDF coating.
  - 1. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
  - 2. Color: As selected by Owner from manufacturer's standard colors.

3. Acceptable Manufacturer's:
  - a. Holcim Elevate: Una-Clad
  - b. Petersen Aluminum Corporation: Pac-Clad
- C. Accessories
  1. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer.
  2. Gasketed washers: Soft neoprene washers.
  3. Elastomeric Sealant: High performance, one component polyurethane-base, non-sag elastomeric sealant as manufactured by one of the following manufacturers or approved equivalents:
    - a. Sika Corporation, Sikaflex - 1a
    - b. Tremco, Vulkem 116
- D. Fabrication, General
  1. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal and other characteristics of the item indicated.
  2. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Form material with watertight end joints and seams.
  4. Fabricate vertical faces with bottom edge hemmed 1/2-inch and bent outward to form a drip edge unless specified otherwise.
  5. Form exposed sheet metal work, shop fabricated or field fabricated, that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated.
  6. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
  7. Conceal fasteners and expansion provision where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
  8. Corners: corners must be formed, mitered, lapped, notched, sealed or soldered as necessary to provide a continuous system that is not more susceptible to leaks than straight sections.
- E. Fabrication, Sheet Metal
  1. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
  2. Premanufactured Canted Fascia Cap: ANSI/SPRI/FM 4435/ES-1 to design pressure of 29 psf (perimeters) and 37 psf (corners). The fascia cap shall be 24-gauge prefinished galvanized steel.
    - a. Face dimension required: Varies by area. Fabricate a 3/8-inch stiffening rib at the midpoint or add fascia extensions for face dimensions 8-inches or more.
    - b. Concealed splice plates: 6-inches minimum.
    - c. Formed Lengths: 12'-0".
    - d. Slotted Fastening Holes: 12 inches and 6 inches on center.
    - e. Waterdam: 24-gauge galvanized steel.
    - f. Owner to choose from standard available colors.
    - g. See RTA Detail Nos. 17, 18, 26, 27, and 30. Approved manufacturer or approved equal:
      - 1) Metal-Era, Perma-Tite System 200 Fascia, Single-Ply Application, Crimp-On Version.
  3. Drip Edge: Fabricate from the following material:
    - a. Prefinished Galvanized Steel: 0.0276 inch (24 gauge) thick.

- b. Fabricate the drip edge in accordance with SMACNA Figure 2-5C. Face dimension in accordance with the RTA Details and a 1/2-inch hemmed drip edge along the bottom edge. No gravel stop. Nailing flange dimension: 4-inches minimum. See RTA Detail No. 14.
4. Coping: Prefinished Galvanized Steel: 0.0276 inch (24 gauge) thick. Fabricate the coping in accordance with SMACNA Figure 3-1. Fabricate the coping with 1-inch tall single lock standing seams. Fabricate the inside face with a minimum face dimension of 3-inches. The outside face of the coping varies by area. Hem the bottom edge of the inside and outside faces and bent outward to form a drip edge. Form the outside face with an open lock to receive a continuous cleat. See RTA Detail Nos. 1, 6, 9, 11, 12, 15, 19, 20, 21, 22, 28, A1, and A5.
5. Gutters and Downspouts: Fabricate from the following material:
  - a. Prefinished Galvanized Steel: 0.0276 inch (24 gauge) thick.
  - b. Fabricate the one-piece gutters in accordance with SMACNA Figure 1-2, Style D.
  - c. Gutter size: 5-inch by 5-inch. Fabricate the front of the gutter 1-inch below the back of the gutter.
  - d. Gutter nailing flange width: 4-inches wide.
  - e. Gutter Expansion Joints: Fabricate from matching prefinished galvanized steel in accordance with SMACNA Figure 1-7.
  - f. Fabricate the downspouts using the same prefinished sheet metal as the gutter. Downspout size: 3-inch by 4-inch rectangular downspout fabricated in accordance with SMACNA Figure 1-32B. Downspout connection to the gutter shall be in accordance with SMACNA Figure 1-33B. Provide outlet tubes fabricated from 24 gauge galvanized steel.
  - g. Fabricate the downspout straps in accordance with SMACNA Figure 1-35G. Downspout straps to match the gutter color.
6. Expansion Joint Cover: Fabricate from the following material:
  - a. Prefinished Galvanized Steel: 0.0276 inch (24 gauge) thick.
  - b. Fabricate the two piece expansion joint cover similar to SMACNA Figure 5-5A, 5-6B and as shown in Detail Nos. 4 and 23. Allow for expansion and contraction by providing a slip joint between the expansion joint cover and the continuous cleat. Endjoints: Single lock standing seams. Maximum expansion joint cover length: 10-feet. Vertical face dimension of the expansion joint cover and the continuous cleat: 3-inches. Provide 1/2-inch hemmed drip edges.
7. Counterflashing: Fabricate from the following material:
  - a. Prefinished Galvanized Steel: 0.0276 inch (24 gauge) thick.
  - b. Fabricate the reglet mounted counterflashing in accordance with SMACNA Figure 4-4B. Fabricate the counterflashing with a hemmed drip edge along the bottom edge, a minimum face of 4-inches and bent to return into the reglet 1-1/2-inches. See RTA Detail Nos. 2, 29.
  - c. Fabricate the surface mounted counterflashing (slip flashing) in accordance with SMACNA Figure 4-5B. Fabricate the counterflashing with a hemmed drip edge along the bottom edge and a minimum face of 4-inches. The top edge to receive behind the curb cap cover 2-inches minimum. See RTA Detail Nos. 5, 7, 8, 24, 25, 31 and A1.
8. Miscellaneous Flashing - Penetration Pocket Flashing: Fabricate from the following material:
  - a. Galvanized Steel: 0.028 inch (24 gauge) thick.
  - b. Fabricate penetration pockets in accordance with SMACNA Figure 8-11C. Fabricate the penetration pockets with 4-inch tall sides (minimum), 4-inch wide flanges and soldered corner stiffeners.

- c. Fabricate the closure box flashing in accordance with SMACNA Figure 8-9A. Closure box size shall be as required to accommodate the pipes. Pipe penetration diameters shall closely match the pipe diameters. Provide watershedding slope in the closure box cap. Fabricate the vertical curb covers with 4-inch wide faces and hemmed bottom edges. Lap widths: 1-inch minimum. Seam and solder all joints in the closure box where possible.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

#### **3.02 INSTALLATION**

- A. Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions and SMACNA's "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Expansion Provisions: Provide for thermal expansion of exposed sheet metal work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner of intersection.
- C. Prefabricated Sheet Metal Fascia Cap
  1. Install the specified premanufactured sheet metal fascia cap along the designated perimeter edges. The installation shall be in accordance with the manufacturer's requirements. Secure the galvanized sheet metal water dam 6-inches on-center in the flange and 12-inches on-center in the fascia with galvanized ring shank nails. Fully adhere the roof membrane to the cant and fascia.
  2. Install the extruded aluminum anchor bar and secure through the face as required by the manufacturer.
  3. Install the prefinished fascia cover and concealed splice plates onto the anchor bar.
- D. Drip Edge
  1. Install drip edge on the perimeter edges shown in the RTA details. Secure the drip edge flange with nails spaced 4-inches on-center in two staggered rows. Seal the flange in accordance with the manufacturer's requirements.
- E. Coping
  1. Install a continuous cleat along the outside face of the parapet wall as shown in the RTA Details in preparation for receiving the coping. Secure the continuous cleat with sheet metal screws spaced 12-inches on-center. Use screws long enough to achieve 1-1/2-inches of embedment into the substrate. Use screws with a screw head which will not contact the back side of the coping.
  2. Install coping on the parapet walls as shown in the RTA details. Engage the bottom edge outside face of the coping with the continuous cleat. Hand crimp the bottom edge along the entire length. Secure the coping sections along the inside face with gasketed screws spaced 18-inches on-center. Provide the specified end joints between coping sections.
- F. Gutter and Downspouts (ALTERNATE NO. 1)
  1. Install new sheet metal gutter at locations designated on the Roof Plan. Secure the flange with roofing nails 3-inches on center in two staggered rows. Seal the flange to the roof system with the selected membrane manufacturer's 20-year flashing requirements.
  2. Lap the joints in the gutter 1-inch and rivet 1-inch on center. Apply a continuous bead of the specified sealant in the lap. Seal the rivets with the specified sealant.



3. Install butt type expansion joints at or less than the specified maximum gutter length in accordance with SMACNA Figure 1-7. Allowances for gutter expansion shall be in accordance with SMACNA Table 1-7.
  4. Attach the downspouts to the gutters in accordance with SMACNA Figure 1-35G. Provide elbows and downspout extensions as required.
- G. Expansion Joint Cover
1. Install new sheet metal expansion joint covers on the expansion joints at the designated locations. Secure the continuous cleat onto one side of the expansion joint curb with gasketed screws spaced 12-inches on center through the vertical face. Blind fasten the horizontal portion of the continuous cleat with roofing nails spaced 12-inches on center.
  2. Engage the expansion joint covers with the continuous cleat. Position the expansion joint covers onto the expansion joint curb and fabricate 1-inch tall standing seams at endjoints. Secure the face of the expansion joint covers with gasketed screws spaced 12-inches on-center. Form termination ends of cover to a watertight condition. See Detail Nos. 4 and 23.
- H. Counterflashing
1. Reglet Mounted Counterflashing: Install counterflashing into a sawcut reglet in the walls and chimneys. The counterflashing must cover the top edge of the base flashing a minimum of 3-inches. Insert the top edge of the counterflashing a minimum of 1-1/2-inches into the wall and secure with lead wedges spaced 18-inches on center. Notch and lap the end joints in the counterflashing 4-inches. Fill the reglet with the specified elastomeric sealant and tool the joint to promote adhesion and water shedding capabilities.
  2. Slip Flashing: Install counterflashing along the base of the sill flashing, sheet metal siding, drip edge etc. as shown in Detail Nos. 5, 7, 8, 24, 25, 31 and A1. The top of the counterflashing must be protected by a minimum of 2-inches. Secure 24-inches on center with gasketed screws. Notch and lap the end joints in the counterflashing 4-inches.
  3. Curb Slip Flashing: Install counterflashing along the top of any curb where the top of the base flashing is not protected by a minimum of 3-inches. The counterflashing must cover the top edge of the base flashing a minimum of 3-inches. The top edge of the counterflashing must be concealed by the curb cap a minimum of 2-inches. Secure 24-inches on center with gasketed screws. Notch and lap the corners and end joints in the counterflashing 4-inches.
- I. Penetration Pocket
1. Install sheet metal penetration pockets at miscellaneous roof penetrations which cannot be flashed with a prefabricated boot or flange, sleeve and umbrella flashing. Secure the penetration pocket flanges with screws into the roof deck. Seal the flanges in accordance with the manufacturer's typical details.
  2. Fill the flashing with the specified non-shrink grout and pourable sealer. The pourable sealer must be mounded to promote watershedding capabilities.
- J. Closure Box
1. Provide new closure boxes at miscellaneous roof penetrations which have existing closure boxes that are deteriorated or have penetrations through the sides of the boxes. Field seam and solder the joints in the closure box.
  2. Secure the flange to the roof deck with screws. Neatly field wrap the sheet metal flashing in accordance with the selected membrane manufacturer's requirements.
  3. Provide tight sheet metal closures around all pipe penetrations through the sides of the closure box and seal the pipe penetrations with the specified sealant. Loosely fill the closure box with unfaced glass fiber batt insulation.
  4. Install the closure box cap and secure the cap to the box with gasketed screws spaced 6-inches on center or a minimum of one gasketed screw per side of the box.

K. Hot Stack Flashing

1. Reuse flange, sleeve and umbrella flashing at round stacks and roof penetrations whenever possible.
2. Secure the flange to the roof deck with screws. Neatly field wrap the sheet metal flashing in accordance with the selected membrane manufacturer's requirements.
3. Install an umbrella with 1/4-inch minimum clearance from the top of the sleeve. Tightly secure the umbrella in place with a stainless steel drawbands. Seal the top of the umbrella to the penetration with the specified caulk.

**3.03 FIELD QUALITY CONTROL**

- A. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**3.04 CLEANING**

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

**END OF SECTION**

## APPENDIX

### Roof Plans

Churchill High School.....	Plate 1
Perimeter Edge.....	Detail 1
Expansion Joint at Masonry Wall.....	Detail 2
Expansion Joint.....	Detail 3
Sheet Metal Expansion Joint Cover.....	Detail 4
Wall Flashing.....	Detail 5
Perimeter Edge.....	Detail 6
Wall Flashing.....	Detail 7
Wall Flashing.....	Detail 8
Area F Parapet.....	Detail 9
Area C2 Wall Flashing.....	Detail 10
Perimeter Edge.....	Detail 11
Area Divider.....	Detail 12
Wall Flashing.....	Detail 13
Area F4 Perimeter Edge.....	Detail 14
Area F7 Perimeter Edge.....	Detail 15
Area D to D1 Transition.....	Detail 16
Area D1 Perimeter Edge.....	Detail 17
Area E3 Perimeter Edge.....	Detail 18
Area C3 Perimeter Edge.....	Detail 19
Area C4 Perimeter Edge.....	Detail 20
Area C4 Perimeter Edge.....	Detail 21
Area E3 & E4 Coping.....	Detail 22
Area E3 & E4 Expansion Joint Flashing.....	Detail 23
Area E4 Wall Flashing.....	Detail 24
Area E4 Masonry Wall Flashing.....	Detail 25
Area D3 Fascia Cap.....	Detail 26
Area D3 Perimeter Edge.....	Detail 27
Area D2 Coping.....	Detail 28
Area D3 Wall Flashing.....	Detail 29
Perimeter Edge – Fascia Cap.....	Detail 30
Area D Wall Flashing.....	Detail 31
Area F Roof Drain.....	Detail 32
Ductwork / Wall Flashing.....	Detail 33
Area E1 & E2 Masonry Wall Flashing.....	Detail A1

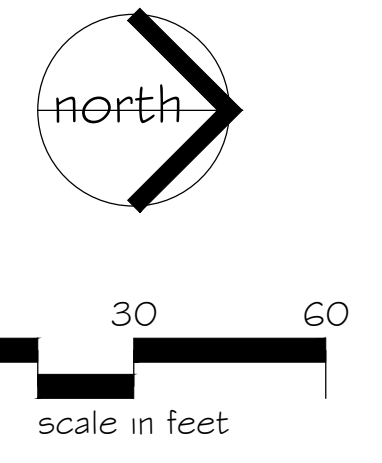
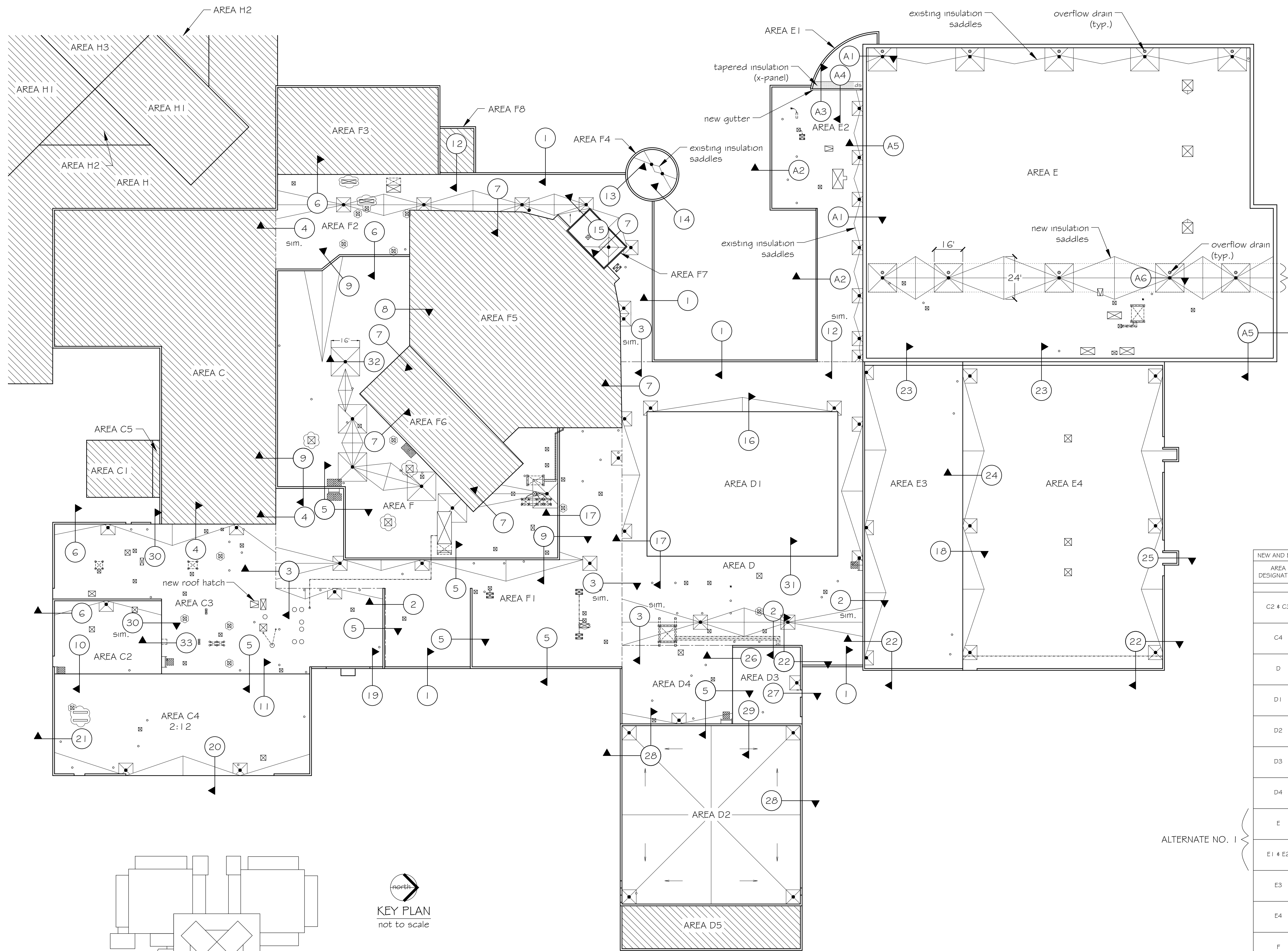
Area E2 Coping.....	Detail A2
Area E2 Wall Flashing.....	Detail A3
Area E1 Gutter Edge.....	Detail A4
Area E Coping.....	Detail A5
Area E Roof Drain.....	Detail A6

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Rectangular Gutter Styles .....	Figure 1-2
Gutter Expansion Joint .....	Figure 1-7
Downspouts .....	Figure 1-32
Gutter Connections .....	Figure 1-33
Downspout Connections .....	Figure 1-35
Formed Gravel-Stop Fascia – Design Data .....	Figure 2-5
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Counterflashing Systems – Installation .....	Figure 4-4
Counterflashing Systems – Installation .....	Figure 4-5
Expansion Joints .....	Figure 5-5
Roof to Wall Expansion Joints .....	Figure 5-6
Roof Penetration Flashing - Pipes .....	Figure 8-9
Equipment Support Flashing.....	Figure 8-11
Allowances for Gutter Expansion .....	Table 1-7

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Asbestos Test Results .....	Pages 1 - ____
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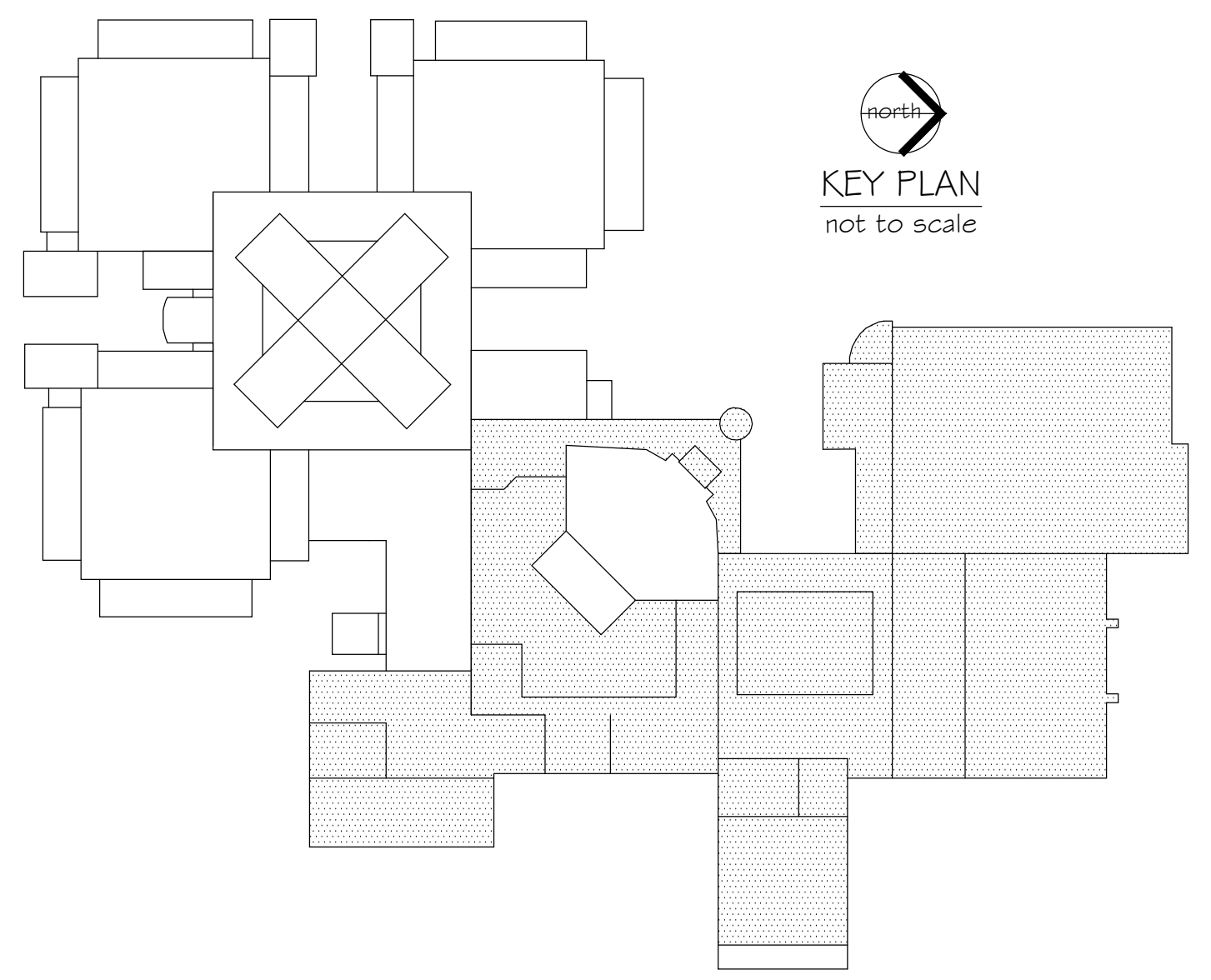
remove and dispose of enough of (1) layer of existing 1.5" insulation and existing insulation saddles to allow for installation of 1'6" x 1'6" (1/2" / ft.) tapered insulation sumps and saddles

**LEGEND:**

- roof drain
- round penetration
- ⊠ mechanical unit
- ⊞ elevated equipment
- ┆ ladder
- ⊞ roof hatch
- ⊞ obsolete
- - - expansion joint
- - - supply line
- slope of tapered insulation
- RTA detail
- ▨ walk pads
- ▨ not in contract

AREA DESIGNATION	DECK (slope)	EXISTING ROOF MEMBRANE	EXISTING INSULATION thickness	REMOVE OR SAVE	ADD INSULATION		DRAIN TAPER	SADDLE SLOPE
					thickness	attachment		
C2 & C3	Steel	BUR - CTP (2) PVC	1.5" fiberglass 1.5" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
C4	Steel (2.5:12)	BUR - asphalt (2) PVC	1.5" fiberglass 1.5" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate & 1/2-inch gypsum board	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
D	Steel	BUR (2) PVC	1.5" fiberglass 1.0" ISO 1.0" XPS	remove	2 layers of 2.6" isocyanurate	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
D1	Steel (1.25:12)	BUR - asphalt (2) PVC	1.5" fiberglass 1.75" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate & 1/2-inch gypsum board	mechanically fastened & foam adhesive	NA	NA
D2	Concrete	BUR (2) PVC	1.5" fiberglass 1.75" EPS 1.0" XPS	remove	vapor retarder, 2.0" base & 1/8" per ft tapered isocyanurate	foam adhesive	1/4" / ft. (Y Panel)	NA
D3	Steel (2.5:12)	BUR - asphalt + PVC	1.5" fiberglass 1.5" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate & 1/2-inch gypsum board	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
D4	Steel	BUR (2) PVC	1.5" fiberglass 1.0" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
E	Steel	PVC	1.5" ISO 1.5" ISO	save insulation (see roof plan notes)	2 layers of 1.5" isocyanurate	mechanically fastened & foam adhesive	meeting base layer of 1.5" (1/2" / ft. (1'6" x 1'6" sumps) RTA Det. AG)	1/2" / ft.
E1 & E2	Steel	PVC	1.5" ISO 1.5" ISO	save insulation	1 layer of 1.5" isocyanurate	mechanically fastened	1/4" / ft. (X Panel)	NA
E3	Tectum (2:12)	BUR - asphalt (2) PVC	.75" fiberglass 1.5" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate & 1/2-inch gypsum board	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
E4	Tectum	BUR (2) PVC	.75" fiberglass 1.0" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
F	Steel	BUR - CTP (2) PVC	1.5" fiberglass 1.0" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate	mechanically fastened & foam adhesive	1/2" / ft. (See RTA Detail #32)	1/2" / ft.
F1 & F2	Steel	BUR - CTP (2) PVC	1.5" fiberglass 1.0" EPS 1.0" XPS	remove	2 layers of 2.6" isocyanurate	mechanically fastened & foam adhesive	2.6" base layer 1/2" / ft. (Q Panel)	1/2" / ft.
F4	Steel	PVC	2.0" ISO 2.0" ISO 1.0" XPS	save ISO remove XPS	1 layer of 1.5" isocyanurate	mechanically fastened	NA	NA
F7	Steel	BUR (2) PVC	1.5" fiberglass 1.5" EPS 1.0" XPS	remove	2.0" base & 1/8" per ft tapered isocyanurate	mechanically fastened & foam adhesive	1/4" / ft. (Y Panel)	NA

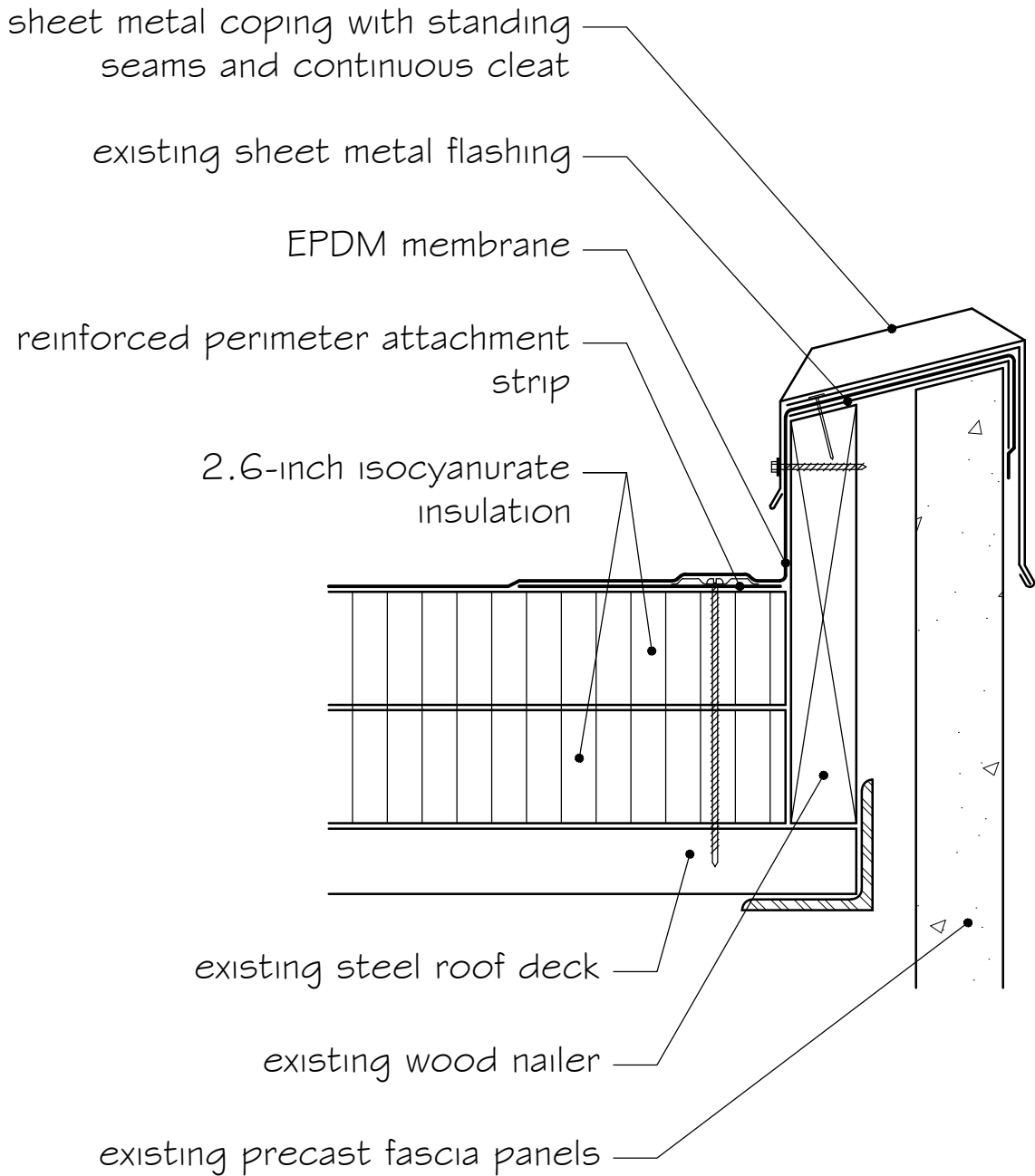
ALTERNATE NO. 1



**GENERAL NOTES:**

- All areas and dimensions shown are approximate and based upon rough field measurements taken by representatives of Roofing Technology Associates, Ltd.
- This drawing should not be used for bidding or estimating purposes. Contractors are responsible for their own field measurements, quantities and verification of conditions shown.

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Project No:	24-017	Drawn By:	JPW
Date:	MARCH 2024	Checked By:	APW
			Plate No: 1



PERIMETER EDGE  
not to scale

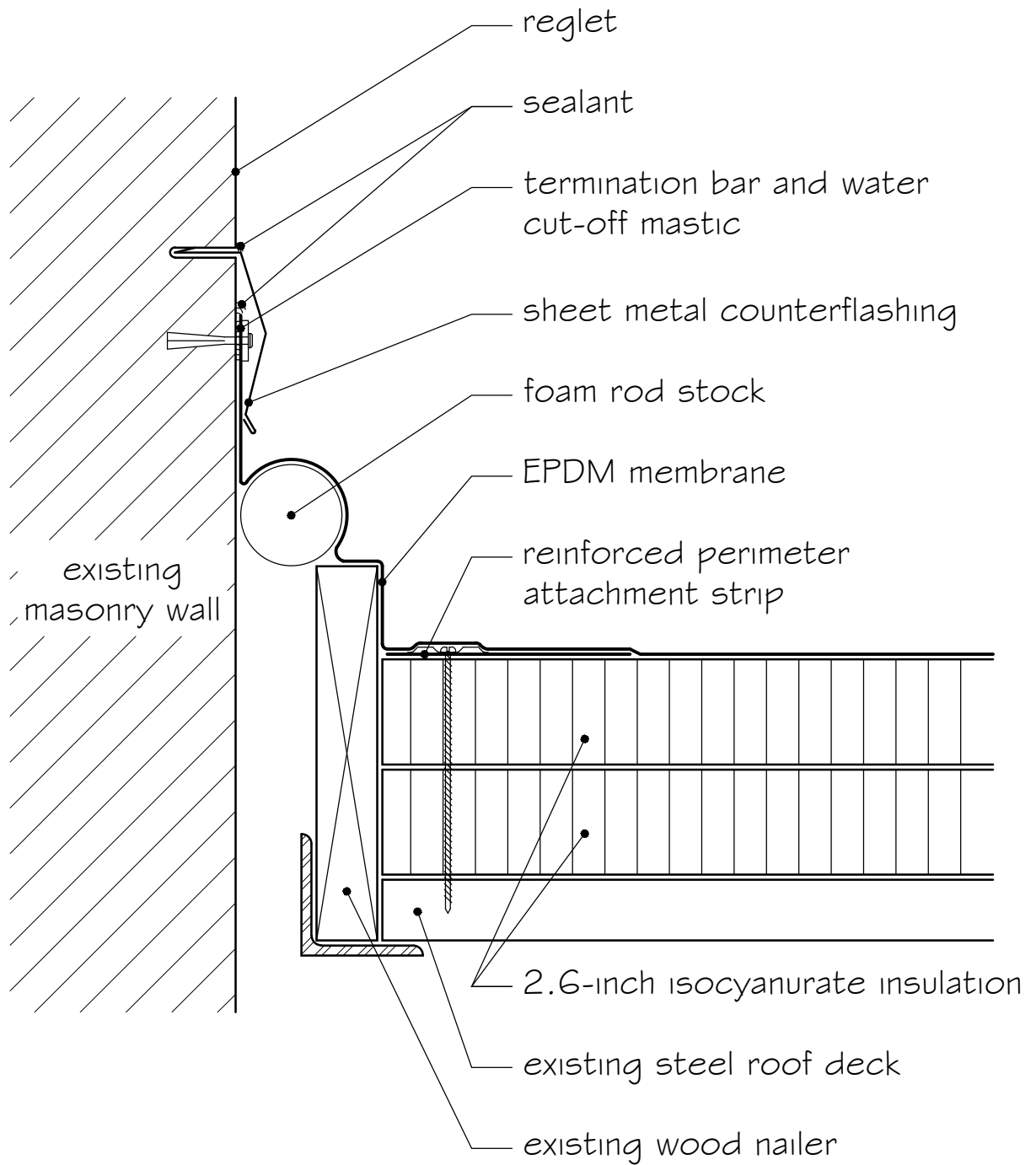
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**EXPANSION JOINT AT MASONRY WALL**  
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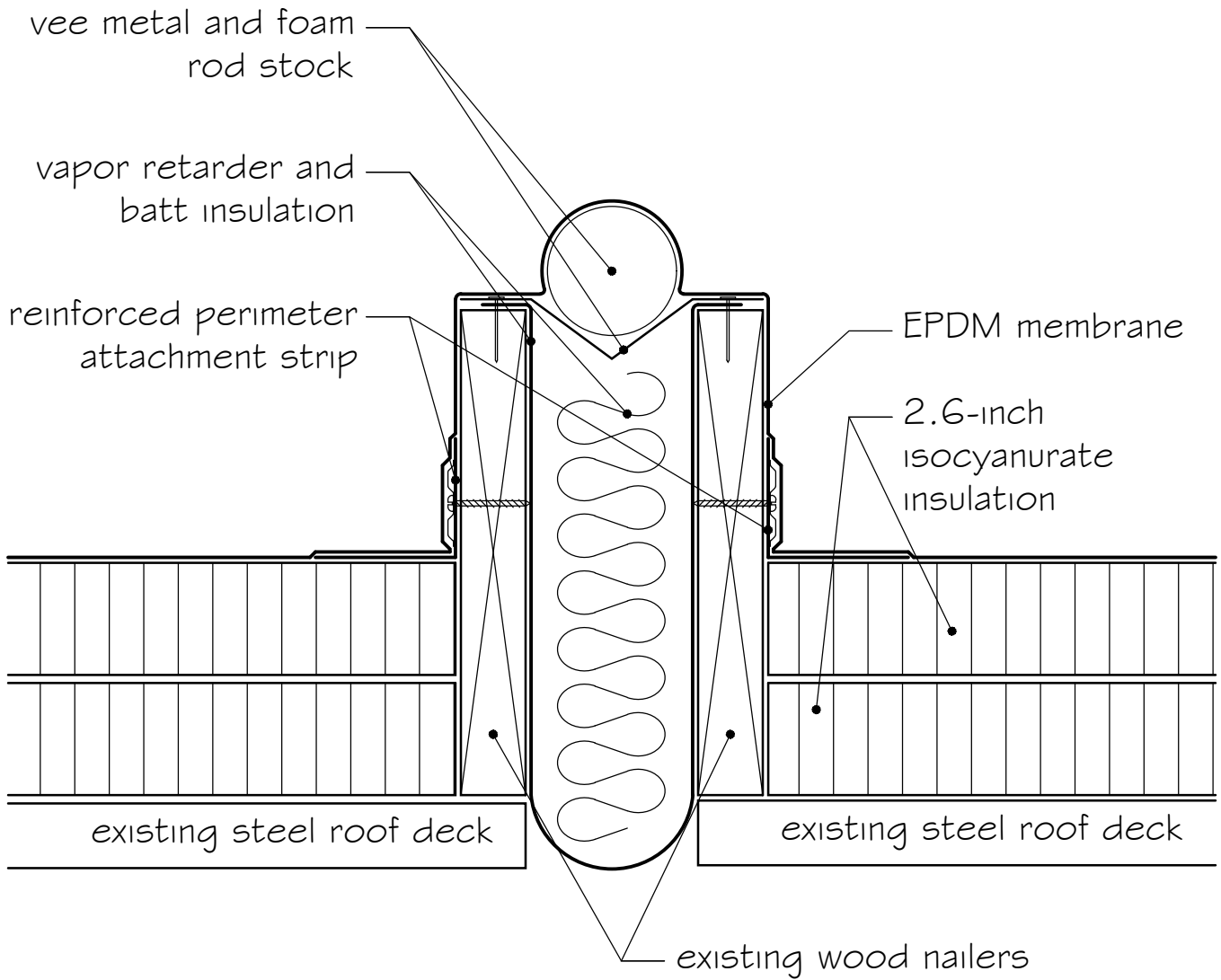


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**EXPANSION JOINT**  
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<i>Date:</i>	3-22-24	<i>Checked By:</i>	APW		



sheet metal expansion  
joint cover with  
continuous cleat and  
standing seams

existing PVC  
roof system  
(N.I.C.)

EPDM membrane

reinforced  
perimeter  
attachment strip

2.6-inch  
isocyanurate  
insulation

vapor retarder and  
batt insulation

existing steel roof deck

existing plywood and  
wood blocking

## SHEET METAL EXPANSION JOINT COVER not to scale

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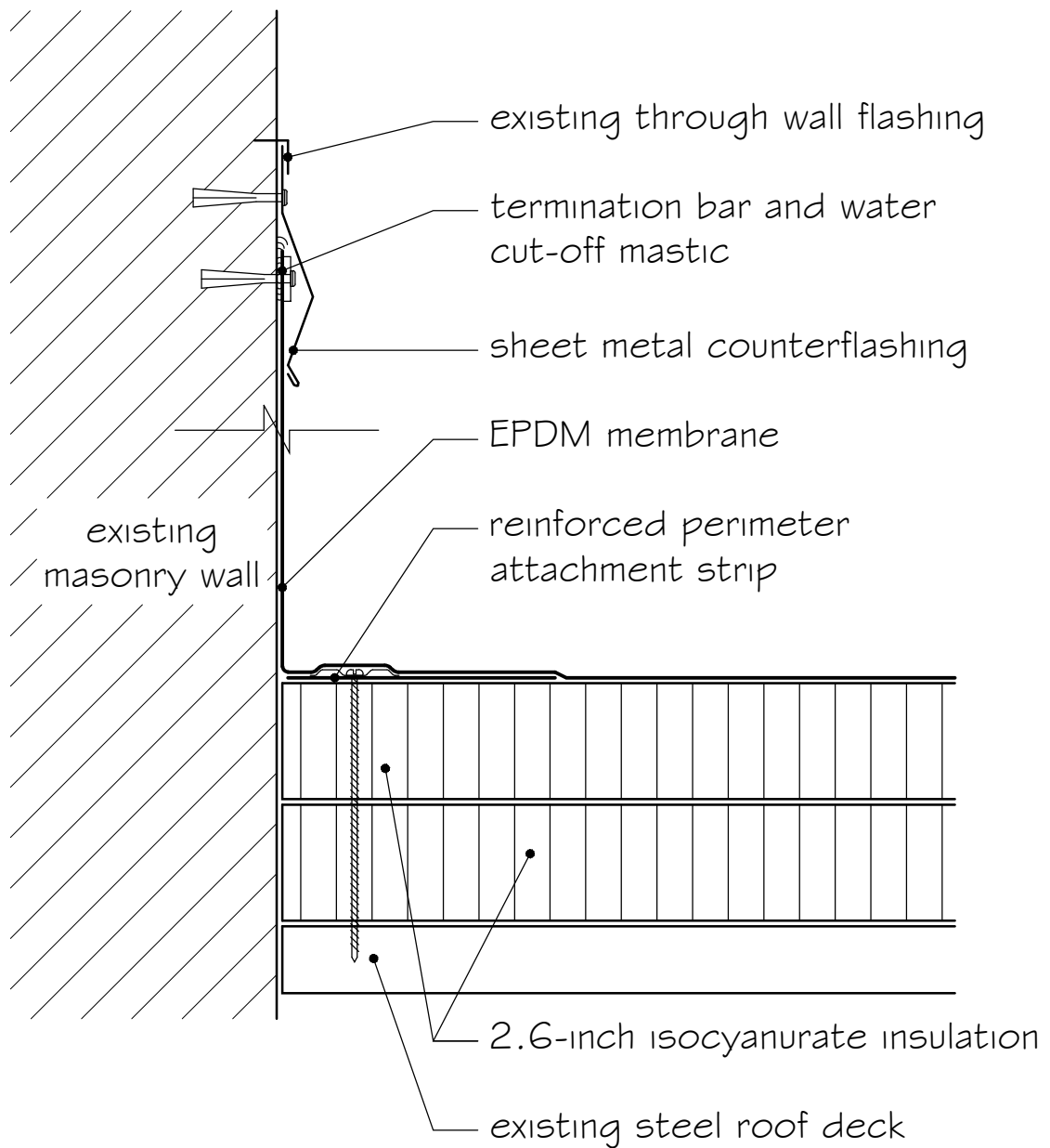
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Detail No:

Date: 3-25-24

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**WALL FLASHING**  
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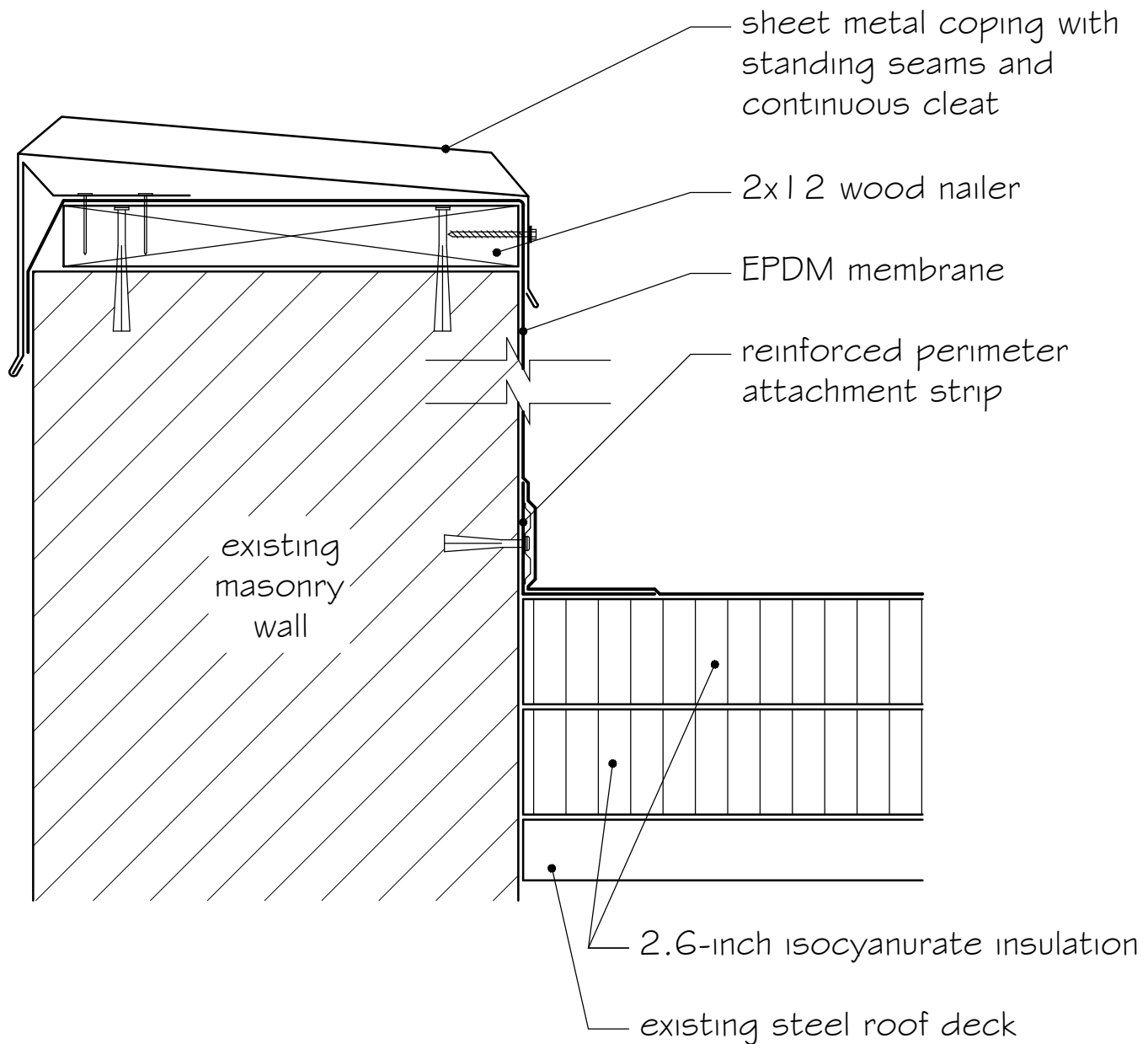


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<i>Date:</i>	3-25-24	<i>Checked By:</i>	APW		



**PERIMETER EDGE**  
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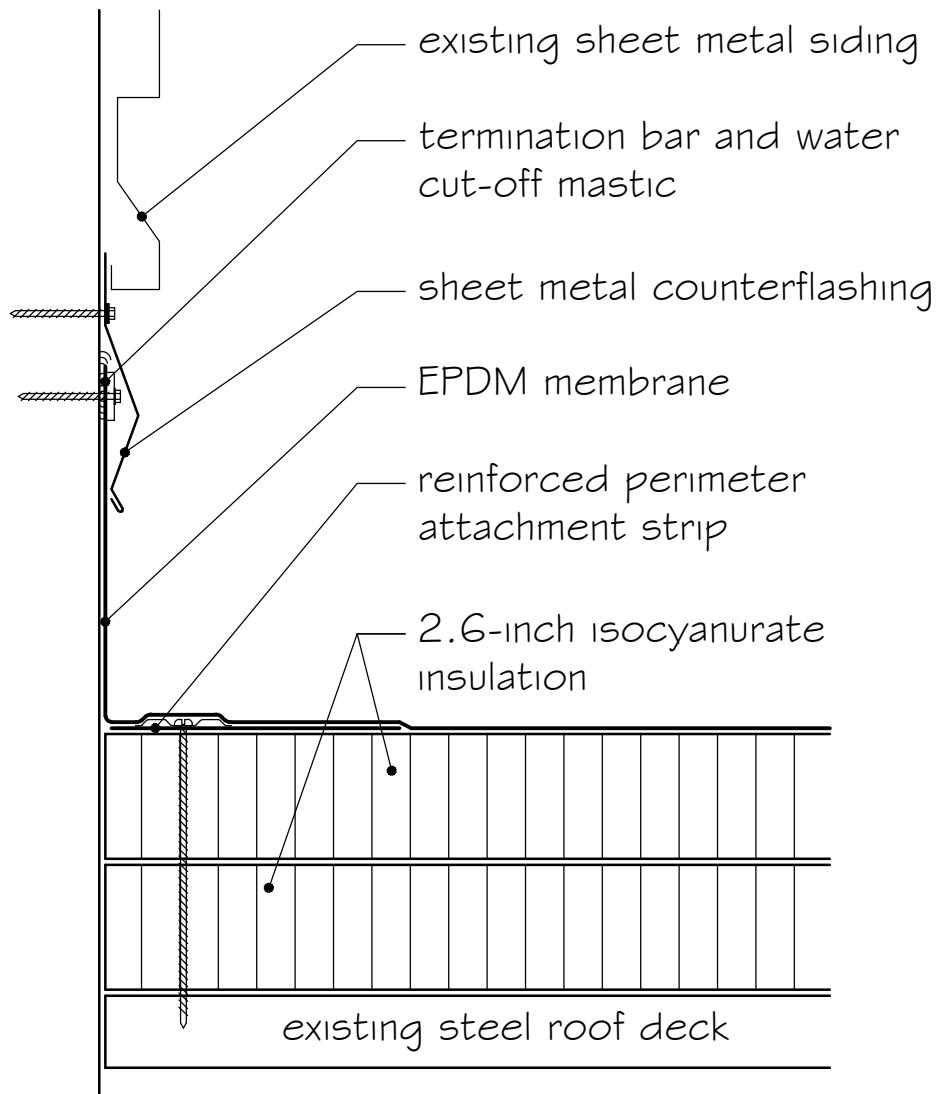


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## WALL FLASHING

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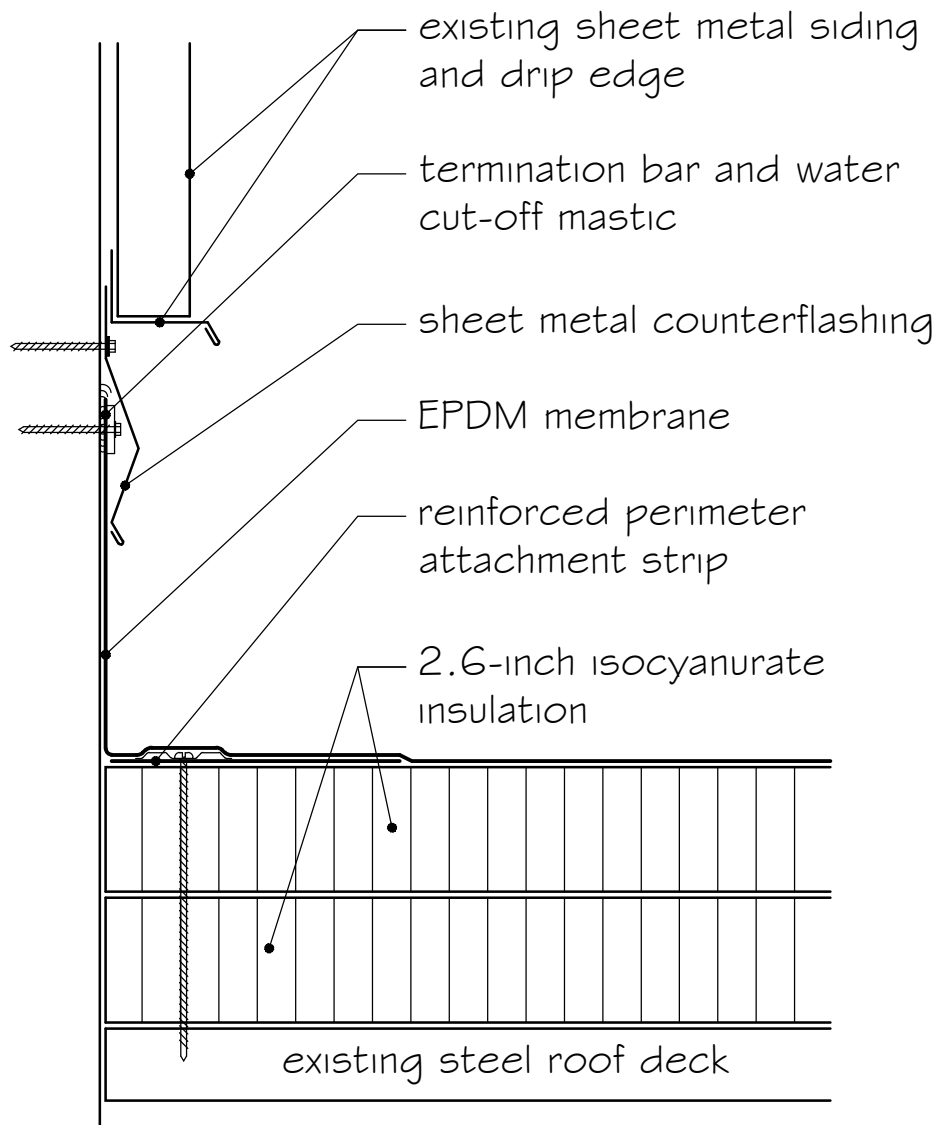
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7



**WALL FLASHING**  
not to scale

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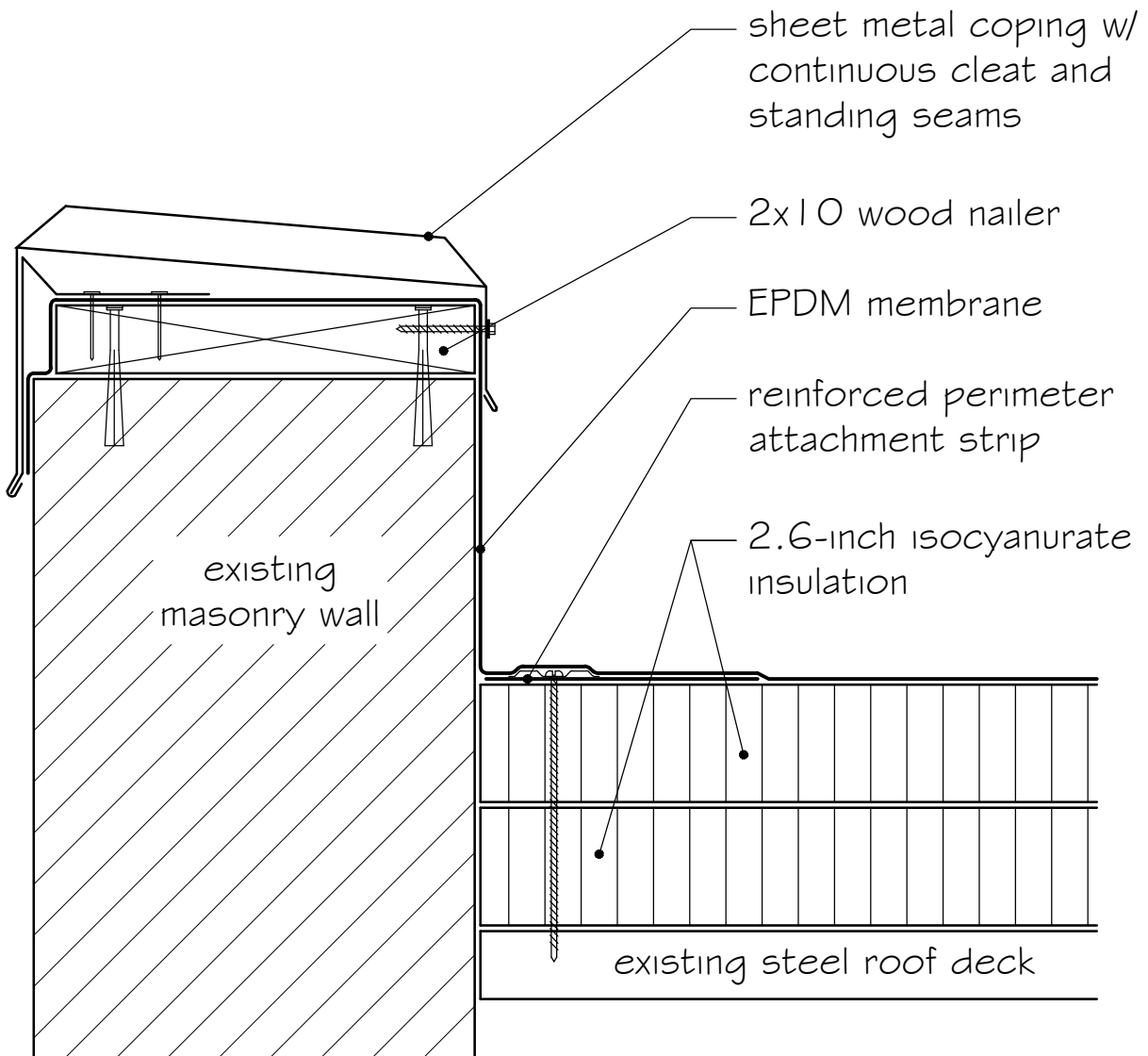


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<i>Date:</i>	3-25-24	<i>Checked By:</i>	APW		



AREA F PARAPET  
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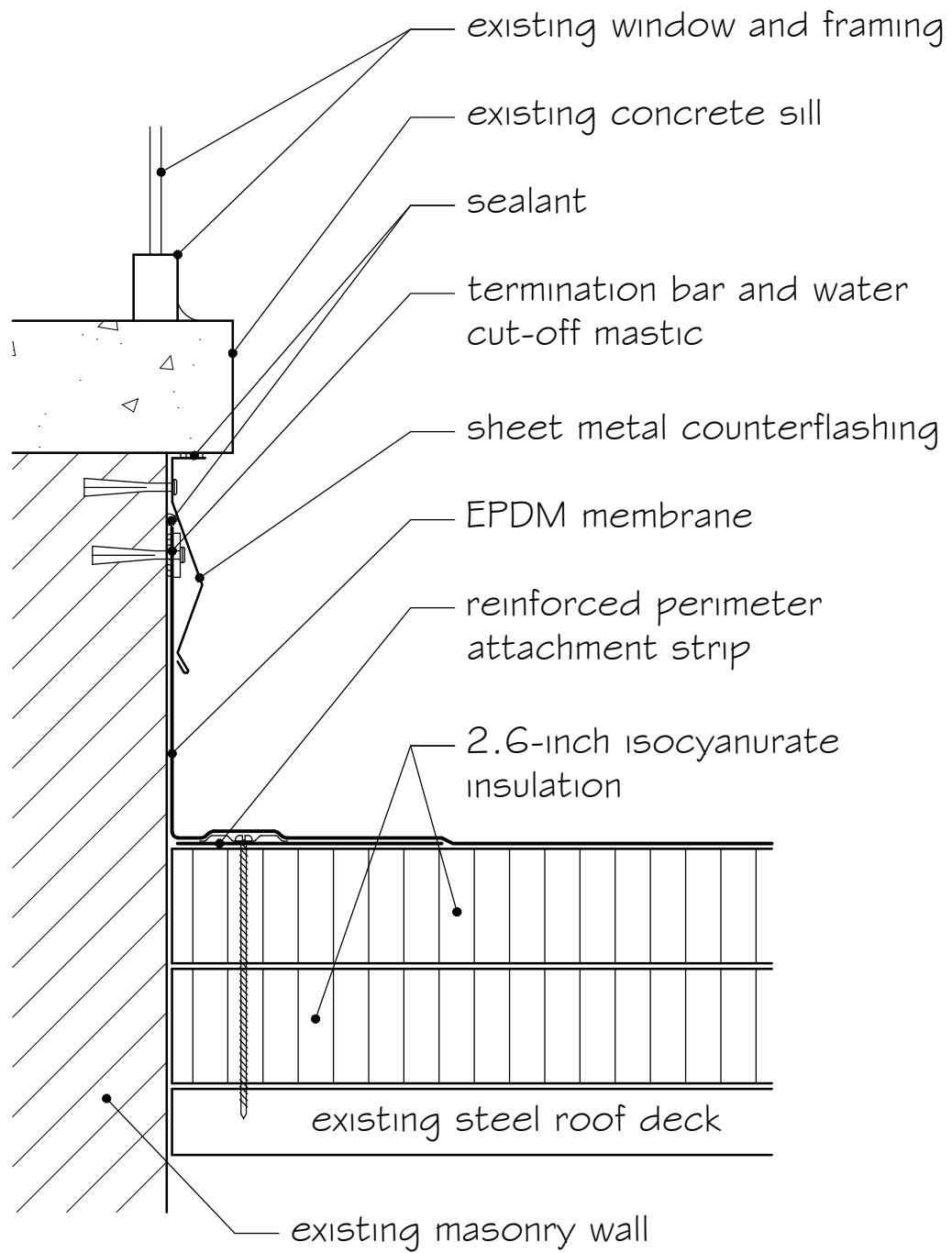


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<i>Date:</i> 3-22-24	<i>Checked By:</i> APW	



**AREA C2 WALL FLASHING**  
not to scale

NOTE: components shown are new unless noted as existing

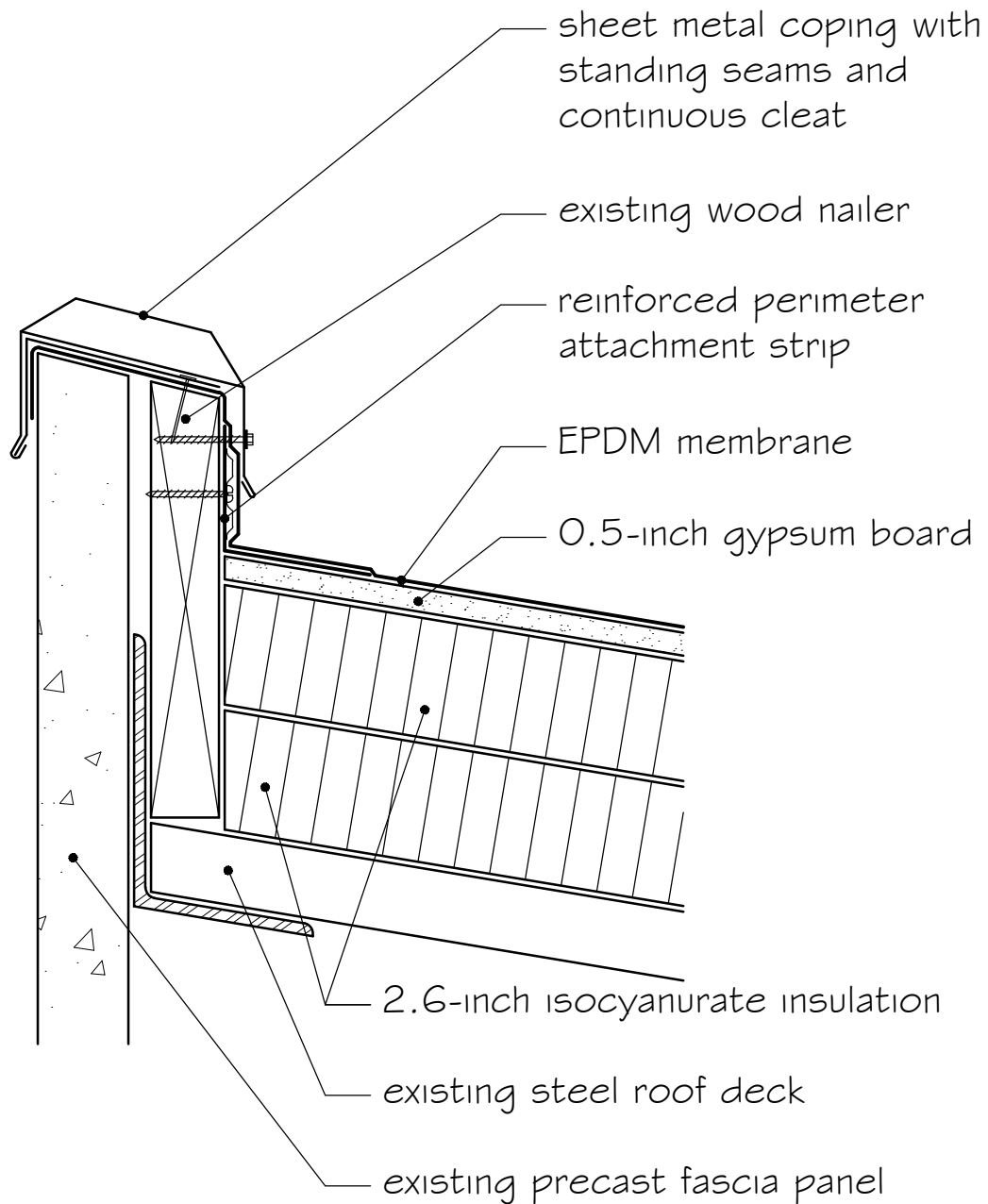


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<i>Date:</i> 3-22-24	<i>Checked By:</i> APW	



PERIMETER EDGE  
not to scale

NOTE: components shown are new unless noted as existing



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||



sheet metal coping  
with standing seams  
and continuous cleat

EPDM membrane

reinforced perimeter  
attachment strip

2.6" isocyanurate  
insulation

existing steel roof deck

existing wood nailers

existing counterflashing

existing EPDM  
roof system  
(N.I.C)

AREA DIVIDER  
not to scale

NOTE: components shown are new unless noted as existing



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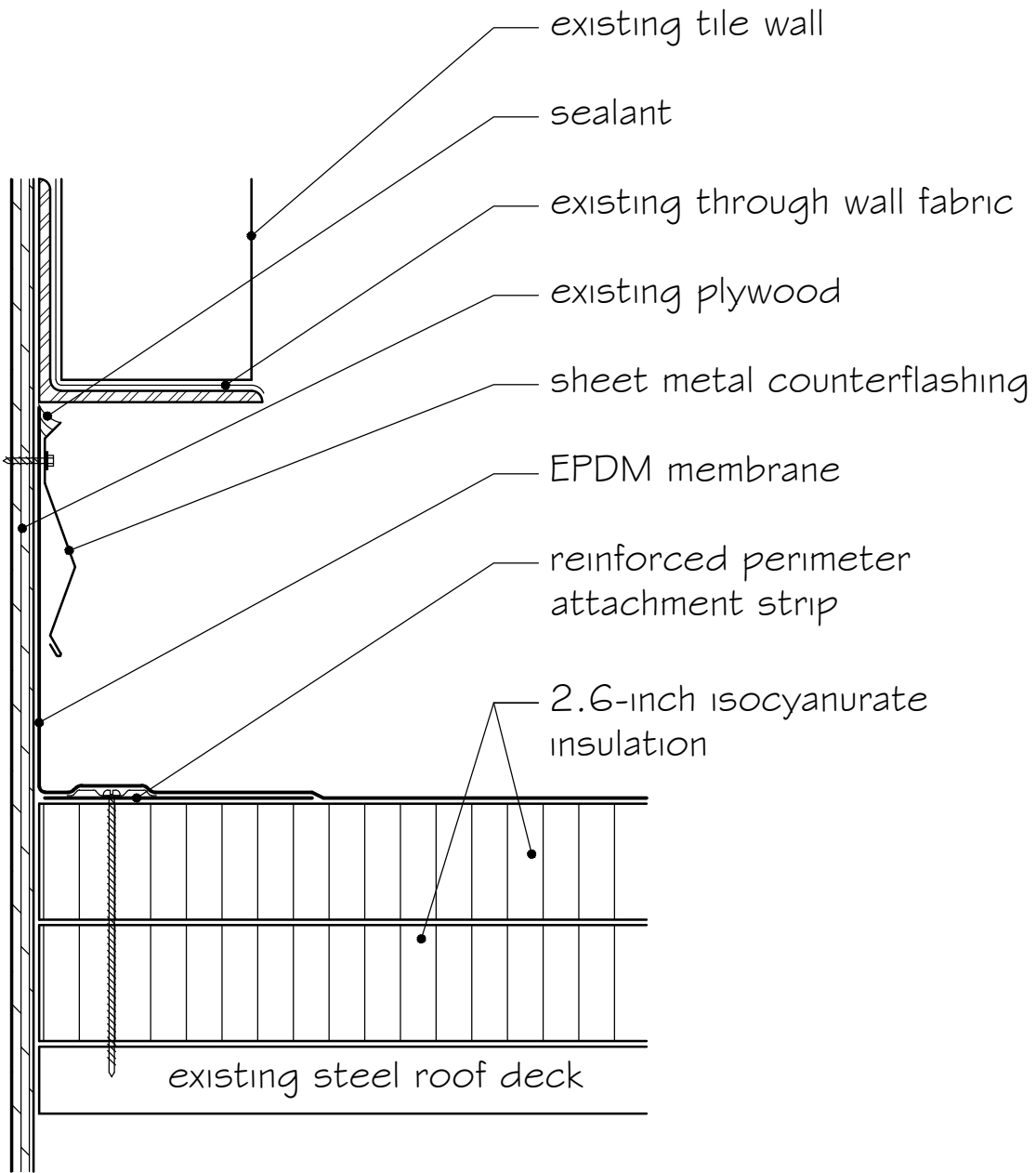
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Date: 3-22-24

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WALL FLASHING  
not to scale

NOTE: components shown are new unless noted as existing



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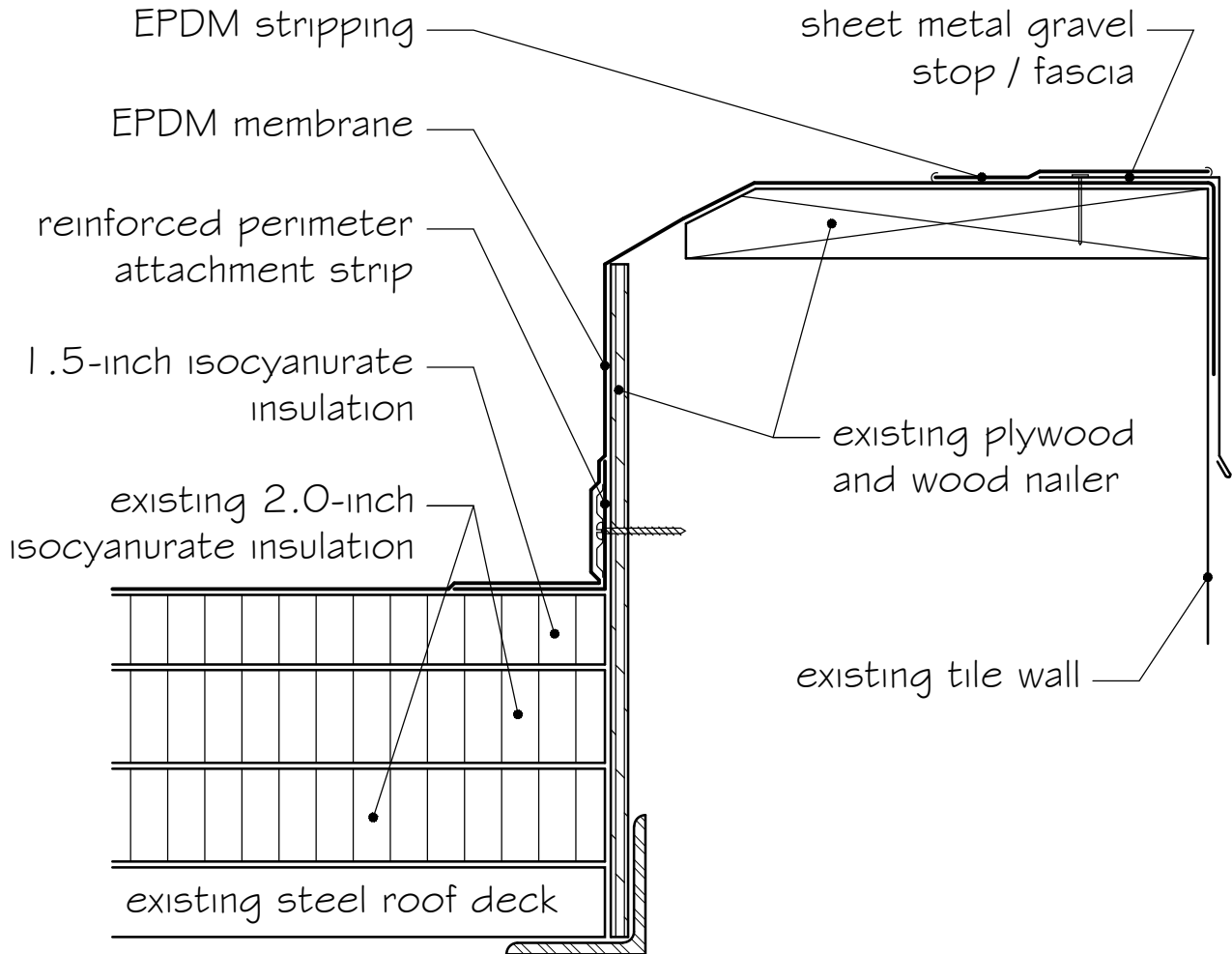
Detail No:

Date: 3-22-24

Checked By: APW

13

NOTE: remove and dispose of existing 1.0-inch XPS insulation



AREA F4 PERIMETER EDGE  
not to scale

NOTE: components shown are new unless noted as existing

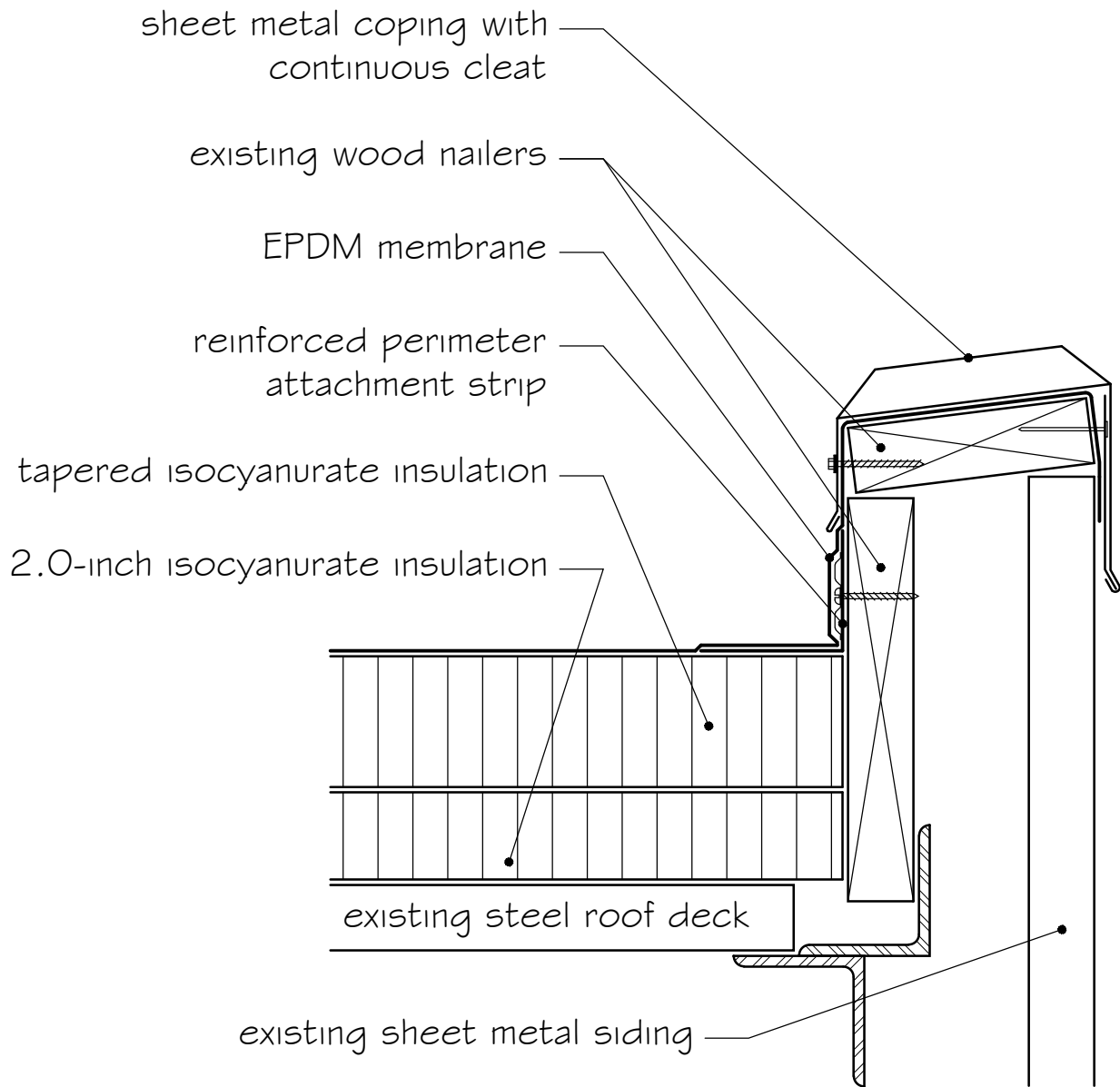


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Date:	3-22-24	Checked By:	APW	



AREA F7 PERIMETER EDGE  
not to scale

NOTE: components shown are new unless noted as existing



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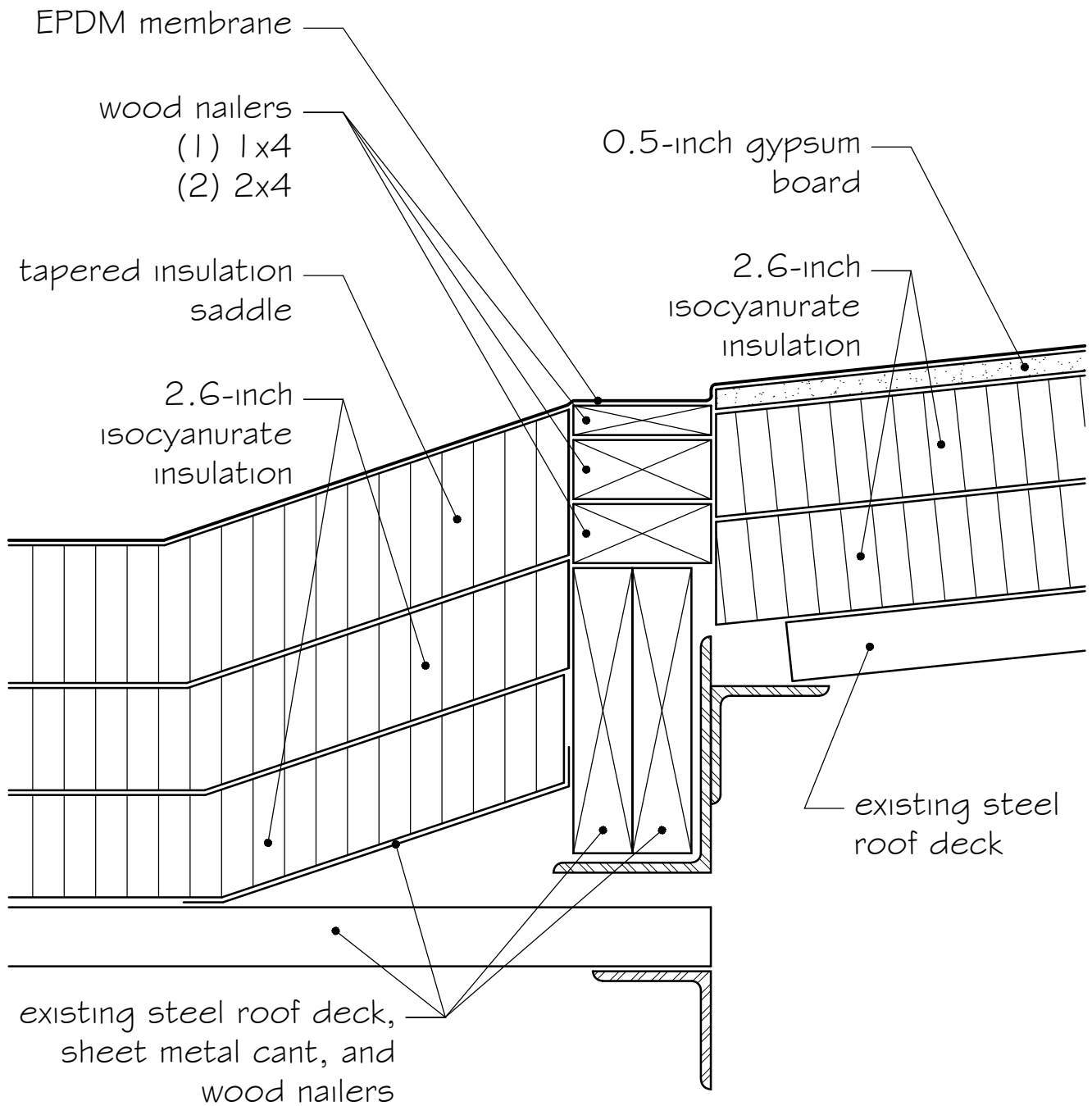
Drawn By: APW

Detail No:

Date: 3-22-24

Checked By: APW

15



AREA D TO D I TRANSITION

not to scale

NOTE: install reinforced perimeter attachment strip or tapered edge strip as necessary  
 NOTE: components shown are new unless noted as existing



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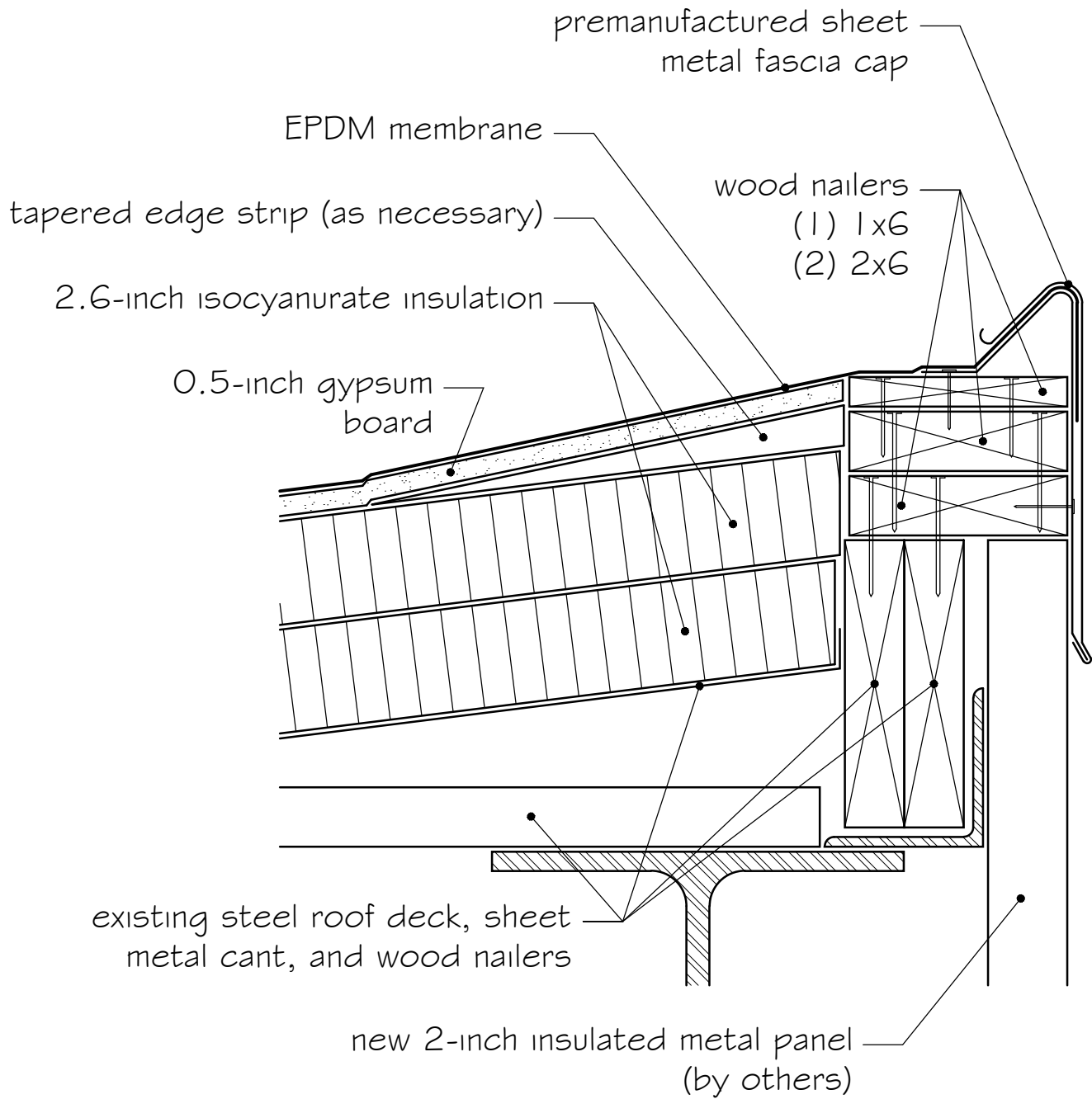
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Detail No:

Date: 3-22-24

Checked By: APW

16



AREA D1 PERIMETER EDGE  
not to scale

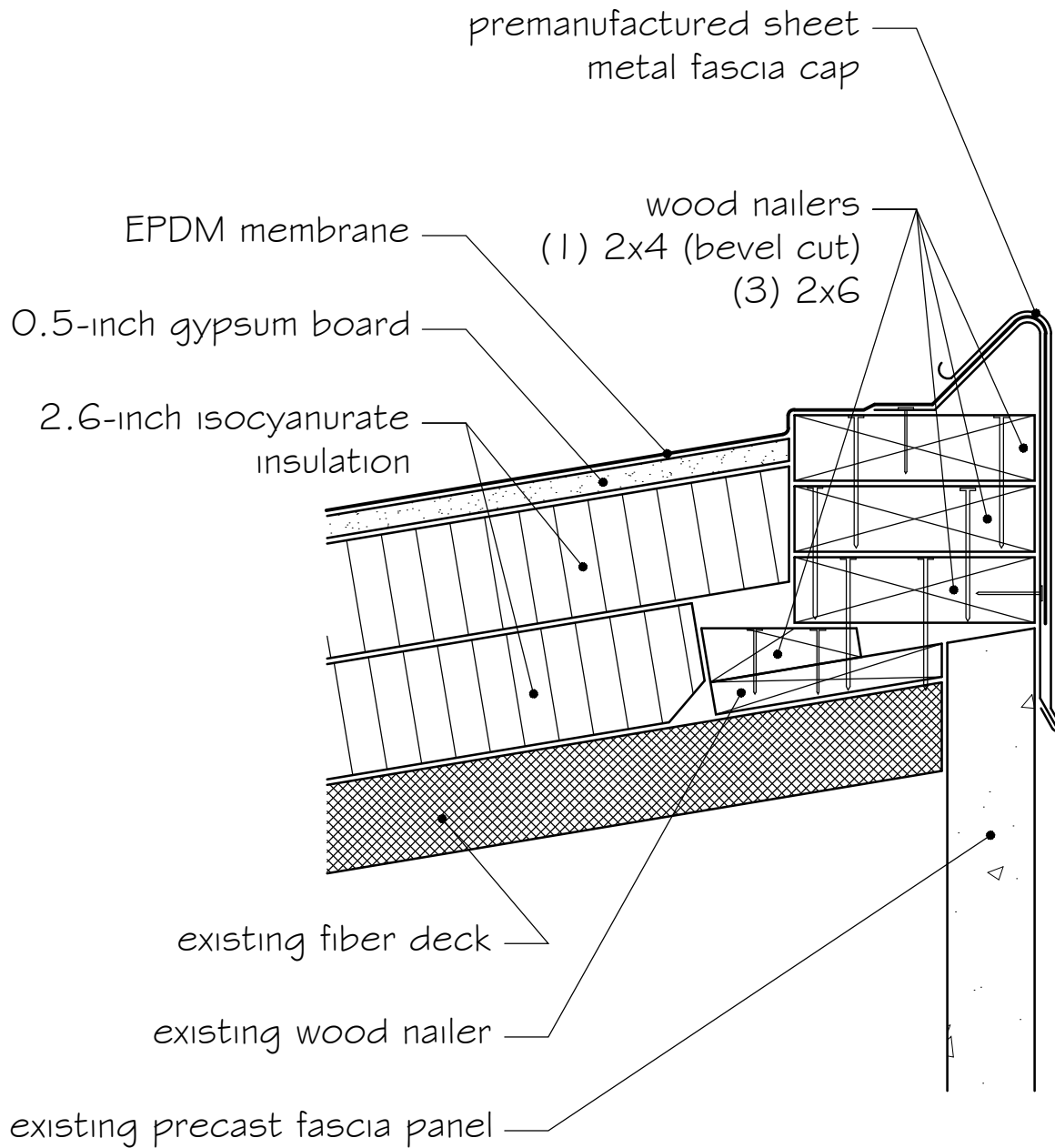
NOTE: components shown are new unless noted as existing



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<i>Date:</i> 3-22-24	<i>Checked By:</i> APW	



AREA E3 PERIMETER EDGE  
not to scale

NOTE: components shown are new unless noted as existing



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Date: 3-22-24

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18

sheet metal coping with standing seams and continuous cleat

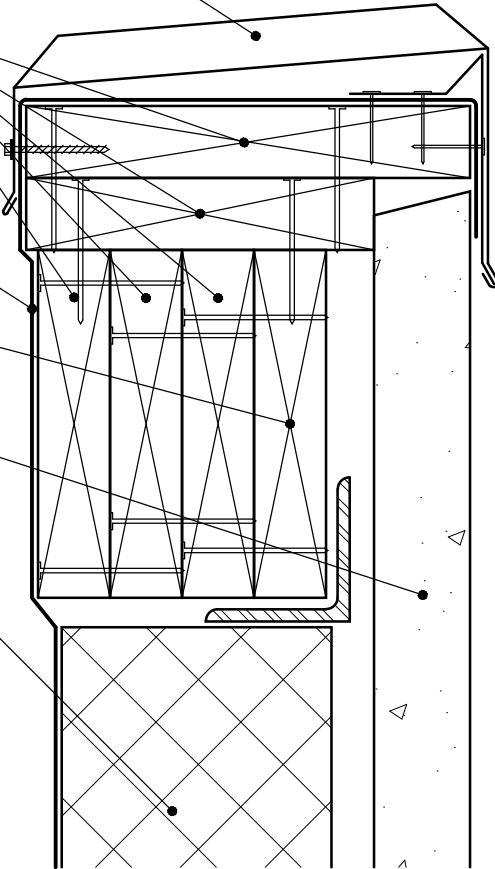
wood nailers  
(4) 2x8  
(1) 2x10

EPDM membrane

existing wood nailer

existing precast fascia panels

existing concrete block



## AREA C3 PERIMETER EDGE

not to scale

NOTE: components shown are new unless noted as existing



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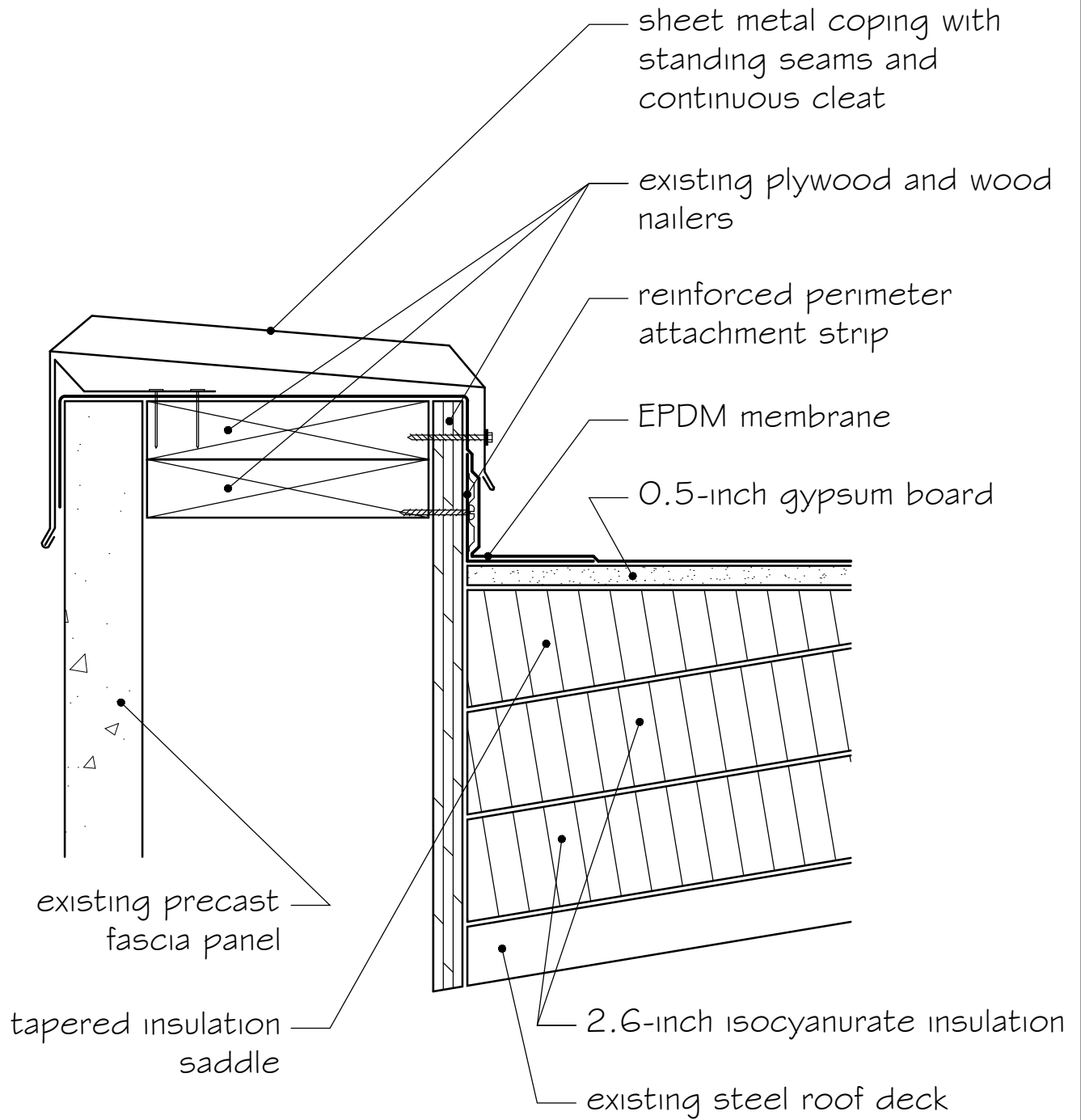
Detail No:

Date: 3-22-24

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19





AREA C4 PERIMETER EDGE  
not to scale

NOTE: components shown are new unless noted as existing



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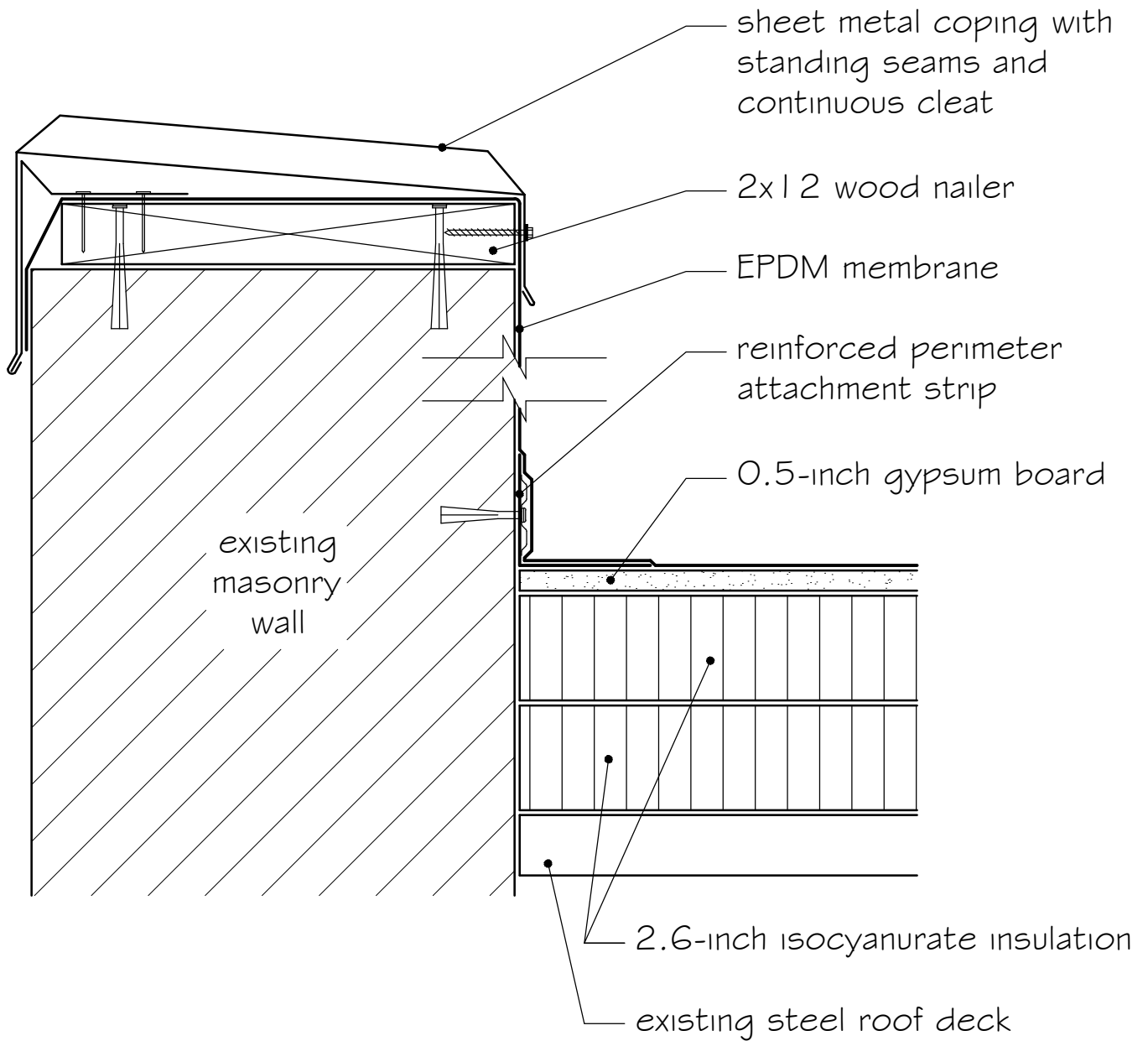
Drawn By: APW

Detail No:

Date: 3-22-24

Checked By: APW

20



AREA C4 PERIMETER EDGE  
not to scale

NOTE: components shown are new unless noted as existing



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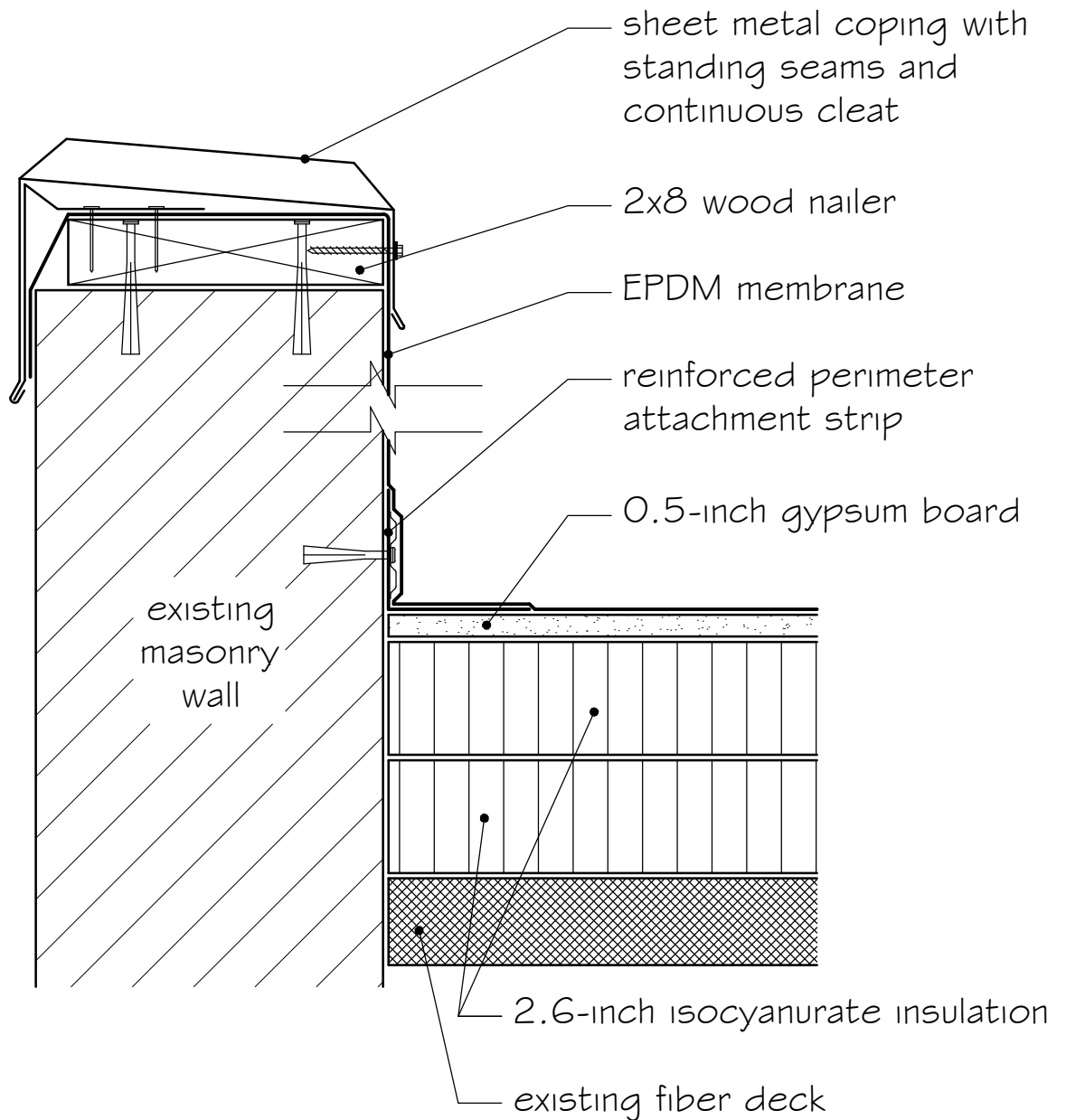
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Detail No:

Date: 3-22-24

Checked By: APW

21



## AREA E3 & E4 COPING

not to scale

NOTE: Area E4 will not require the installation of the 0.5-inch gypsum board

NOTE: components shown are new unless noted as existing



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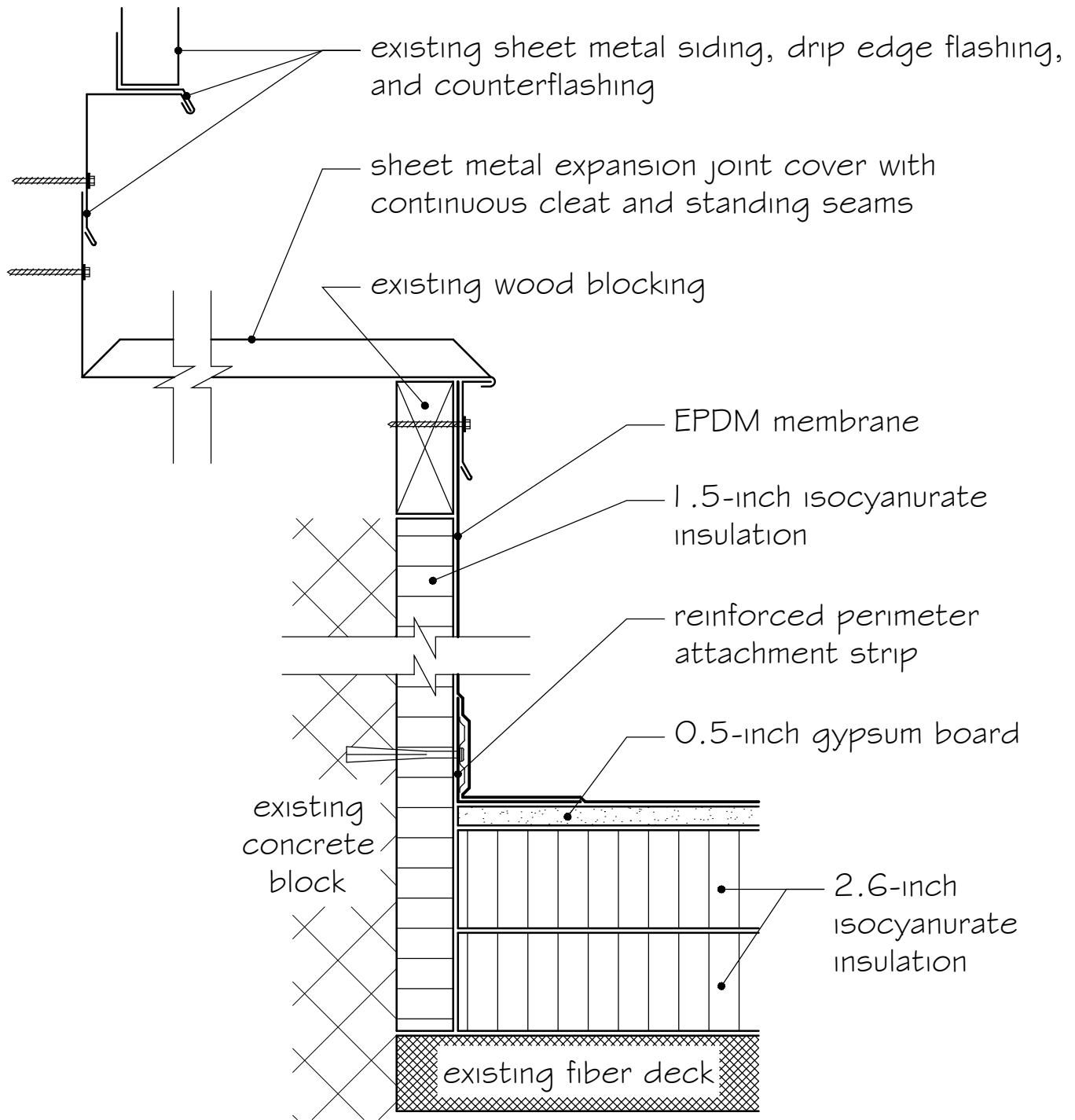
Drawn By: APW

Detail No:

Date: 3-22-24

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## AREA E3 & E4 EXPANSION JOINT FLASHING

not to scale

NOTE: Area E4 will not require the installation of the 0.5-inch gypsum board

NOTE: components shown are new unless noted as existing



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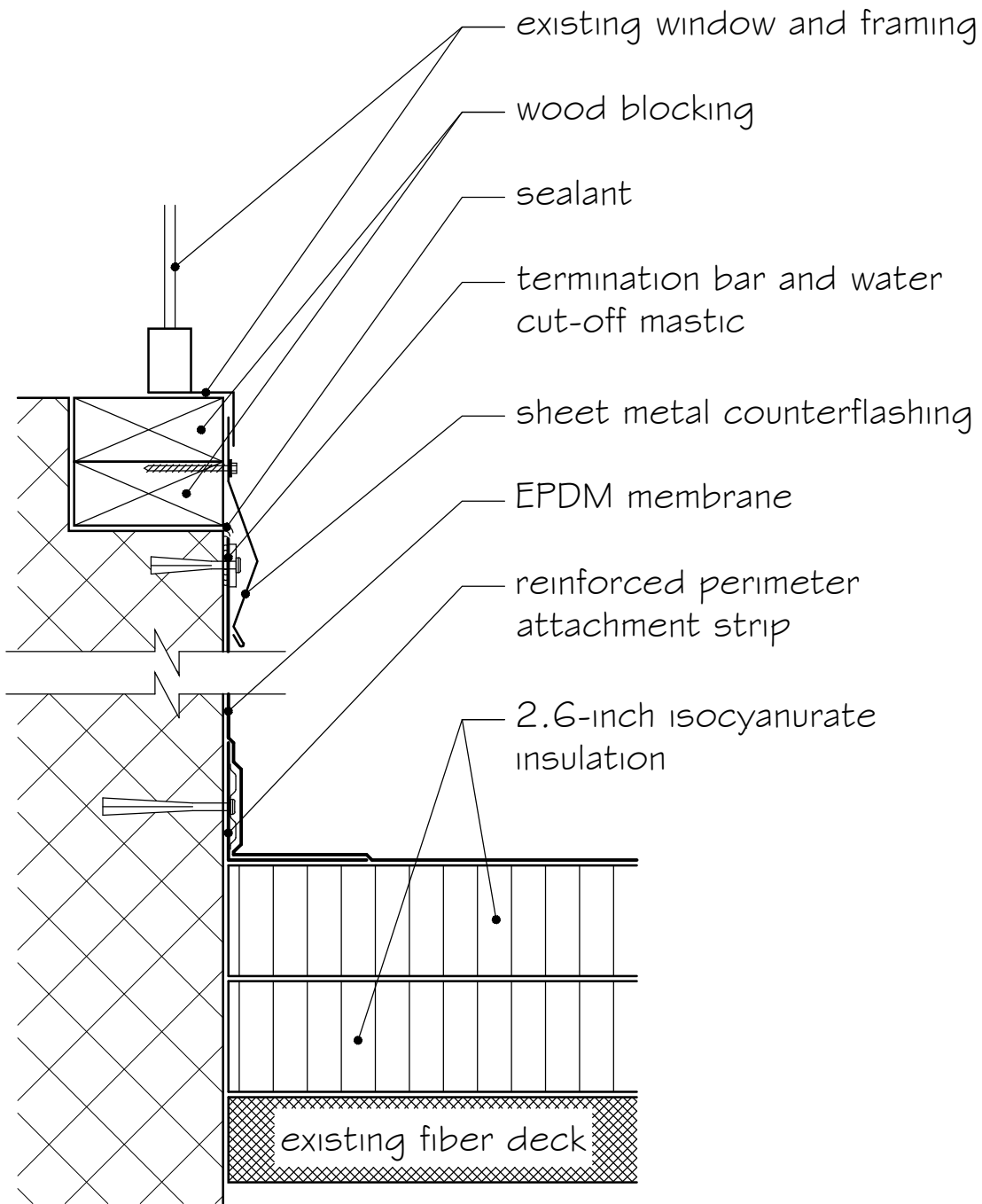
Drawn By: APW

Detail No:

Date: 3-22-24

Checked By: APW

23



**AREA E4 WALL FLASHING**  
not to scale

NOTE: components shown are new unless noted as existing



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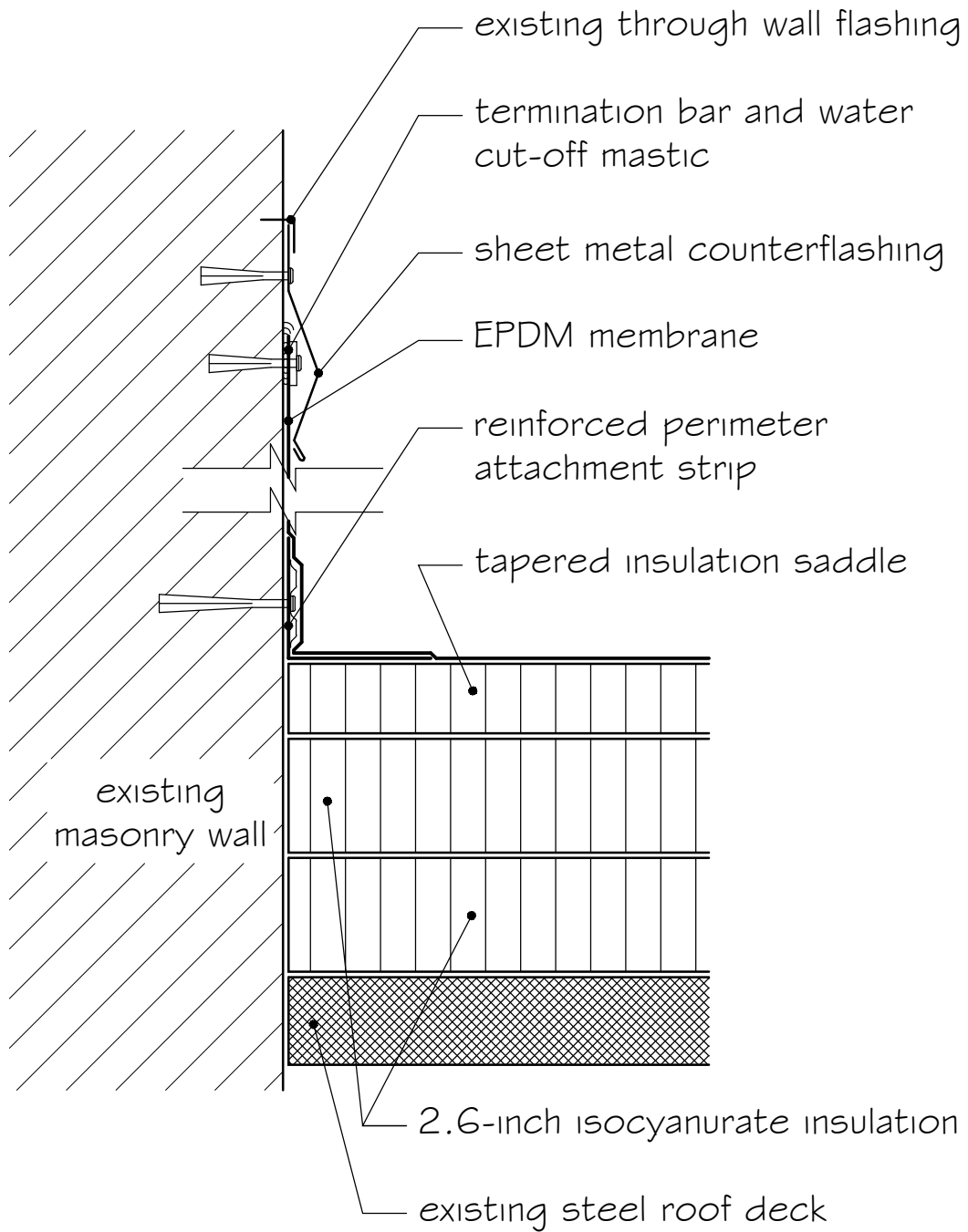
Drawn By: APW

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Date: 3-22-24

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24



**AREA E4 MASONRY WALL FLASHING**  
not to scale

NOTE: components shown are new unless noted as existing



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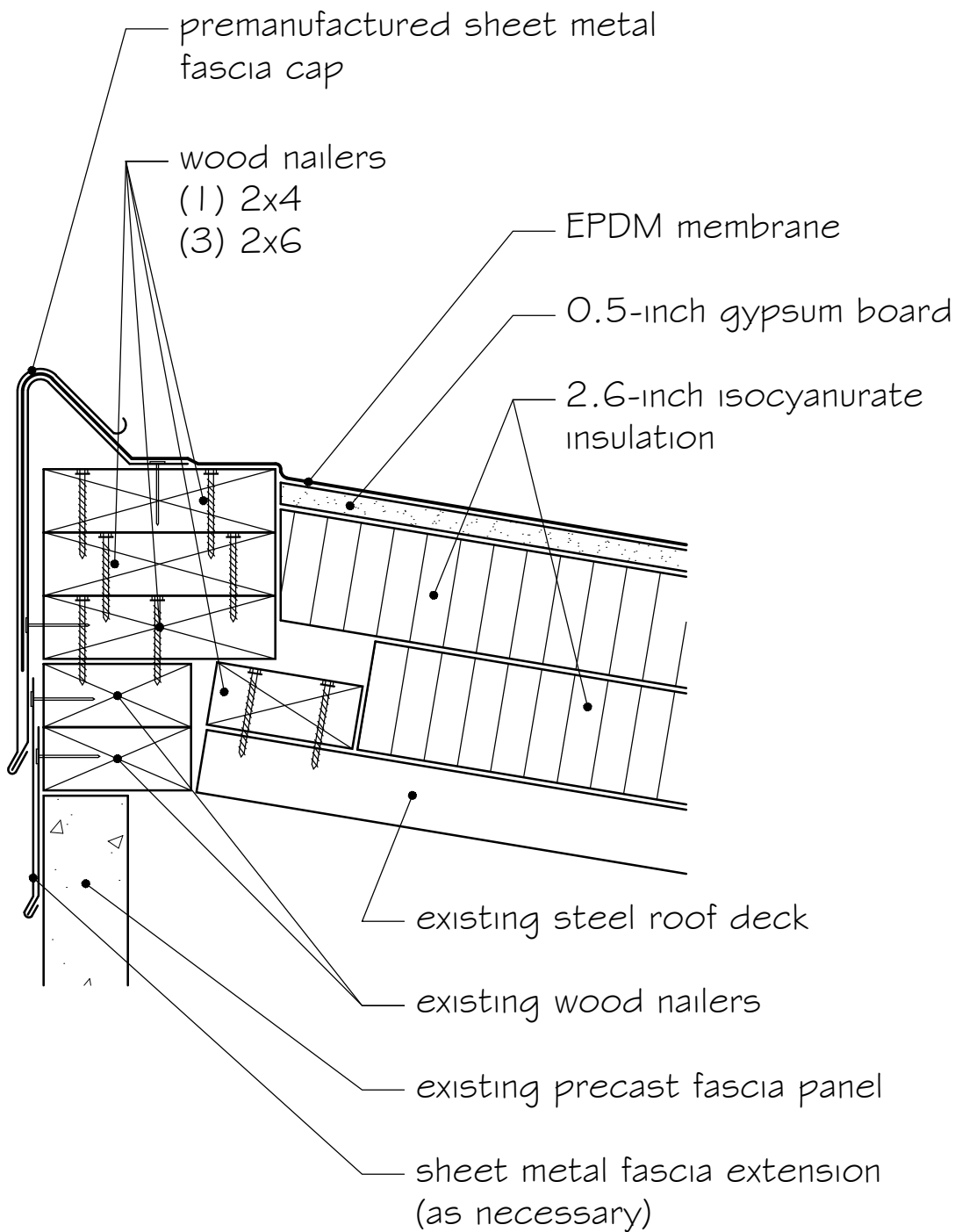
Drawn By: APW

Detail No:

Date: 3-25-24

Checked By: APW

25



AREA D3 FASCIA CAP  
not to scale

NOTE: components shown are new unless noted as existing

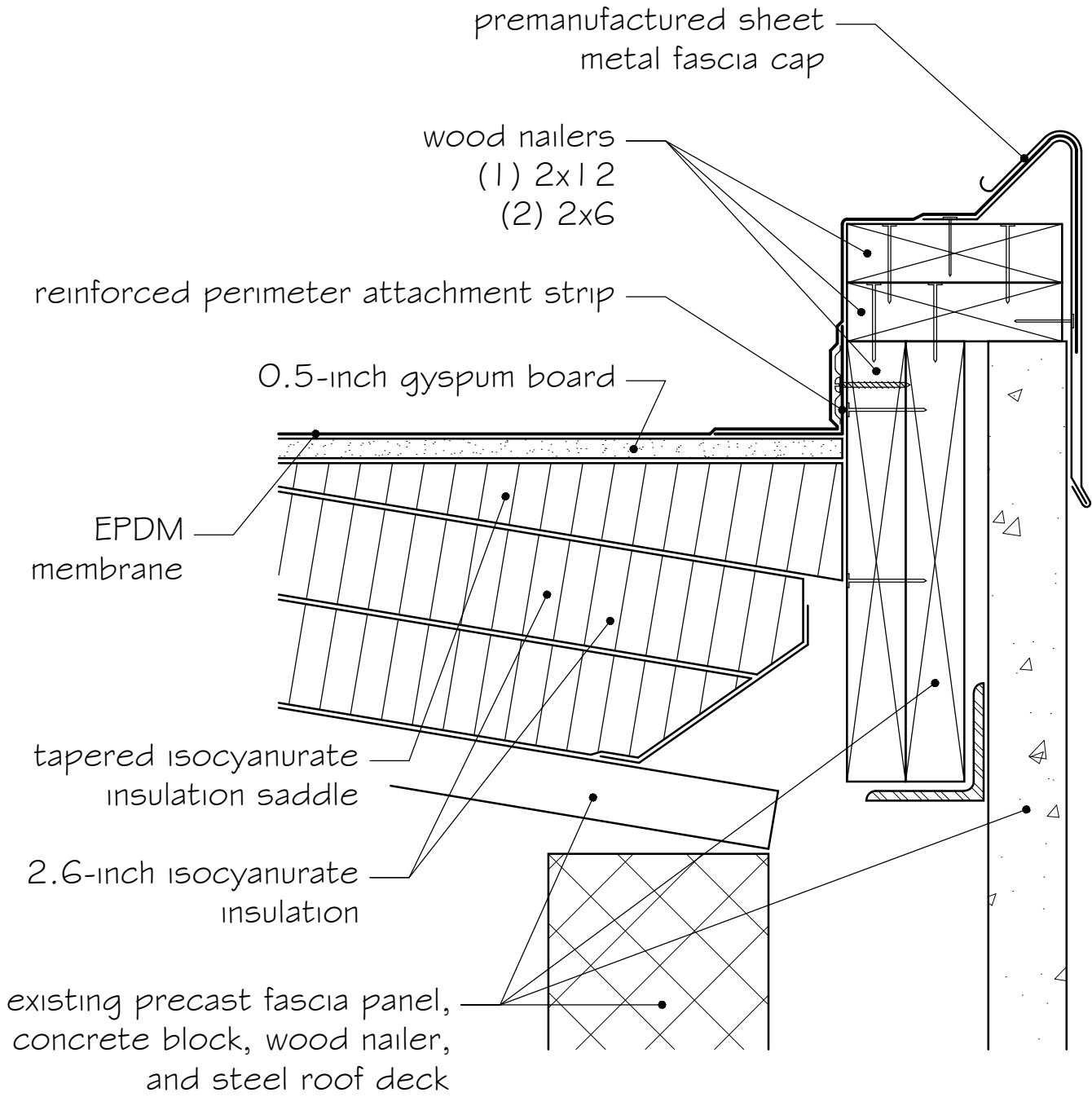


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Date:	3-22-24	Checked By:	APW	



**AREA D3 PERIMETER EDGE**  
not to scale

NOTE: components shown are new unless noted as existing



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Drawn By: APW

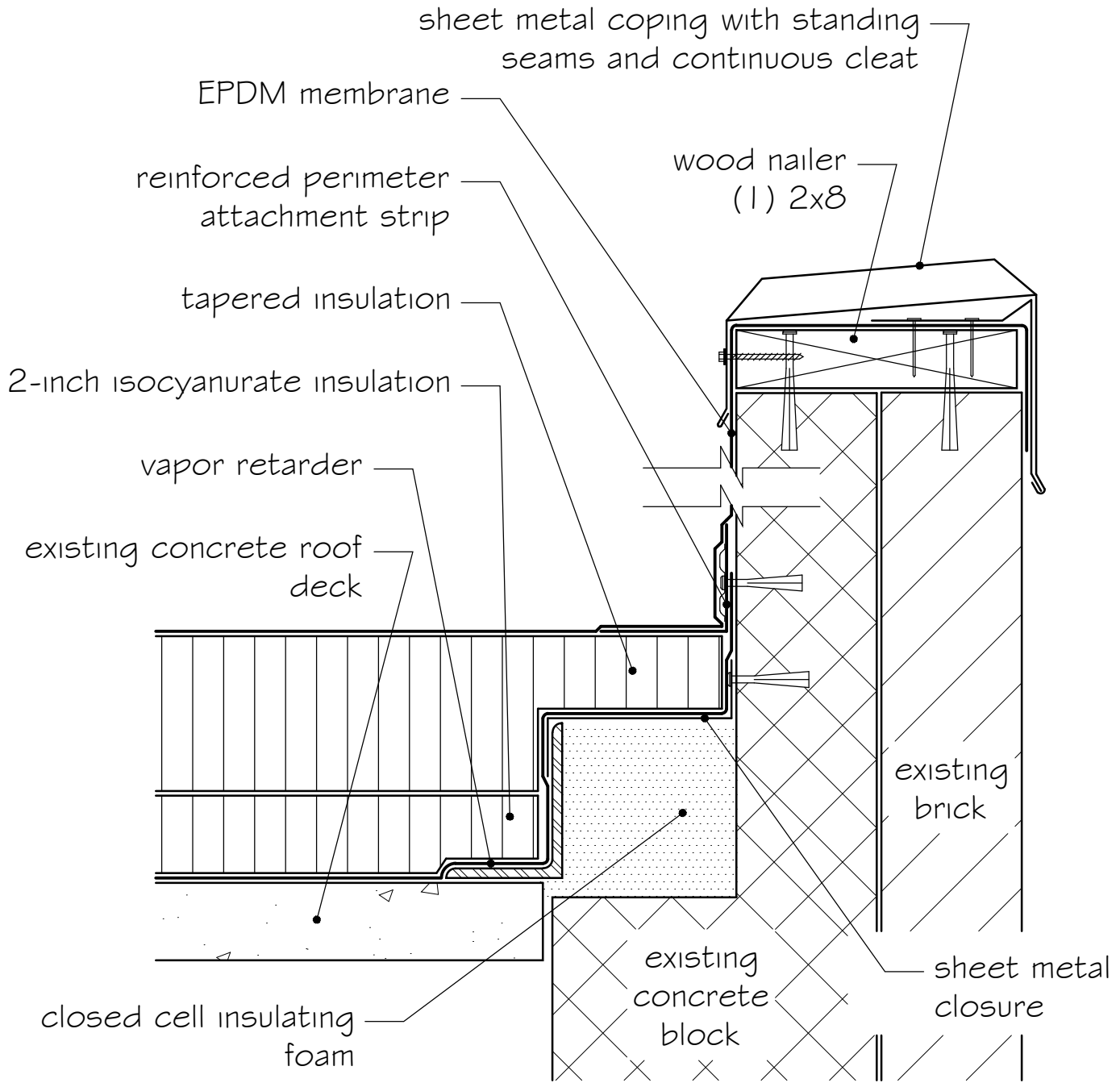
Detail No:

Date: 3-22-24

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27





**AREA D2 COPING**  
not to scale

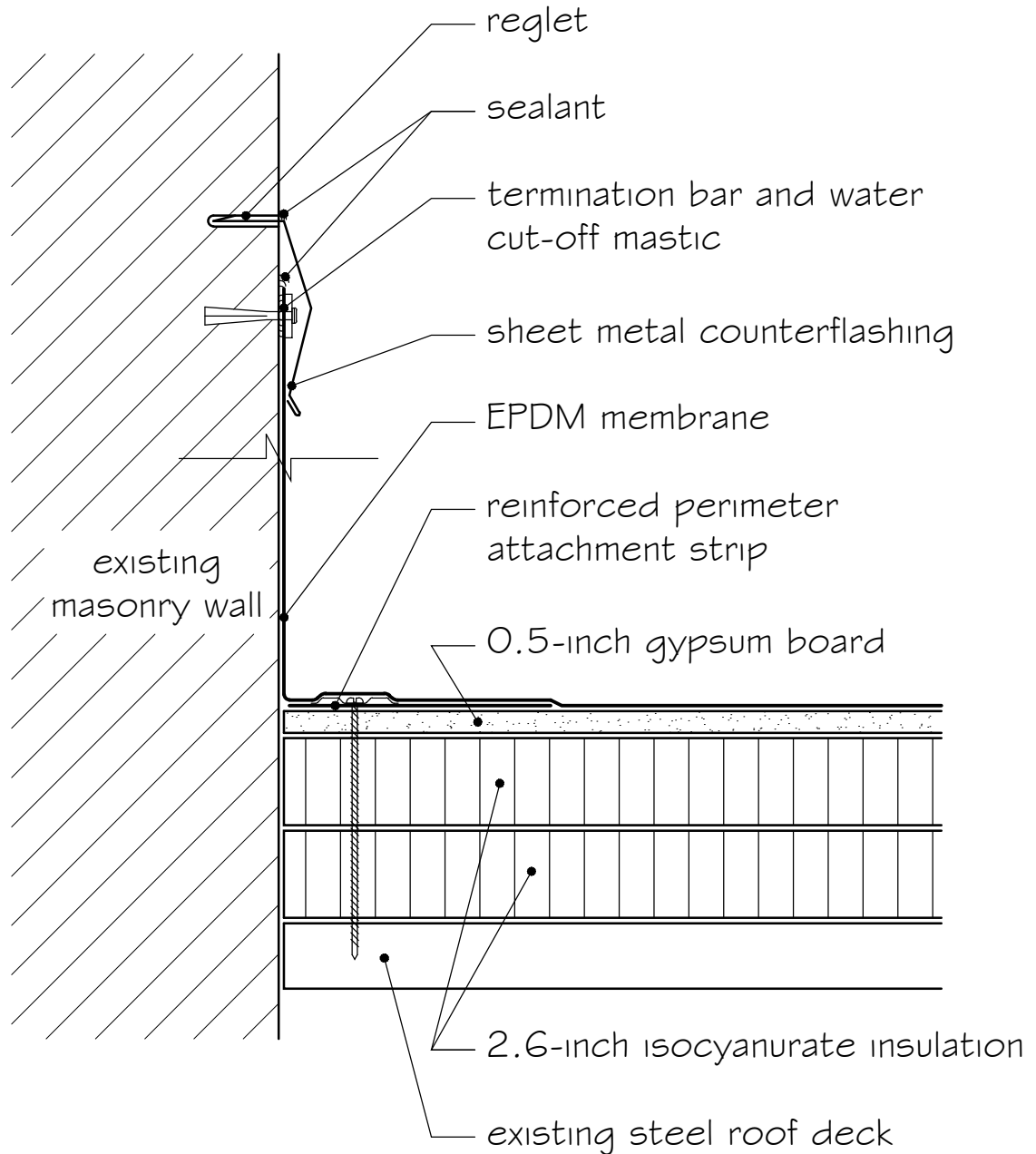
NOTE: components shown are new unless noted as existing



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<i>Date:</i> 3-22-24	<i>Checked By:</i> APW	28



**AREA D3 WALL FLASHING**  
not to scale

NOTE: components shown are new unless noted as existing



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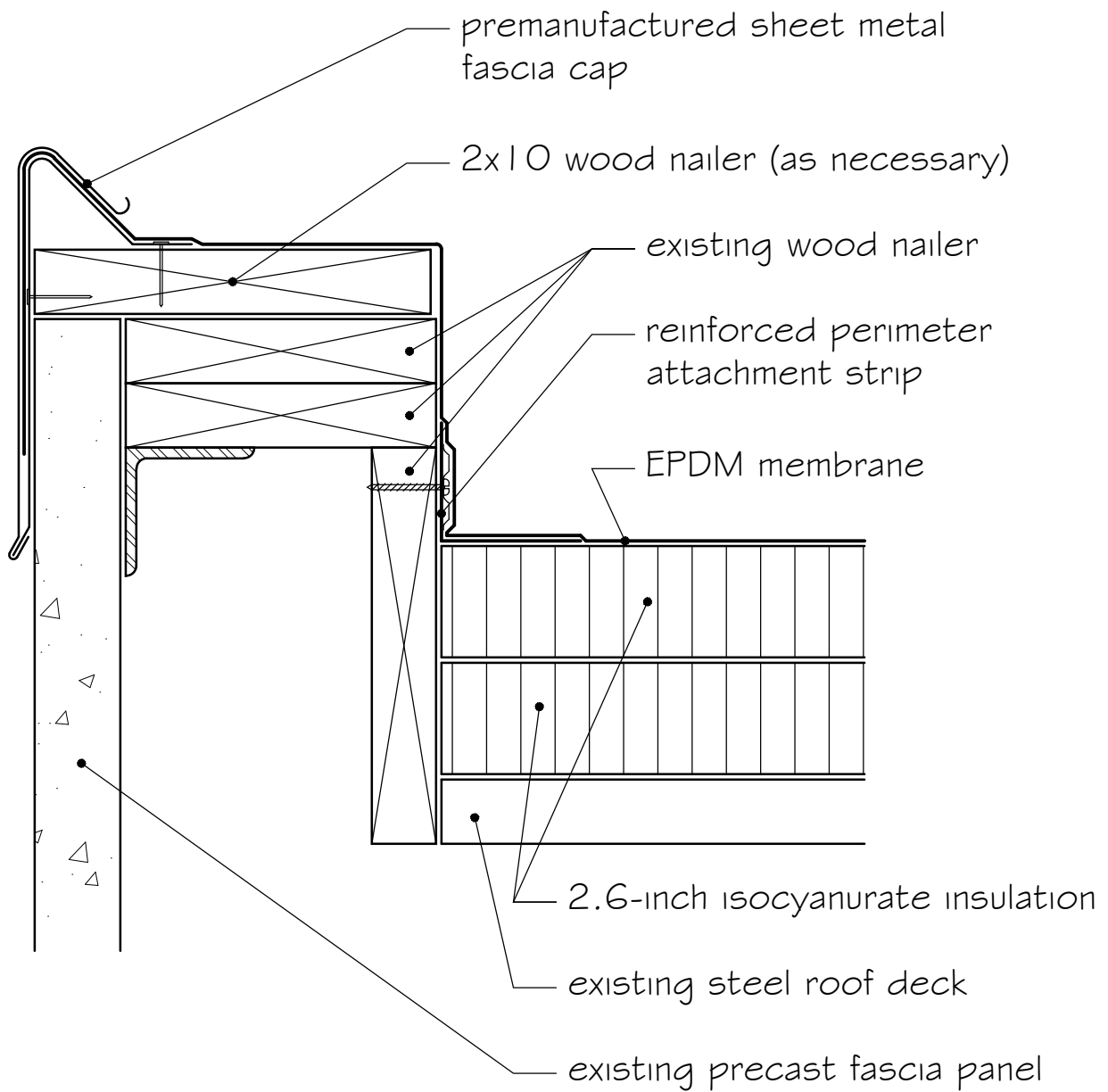
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29



PERIMETER EDGE - FASCIA CAP  
not to scale

NOTE: components shown are new unless noted as existing



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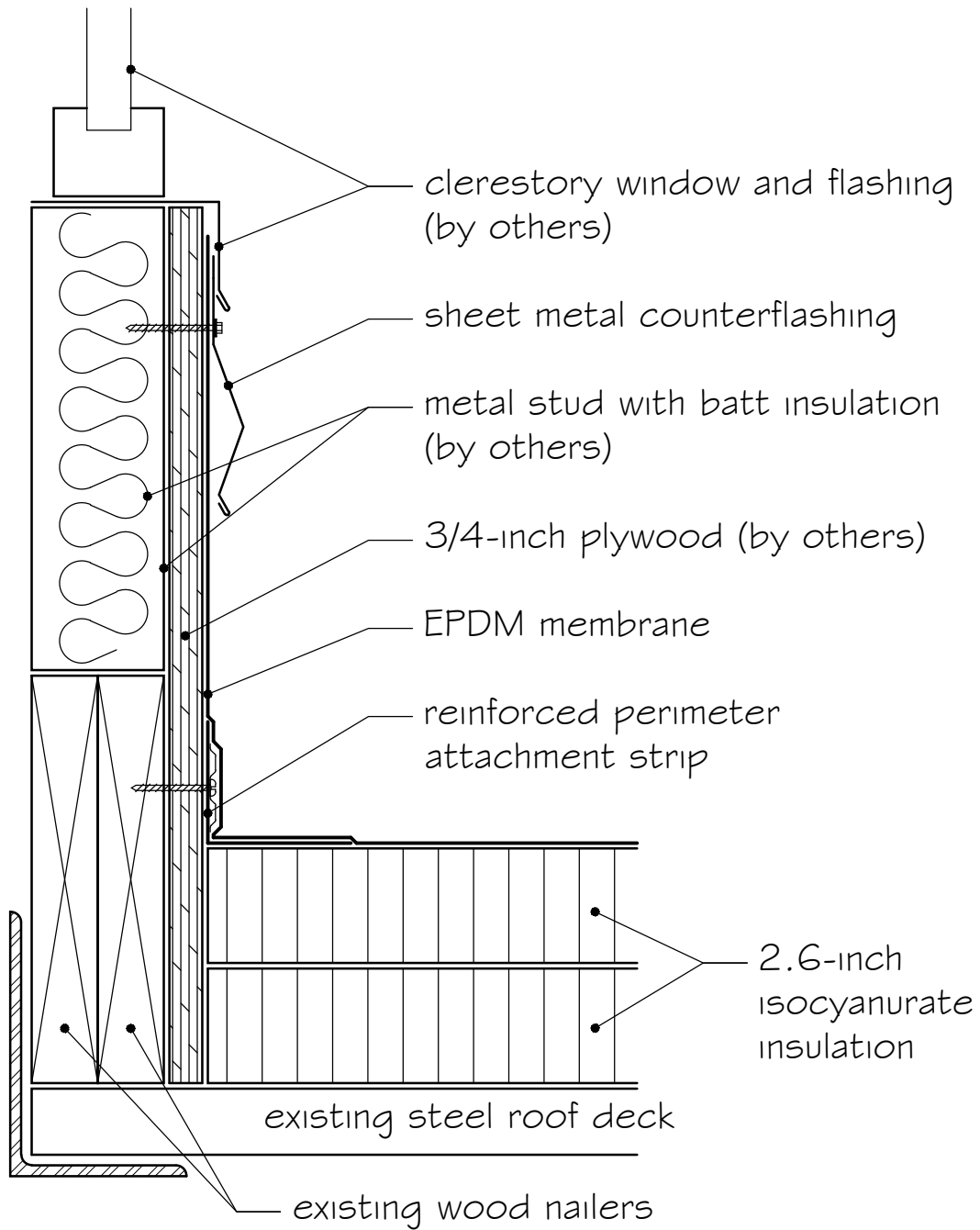
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Detail No:

Date: 3-25-24

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AREA D WALL FLASHING  
not to scale

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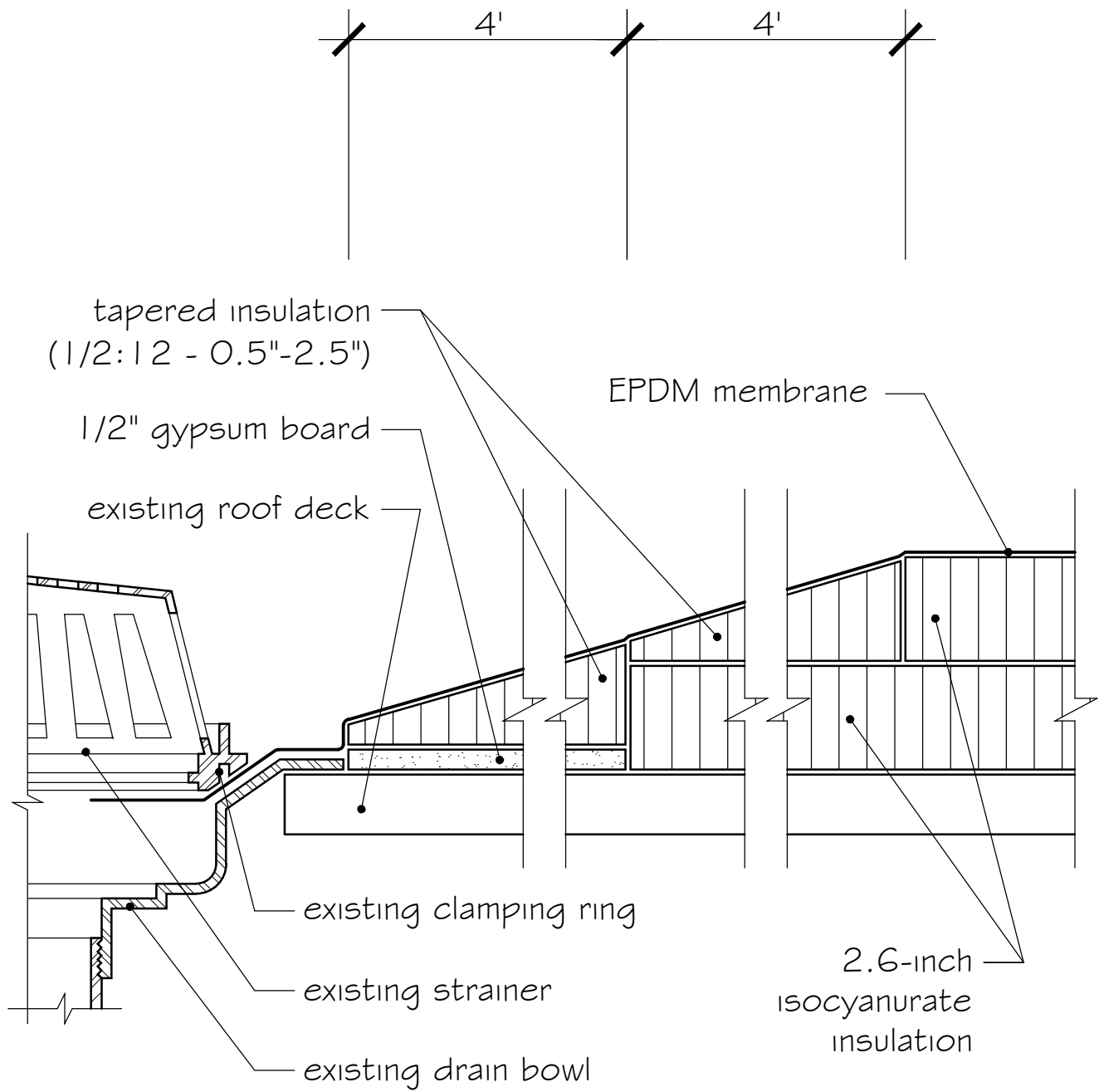
Drawn By: APW

Detail No:

Date: 3-25-24

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31



**AREA F ROOF DRAIN**  
not to scale

NOTE: components shown are new unless noted as existing



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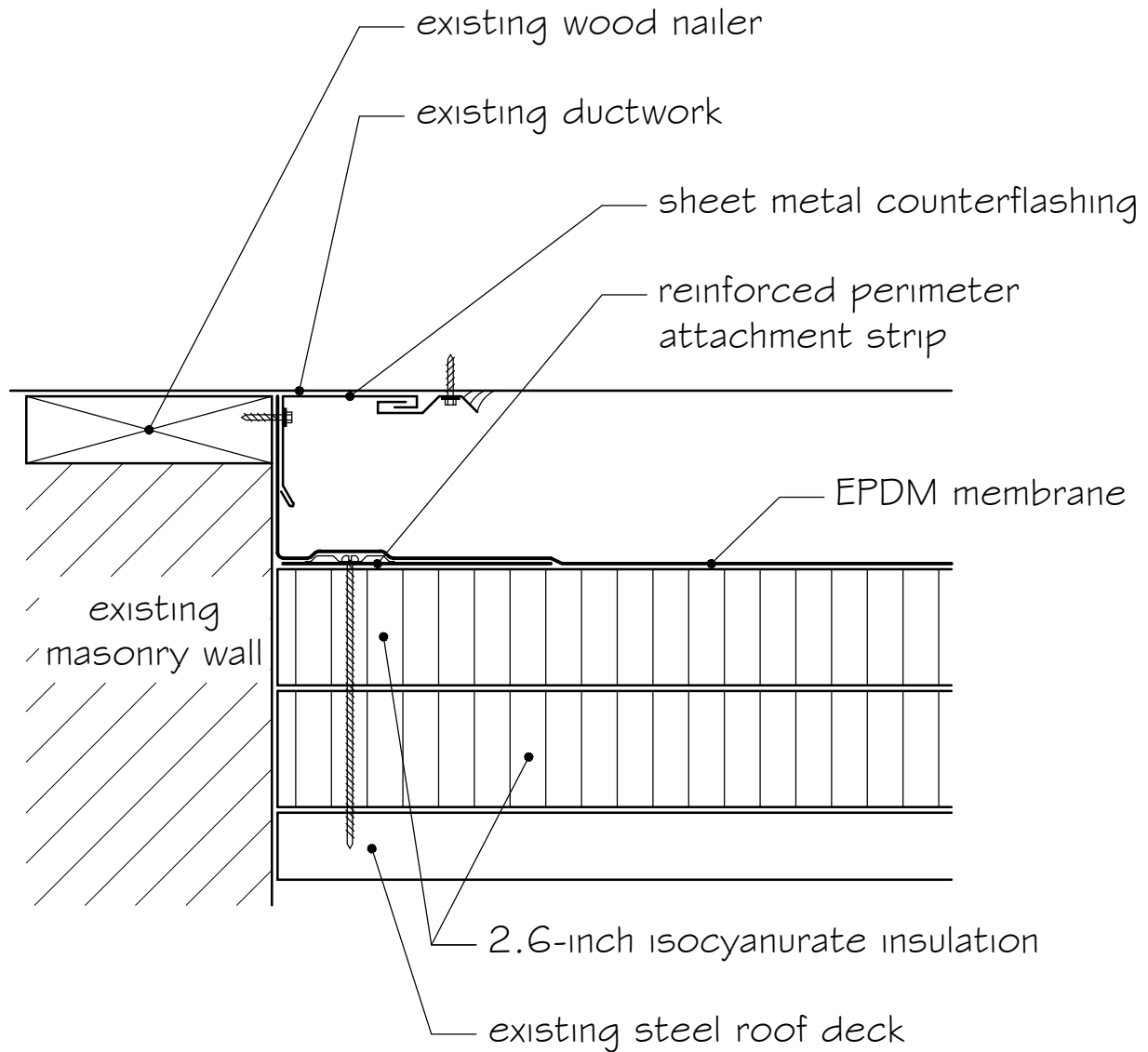
Drawn By: APW

Detail No:

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32



DUCTWORK / WALL FLASHING  
not to scale

NOTE: components shown are new unless noted as existing



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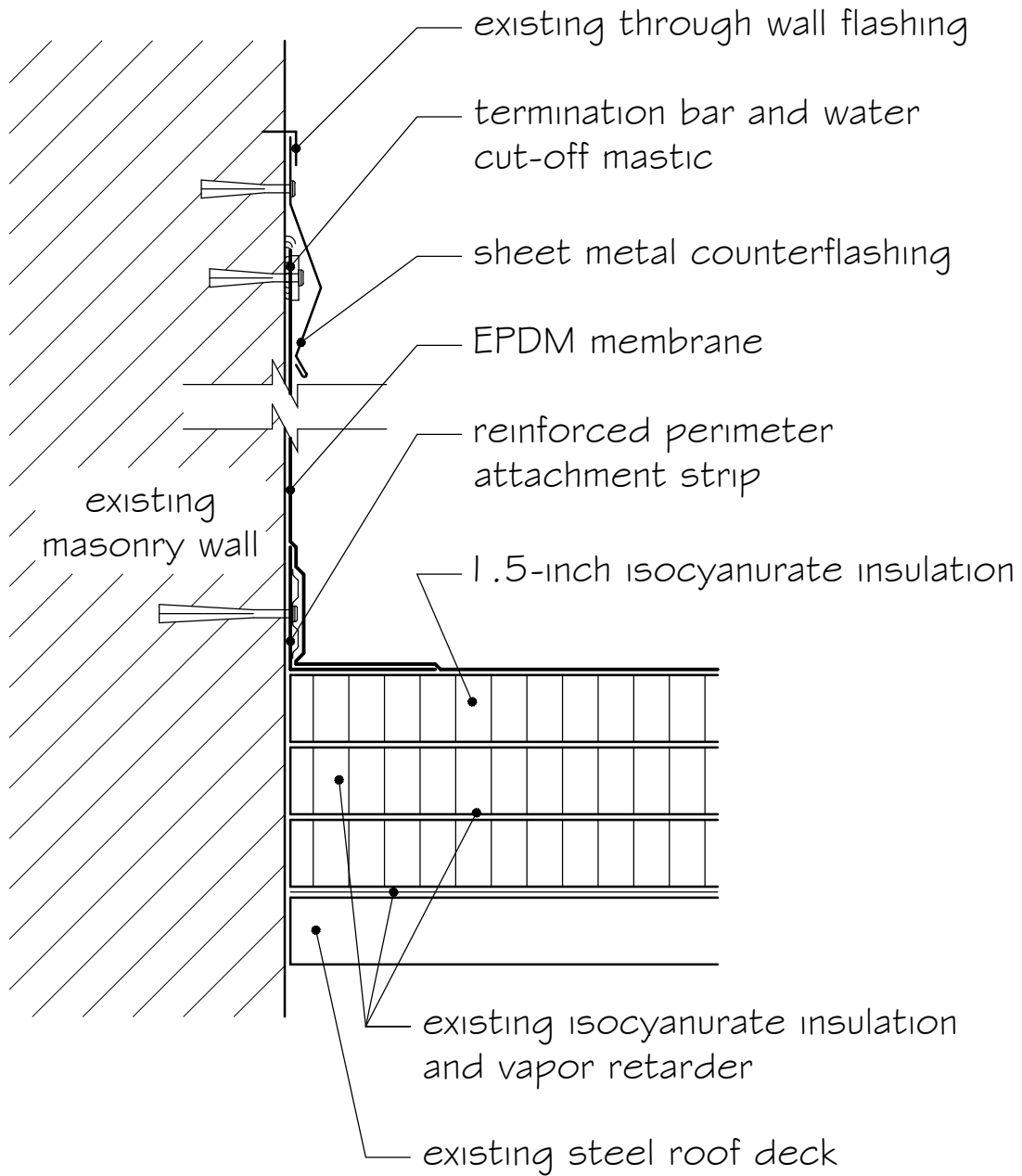
Drawn By: APW

Detail No:

Date: 3-25-24

Checked By: APW

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## AREA E1 & E2 MASONRY WALL FLASHING

not to scale

NOTE: Areas E, E1 & E2 are only in contract if Alternate No. 1 is accepted

NOTE: components shown are new unless noted as existing



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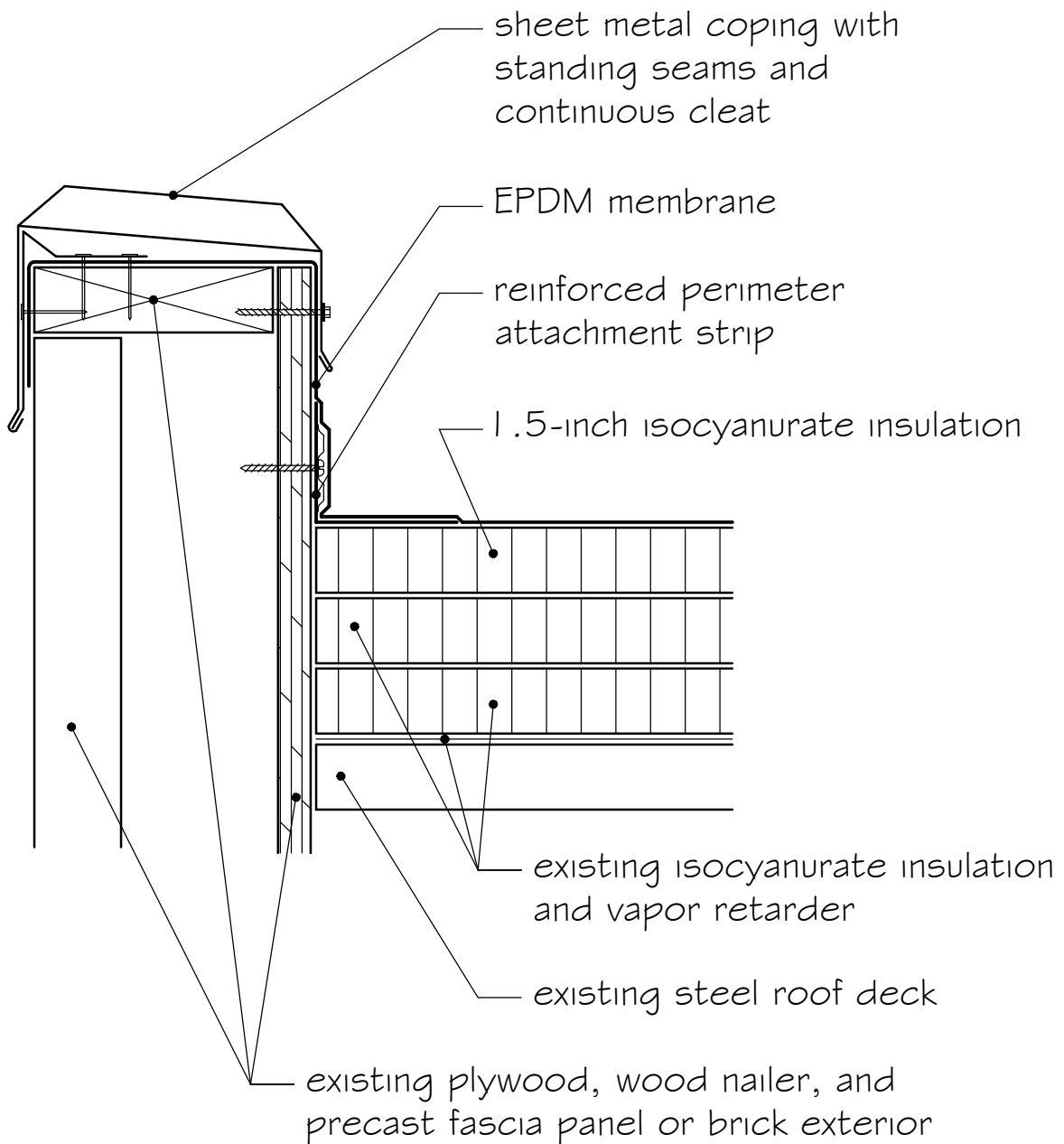
Drawn By: APW

Detail No:

Date: 3-25-24

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A1



## AREA E2 COPING

not to scale

NOTE: Areas E, E1 & E2 are only in contract if Alternate No. 1 is accepted

NOTE: components shown are new unless noted as existing



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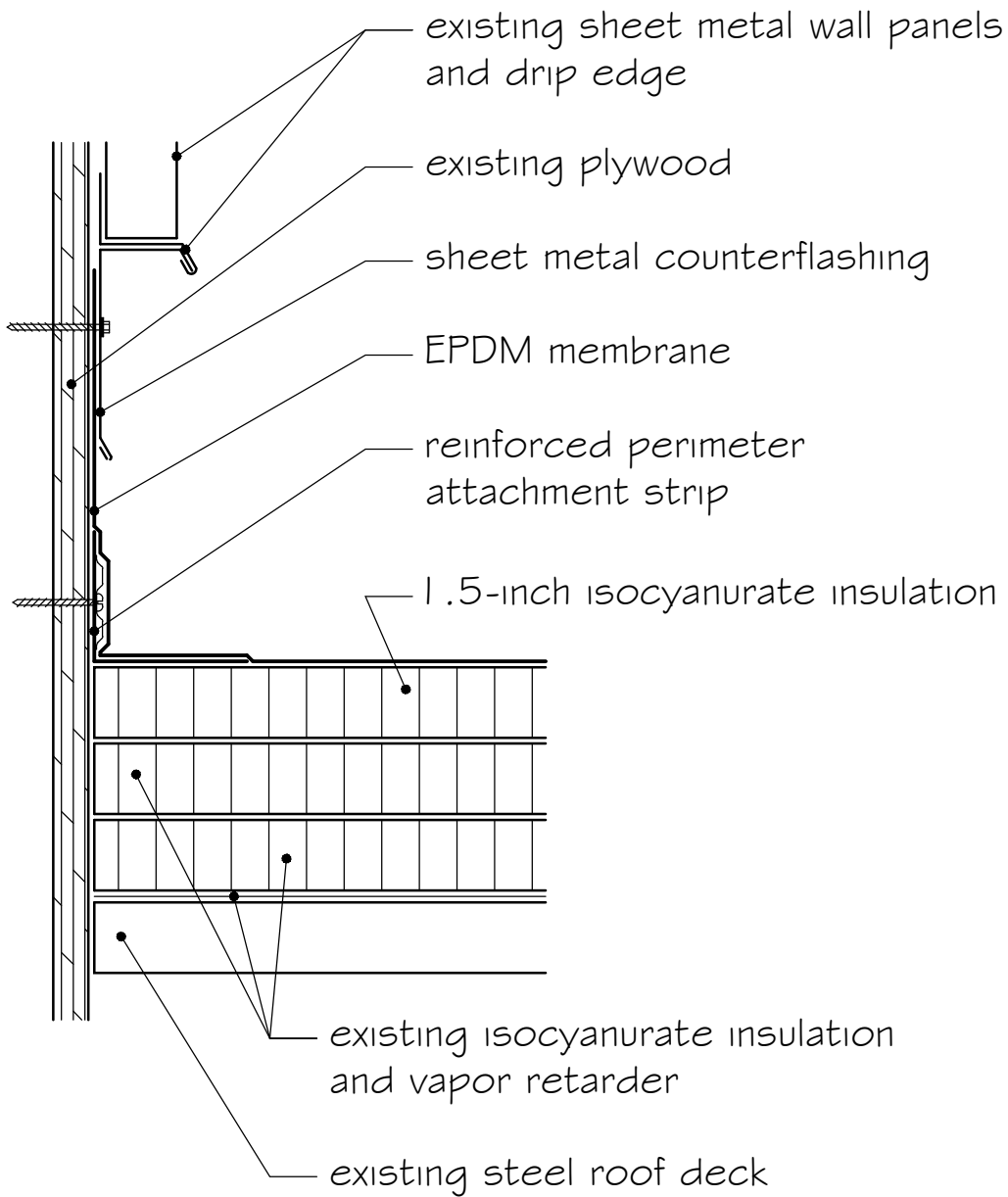
Detail No:

Date: 3-25-24

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A2





## AREA E2 WALL FLASHING

not to scale

NOTE: Areas E, E1 & E2 are only in contract if Alternate No. 1 is accepted

NOTE: components shown are new unless noted as existing

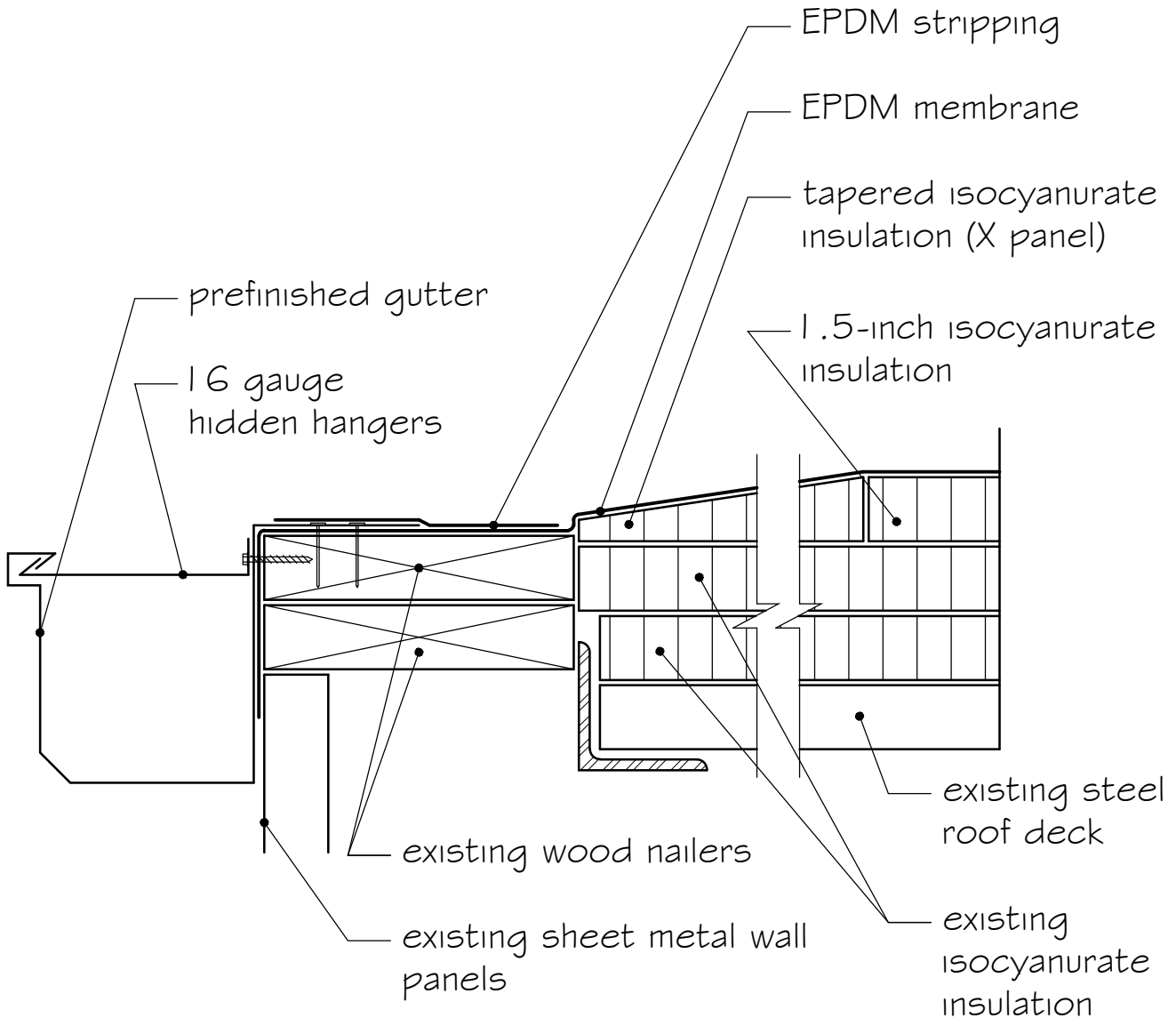


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<i>Date:</i>	3-25-24	<i>Checked By:</i>	APW		



## AREA E1 GUTTER EDGE

not to scale

NOTE: Areas E, E1 & E2 are only in contract if Alternate No. 1 is accepted

NOTE: components shown are new unless noted as existing



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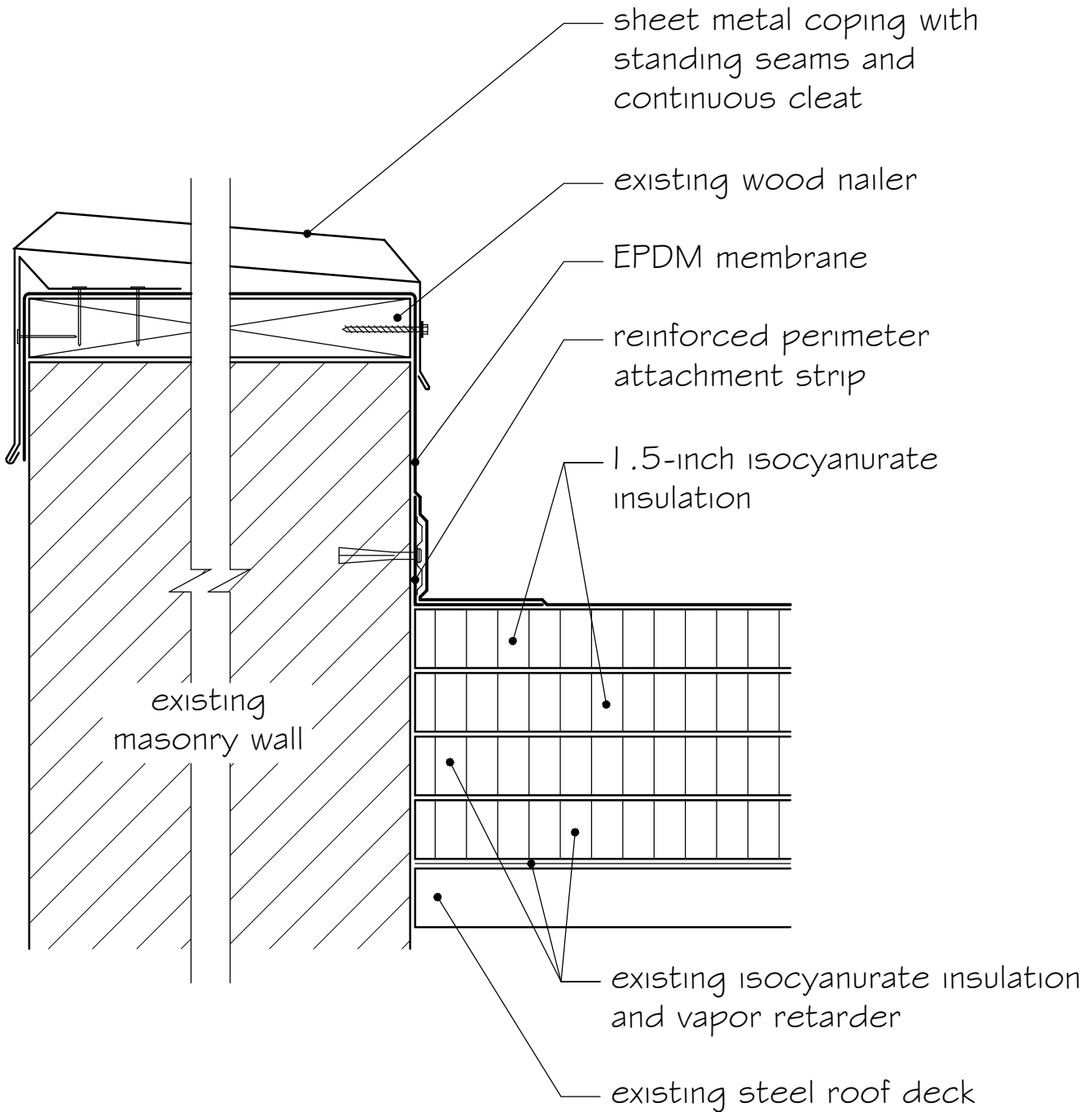
Drawn By: APW

Detail No:

Date: 3-25-24

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A4



## AREA E COPING

not to scale

NOTE: Areas E, E1 & E2 are only in contract if Alternate No. 1 is accepted

NOTE: components shown are new unless noted as existing



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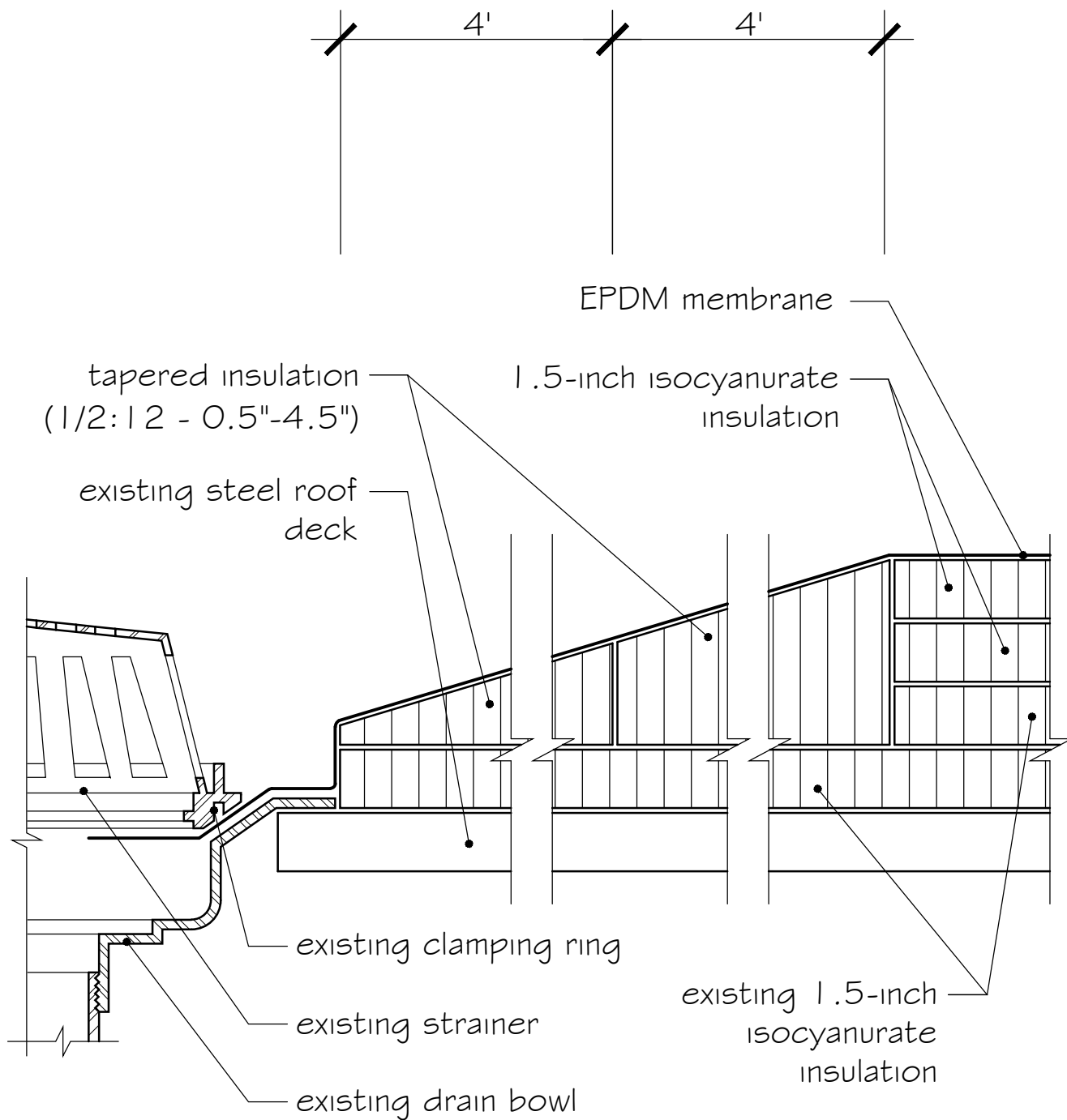
Drawn By: APW

Detail No:

Date: 3-25-24

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A5



## AREA E ROOF DRAIN

not to scale

NOTE: Areas E, E1 & E2 are only in contract if Alternate No. 1 is accepted

NOTE: components shown are new unless noted as existing



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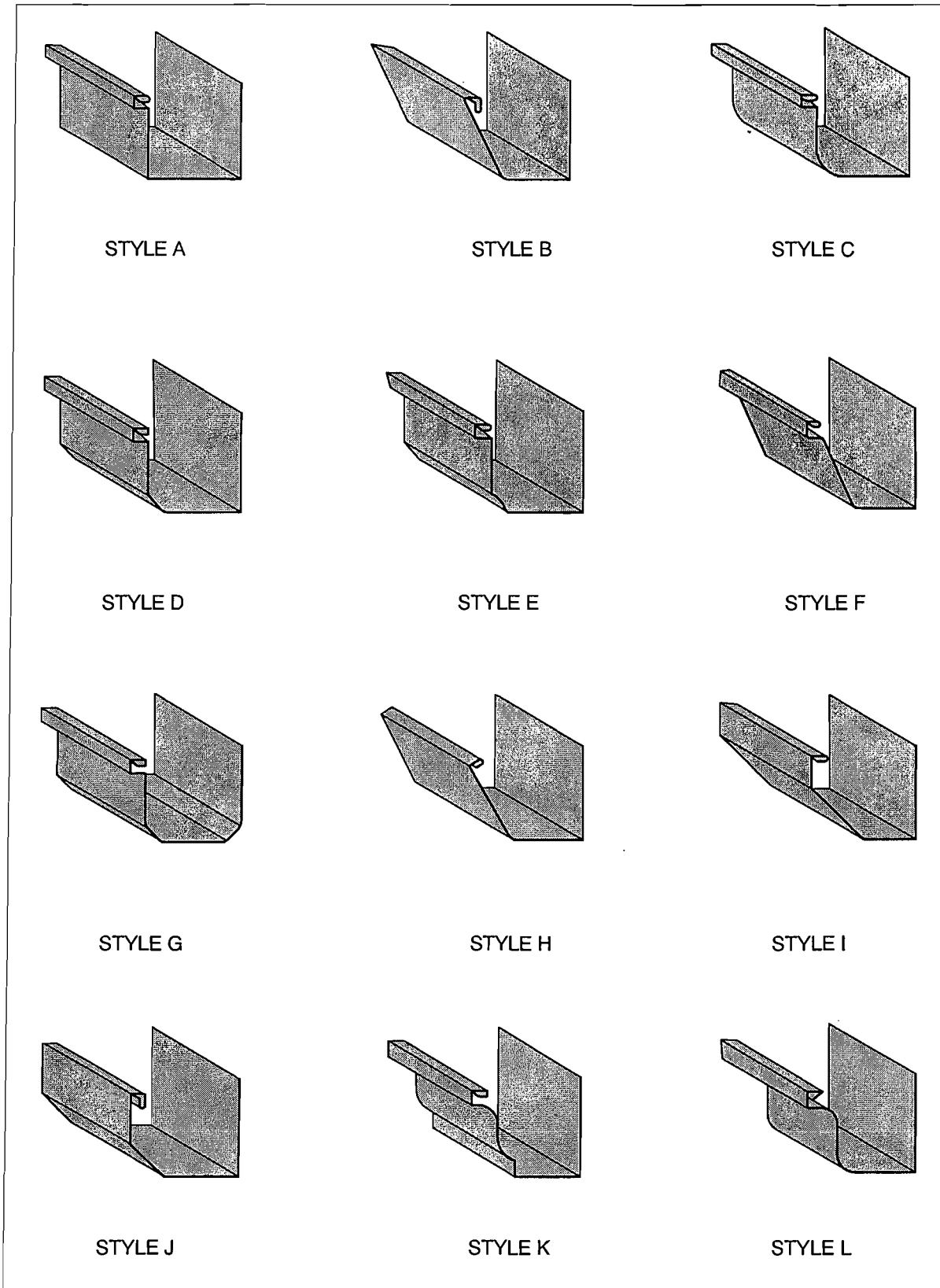
Drawn By: APW

Detail No:

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A6



**FIGURE 1-2 RECTANGULAR GUTTER STYLES**

## BUTT TYPE GUTTER EXPANSION JOINT

Figure 1-7 shows the method used to fabricate and install a butt type gutter expansion joint.

Gutter ends are flanged at the top, riveted and soldered into each section of gutter. Sections are joined and a cap is used to cover the joint as shown in Section A-A. Values for dimensions B, C, D, and E are given in tables on Figure 1-5.

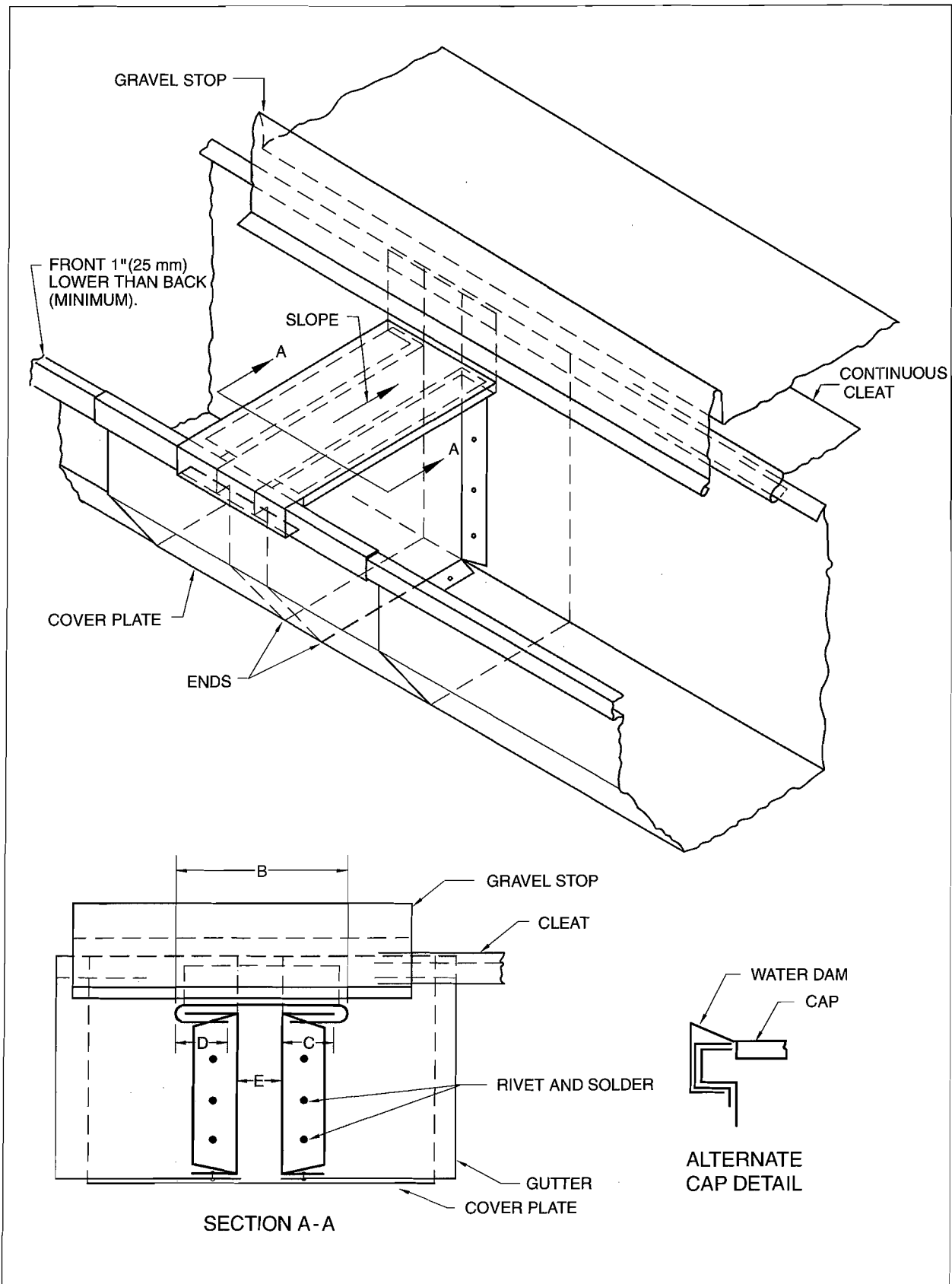
A cover plate is used primarily to hide the exposed expansion joint. Where appearance is not an important factor, the cover plate may be eliminated. The cover plate must not be attached in a manner that will restrict

**FIGURE 1-7**

the movement of the gutter sections. It should also slope down to the back of the gutter or have a water dam as shown in the Alternate Cap Detail.

This expansion joint is shown on a rectangular gutter attached to a flat roof using a gravel stop. This application may be used for any rectangular hanging gutter installation. Installation requirements include notching of the gravel stop to fit over the expansion joint.

The use of a continuous cleat (as shown) is optional.



**FIGURE 1-7 BUTT TYPE GUTTER EXPANSION JOINT**

## DOWNSPOUTS — SHOP FABRICATED

Figure 1-32 illustrates shop-fabricated downspout pipe and elbows.

Figures 1-32A and 1-32B are plain round and rectangular downspouts. These may be fabricated in any size desired; however, standard sizes and their cross-sectional area are given in Table 1-9. Seams and joints in downspouts are not completely watertight. Snap lock or Pittsburgh seams may be used in downspouts.

Figures 1-32D and 1-32E show open-face downspouts. It is not recommended that braces as shown in Figure 1-32E be located less than 60 in. (1520 mm) from ground level.

The configurations shown in Figures 1-32C, D, E, and H are recommended in icing areas.

## FIGURE 1-32

Figures 1-32F and 1-32G show portions of shop fabricated downspout systems installed on a building. Elbows are made by mitering the downspout. Miterers are connected by soldering or welding piece or by riveting the lap. Where it is necessary to vary the downspout system from the vertical, the downspout must be pitched.

Figure 1-32H is a semi-open downspout. Its face has a cutout.

Figure 1-32I shows a protection cover, typically 10 ga. (3.4 mm), that can be used over the downspout in alleys, truck docks, or other areas where susceptibility to damage is high. These are typically 48 in. (1220 mm) above street level in height.

Downspouts that are set  $\frac{1}{2}$  in. (13 mm) away from walls may have a longer service life.



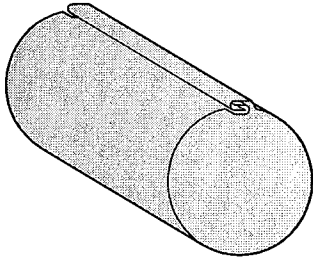


FIG 1-32A

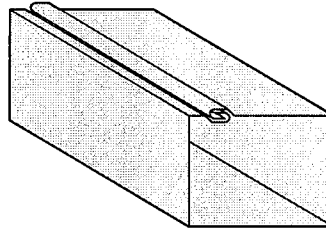


FIG 1-32B

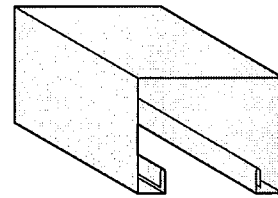


FIG 1-32C

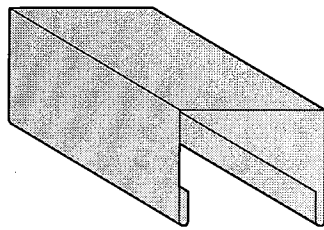


FIG 1-32D

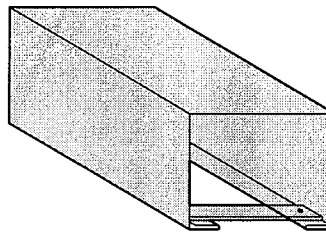


FIG 1-32E

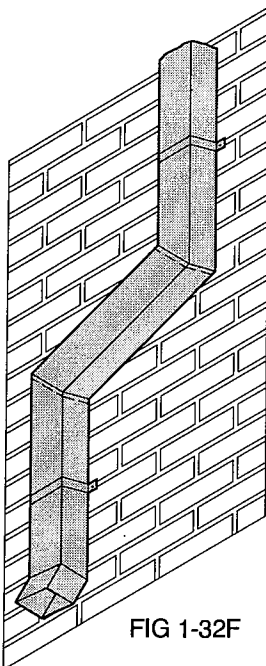


FIG 1-32F

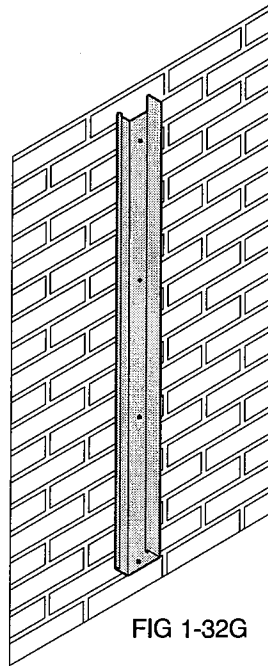


FIG 1-32G

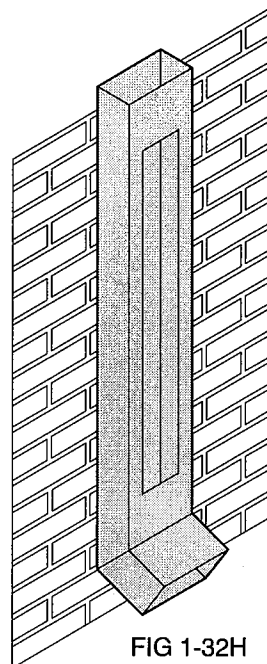


FIG 1-32H

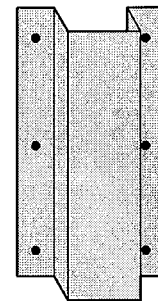


FIG 1-32I

FIGURE 1-32 DOWNSPOUTS — SHOP FABRICATED

## DOWNSPOUT — GUTTER CONNECTIONS

Figure 1-33A shows the preferred orientation of a rectangular gutter outlet. It has been suggested that dimension A should approach dimension W, the gutter width, B should approach the gutter depth, and that the transition to the downspout have a length equal to W.

Figure 1-33B shows the more common orientation for rectangular outlets. With this configuration, fewer fittings are necessary to get the downspout's greater dimension against a wall.

Figure 1-33C and Section A-A show a type of tube outlet frequently used on residential buildings. The smallest area of the taper relates to draining capacity which may be less than that of the downspout sized from Table 1-2. The downspout is shown with a slip fit only but it may be riveted to the tube.

The text of Figure 1-24, gutter accessories, states that the dimensions illustrated in Detail 1 should be used for outlets. The minimum flange width for outlets is  $\frac{3}{8}$  in. (10 mm). The flange is riveted and soldered. Or with aluminum and precoated metal, it is set in sealant, riveted and the rivets are sealed.

## FIGURE 1-33

Detail 2 shows a loose connection that can serve as a vent or overflow relief; it can also allow some relative movement of the gutter from thermal expansion.

Figure 1-33D illustrates the type of solid connection that must be used on built-in gutters. It may also be used on other types of gutters. Welded connections are an alternative. Various other methods of attaching roof drains to gutters also exist. Flexible piping may be used to allow movement due to expansion. However, it is critical to provide clearance for movement around the downspout if the gutter will move at an outlet connection.

Figure 1-33E shows a transition with a more efficient inlet to a downspout. This may be considered where high assurance of gutter draining is desired. Size this as discussed for Figure 1-33A. A funnel or conductor head might also be used to conceal two outlets in cases like that shown in Figure 1-5C.

Open faced downspouts should not have offsets—straight drop only. Open-faced downspouts are used in high-volume flows and where icing conditions exist to avoid downspout damage due to freezing or stoppage conditions.

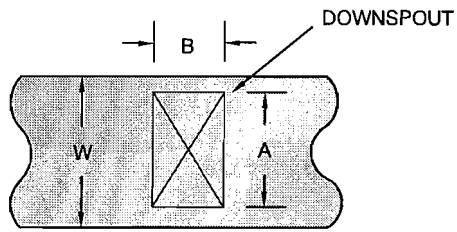


FIG 1-33A

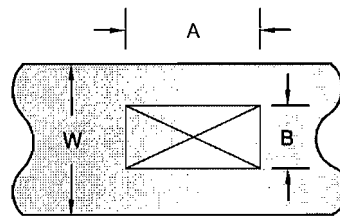


FIG 1-33B

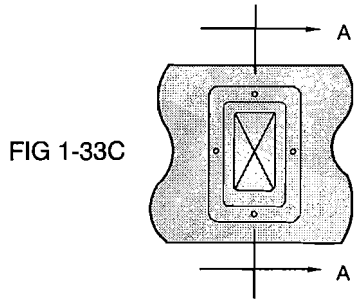
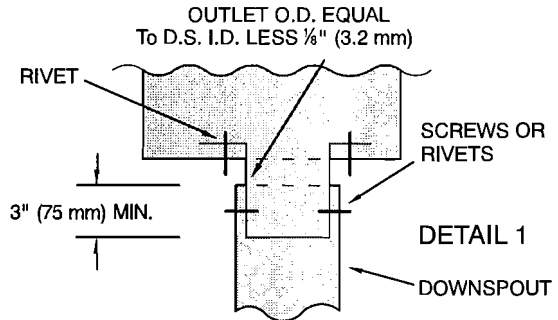
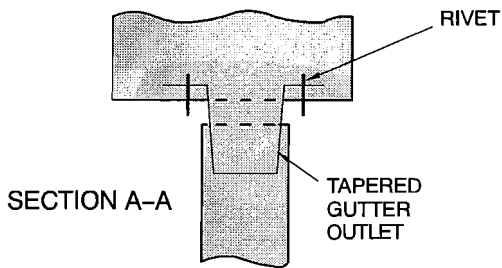


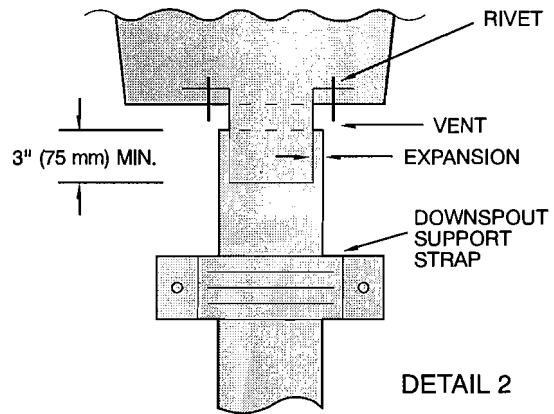
FIG 1-33C



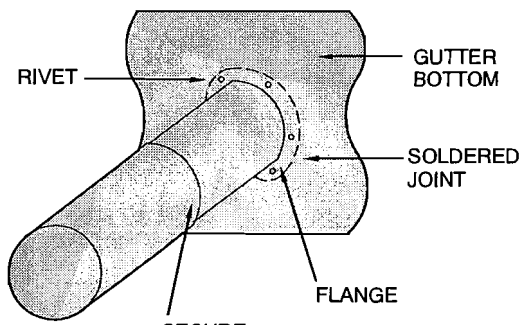
DETAIL 1



SECTION A-A



DETAIL 2



SECURE AND SEALED JOINT

FIG 1-33D

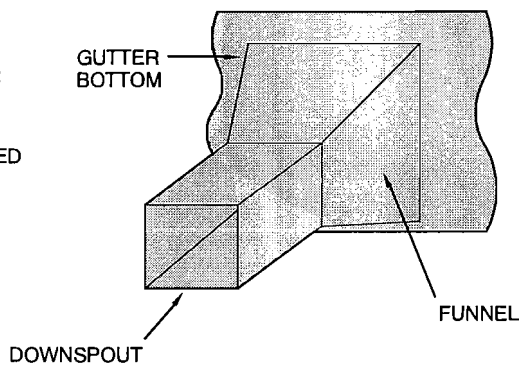


FIG 1-33E

FIGURE 1-33 DOWNSPOUT — GUTTER CONNECTIONS

## SHOP-FABRICATED DOWNSPOUT HANGERS

Figure 1-35 illustrates several shop-fabricated downspout hangers. Other styles may be used. Ornamental bands may be used in conjunction with any of these hangers.

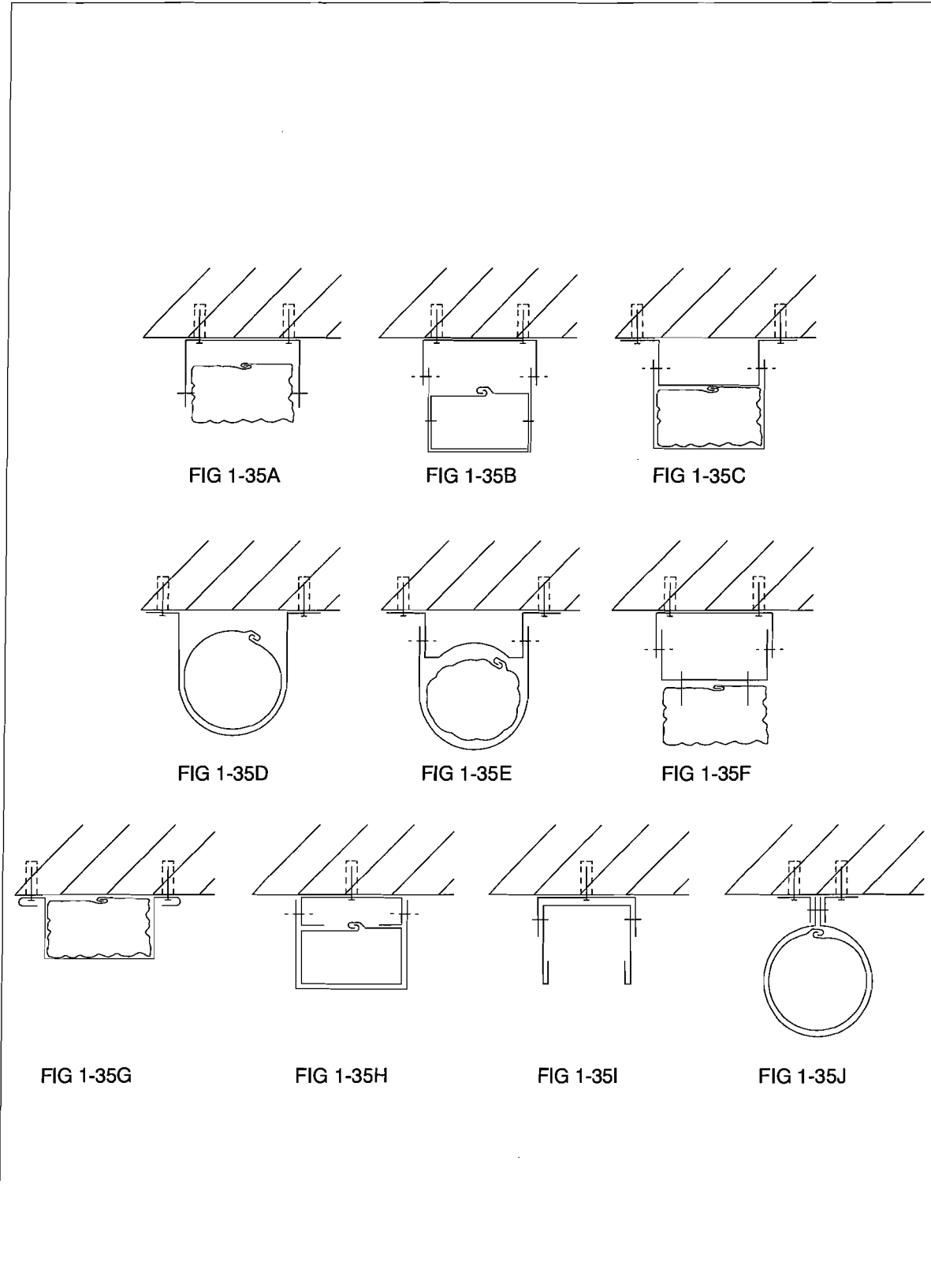
Figures 1-35A, B, C, and G show hangers used for rectangular or square downspouts. Figures 1-35D, E, and J have been designed for round downspouts. These hangers should be fabricated of  $\frac{1}{16} \times 1$  in. (1.6  $\times$  25 mm) flat stock (minimum) and be of the same material as the downspout.

## FIGURE 1-35

Figure 1-35H shows a light-gage hanger for square or rectangular downspouts. This hanger must be removed to repair the downspout. The hanger should be of the same material as the downspout but two gages heavier.

The fasteners for these hangers could be screws, bolts, or blind rivets. To reduce clogging, use fasteners with minimal penetration length.

Downspouts of 10 ft (2.5 m) or less shall have two straps of support, and longer downspouts shall be supported at 10 ft (2.5 m) maximum intervals.



**FIGURE 1-35 SHOP-FABRICATED DOWNSPOUT HANGERS**

## FORMED GRAVEL-STOP-FASCIA — JOINT SYSTEMS

## FIGURE 2-5

Figure 2-5 illustrates three different joints for formed gravel-stop-fascia systems. Soldered or welded joints are not recommended, except at corners, because they offer no provision for expansion and contraction.

Figure 2-5A shows a gravel-stop installed with a  $\frac{1}{4}$  in. (6.4 mm) opening between sections. This opening is covered by a 6 in. (152 mm) cover plate formed to the profile of the gravel-stop. The cover plate is embedded in compatible sealant, nailed through the opening between the gravel-stop sections, and loose locked to the drip edge.

Detail 1 shows the notch necessary in the concealed drip edge at a lap.

Figure 2-5B shows a lap joint for gravel-stop. The joint should be set in compatible sealant and lapped 4 in. (102 mm). Lap joints should not be used where the face exceeds 4 in. (102 mm).

Figure 2-5C shows a gravel-stop installed using a 6 in. min (152 mm) back-up plate. The back-up plate is nailed in place before the gravel-stop is installed. Mastic is applied, and the gravel-stop set in place with a  $\frac{1}{4}$  in. opening between sections. The back-up plate must be formed to the exact profile of the gravel-stop. Adding a cover plate is an alternative (from Figure 2-5A).

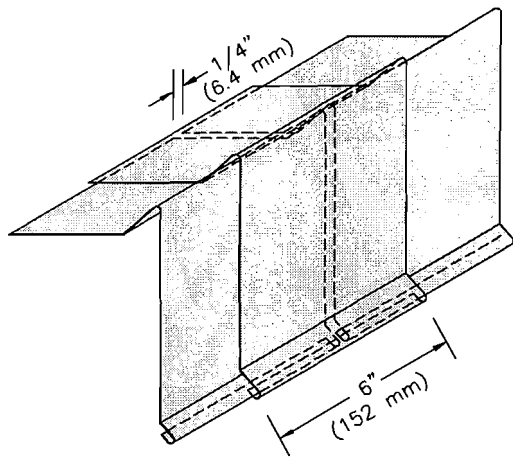


FIG 2-5A

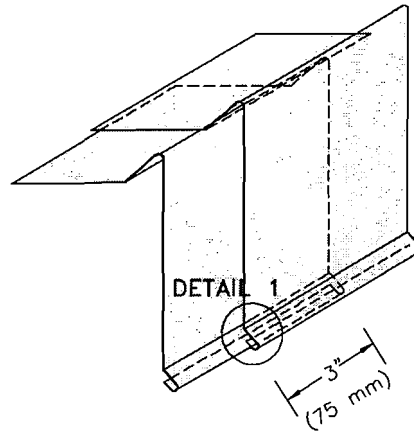
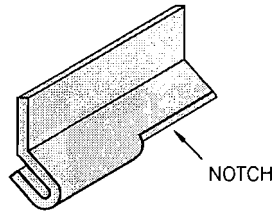


FIG 2-5B



DETAIL 1

ALL JOINT LAPS  
TO BE SEALED

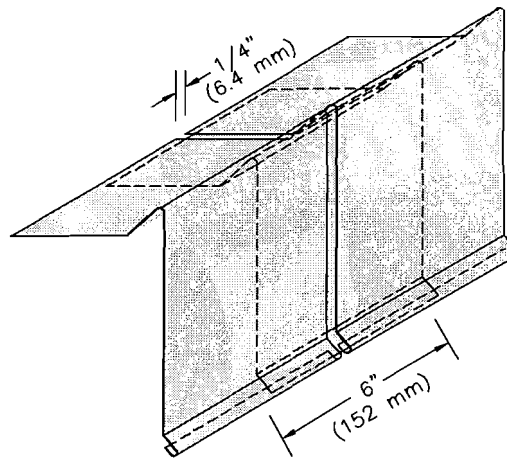


FIG 2-5C

FIGURE 2-5 FORMED GRAVEL-STOP-FASCIA — JOINT SYSTEMS

**METAL COPING (GENERAL)**

The horizontal top surface of a wall is the most vulnerable point for water to penetrate. This is especially true of masonry walls. The most practical and attractive way

to waterproof this vulnerable spot is to cap the wall with formed metal coping.

**FORMED METAL COPINGS — DESIGN DATA**

Figure 3-1 shows a typical coping installed on a masonry wall. Continuous blocking that is sloped toward the interior roof side must be securely anchored to the top of the wall. An appropriate underlayment must go over the blocking past the wall-to-blocking joint and then the cleats and coping are fastened to the blocking.

Continuous cleats are used on the side away from the roof—the exterior face side. On the interior roof side, the copings can be fastened through oversized holes located 24 in. (610 mm) OC with screws and watertight washers. Copings can be installed with continuous cleats on both sides of the coping. However, a coping that can be snapped on may also have enough flexibility to either snap off or admit water in some circumstances.

The coping is generally formed in 10 ft (3 m) sections and joined to allow for longitudinal expansion. Corners on copings should be mitered, lap-seamed, and sealed. On wider copings, stiffening type joints should be specified.

Sample coping shapes are shown in Figure 3-4. These combinations of corners, joints, and edges are representative.

See Figure 3-5 to 3-9 for installations. Recommended gages for formed copings are shown in Table 3-1 and are based on copings that have continuous backing. Thicker metal would be necessary for intermittent support and joint selection would be more limited.

The final selection of a coping design involves study of the service, exposure, thermal expansion, material durability, forming capability, wind uplift, and maintenance needs.

**FIGURE 3-1**

All single lap joints should be 3 in. (76 mm) minimum width. All back-up plates should be 6 in. (152 mm) width. All cover plates should be 6 in. (152 mm) minimum width.

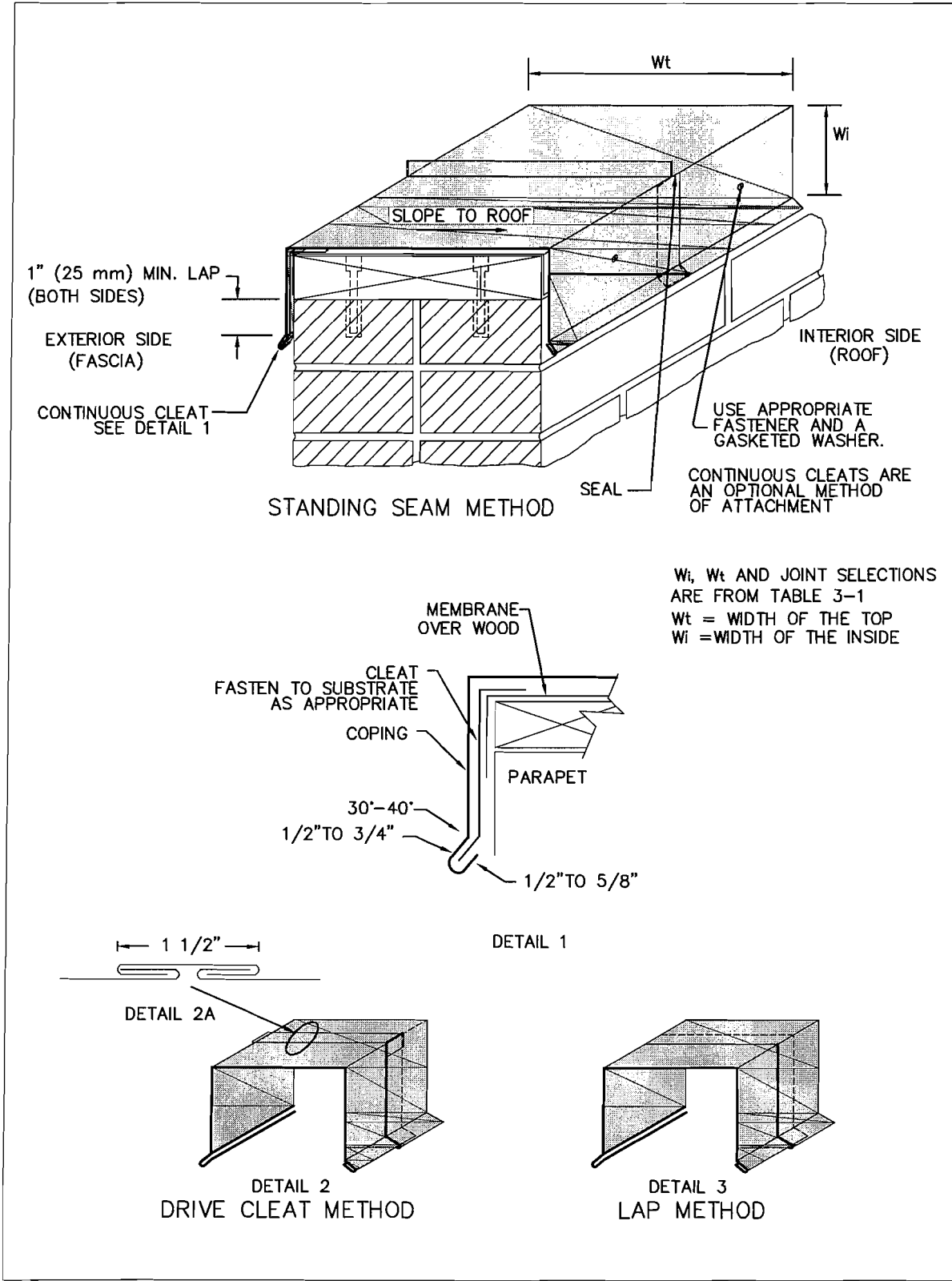
Caulking is NOT indicated along either of the lower edges, intentionally. The only place sealing should be applied to a coping system is at the overlap of certain types of expansion joints—primarily flat, overlapping type joints—and at mitered corners that use folded seam construction. Since the coping and wall will expand at different rates, if sealant were continuously applied along the lower coping edges that sealant would be unlikely to remain adhered to both the wall and coping on a long-term basis.

If it were possible to completely and successfully seal along both the inside and outside lower edges of a coping, moisture could not escape. After a rain, sun-driven vapor pressure would force moisture up the wall and condensate would form under the coping and underlayment, drain down the “legs” of the coping and accumulate anywhere the caulking created an effective dam.

The most likely side of coping to be subject to wind-driven rain penetration is the outside edge but the continuous cleat on the outside edge is fastened against the wall and forms an effective block to wind-driven rain from that side.

If a designer requires that a sealant or sealing material be applied along a coping, between the wall and continuous cleat is the only appropriate location. Sealing the lower edge of copings or the cleats is not a recommended design practice.





**FIGURE 3-1 FORMED METAL COPINGS — DESIGN DATA**



Metal Thickness (Nom.)				Joint (J) for Top Width (W <sub>T</sub> )				Joint (J) for Interior / Exterior Fascia Dimension	
S/S gage (mm)	Al in. (mm)	Cu oz. (mm)	Steel* gage (mm)	6" Max. (150 mm)	Over 6" to 12" (300 mm)	Over 12" to 18" (450 mm)	Over 18" (460 mm)	9" Max. (230 mm)	Over 9" to 12" (300 mm)
28 (.38)	.025 (.64)	12 (.41)	26 (.55)	ALL	ALL	NONE	NONE	ALL	8-12
26 (.46)	.032 (.81)	16 (.55)	24 (.70)	ALL	ALL	5-12	8-11	ALL	8-12
24 (.58)	.040 (1.0)	20 (.69)	22 (.85)	ALL	ALL	5-12	5-9,12	ALL	8-12
22 (.74)	.063 (1.6)	24 (.82)	20 (1.0)	1-10,12	1-10,12	1-10,12	5-9,12	1-7,9,11,11A,12	1-7,9-12
20 (.89)	.080 (2.0)	32 (.92)	18 (1.3)	1-7,12	1-7,12	1-7,12	5-7,12	1-7,11A,12	1-7, 10-12
18 (1.2)	.100 (2.5)	48 (1.6)	16 (1.6)	1-7,12	1-7,12	1-7,12	5-7,12	1-7,11A,12	1-7, 10-12
16 (1.5)	.125 (3.2)		14 (2.0)	2,4,5,12	2,4,5,12	2,4,5,12	5-7,12	2, 4, 5, 11A, 12	2, 4, 5, 12
.075 (1.9)			12 (2.8)	2,4,12	2,4,12	2,4,12	5-7,12	2, 4, 5, 11A, 12	2, 3, 5, 12
.105 (2.7)			10 (3.5)	2,4,12	2,4,12	2,4,12	5-7,12	2, 4, 5, 11A, 12	2, 4, 5, 12

\*Galvanized or coated 1" = 25 mm

J1	J2	J3	J4	J5	J6	
3" LAP	BUTT + BACK-UP PLATE	4" JOGGLE (OFF-SET FLUSH)	BUTT + COVER PLATE	6" COVER + 6" BACKUP PLATES	T & G	
J7	J8	J9	J10	J11	J11A	J12
T & G FLUSH	STDG SEAM	1" DRIVE	3/4" HOOK SEAM	3/4" INSIDE SLIP (POCKET)	3/4" S SLIP	DBL S

**Table 3-1 Coping Design**

NOTE:

Some cover plates slips and drives maybe fabricated with thickness lighter than the base coping material used. (J<sub>2</sub>, J<sub>4</sub>, J<sub>5</sub>, J<sub>6</sub>, J<sub>7</sub>, J<sub>9</sub>, J<sub>11A</sub>, J<sub>12</sub>)

## COUNTER FLASHING SYSTEMS (GENERAL)

Careful consideration must be given to flashing systems where a roof joins a wall. The base flashing system must keep water from entering the building and must be designed to provide for building movement. Counter flashing serves to turn water from a wall onto the roof or base flashing.

Metal counter flashing should be used in conjunction with composition base flashings. Composition base flashing should be applied according to the roofing manufacturer's specification.

It is recommended that base flashings be applied over a cant and extended up the wall a minimum of 10 in. (254 mm) above the roof line. Metal counter flashing is installed so that a minimum of 4 in. (100 mm) of the base flashing is covered. Metal base flashings are used with shingle or metal roofs. Metal base flashing is not recommended for use with membrane roofing systems. A metal base flashing may be used over a composition

flashing as a protective cover in locations where the base flashing may be damaged by traffic.

Joints in flashing should be lapped 4 in. (100 mm).

Removable counter flashing is cost effective for work installation sequencing and for roofing systems repairs. All membrane roofing should have removable counter flashing.

All counter flashing receivers should be elevated 10 in. (254 mm) above the finished roof. The lower edge of metal counter flashing should be 1 in. (25 mm) minimum above a cant.

All reglets must be capable of supporting flashing.

In high wind areas, clips can be specified for the lower edge of the counter flashing. These would be visible on the edge.

## COUNTER FLASHING SYSTEMS — INSTALLATION

Figure 4-4A illustrates the installation of a complete metal counter flashing system using a metal flashing receiver.

The counter flashing is notched and lapped at inside corners and joints, and seamed at outside corners. The flashing receiver is notched and lapped 3 in. (76 mm) at corners and joints.

After the counter flashing is installed, bend the receiver at a 45 degree angle to provide a drip edge.

This type of counter flashing may be removed with comparative ease when roofing is replaced.

Figure 4-4B shows an alternative receiver that is set as the wall is built. The counter flashing is easily inserted into a spring lock condition as shown in Detail 1.

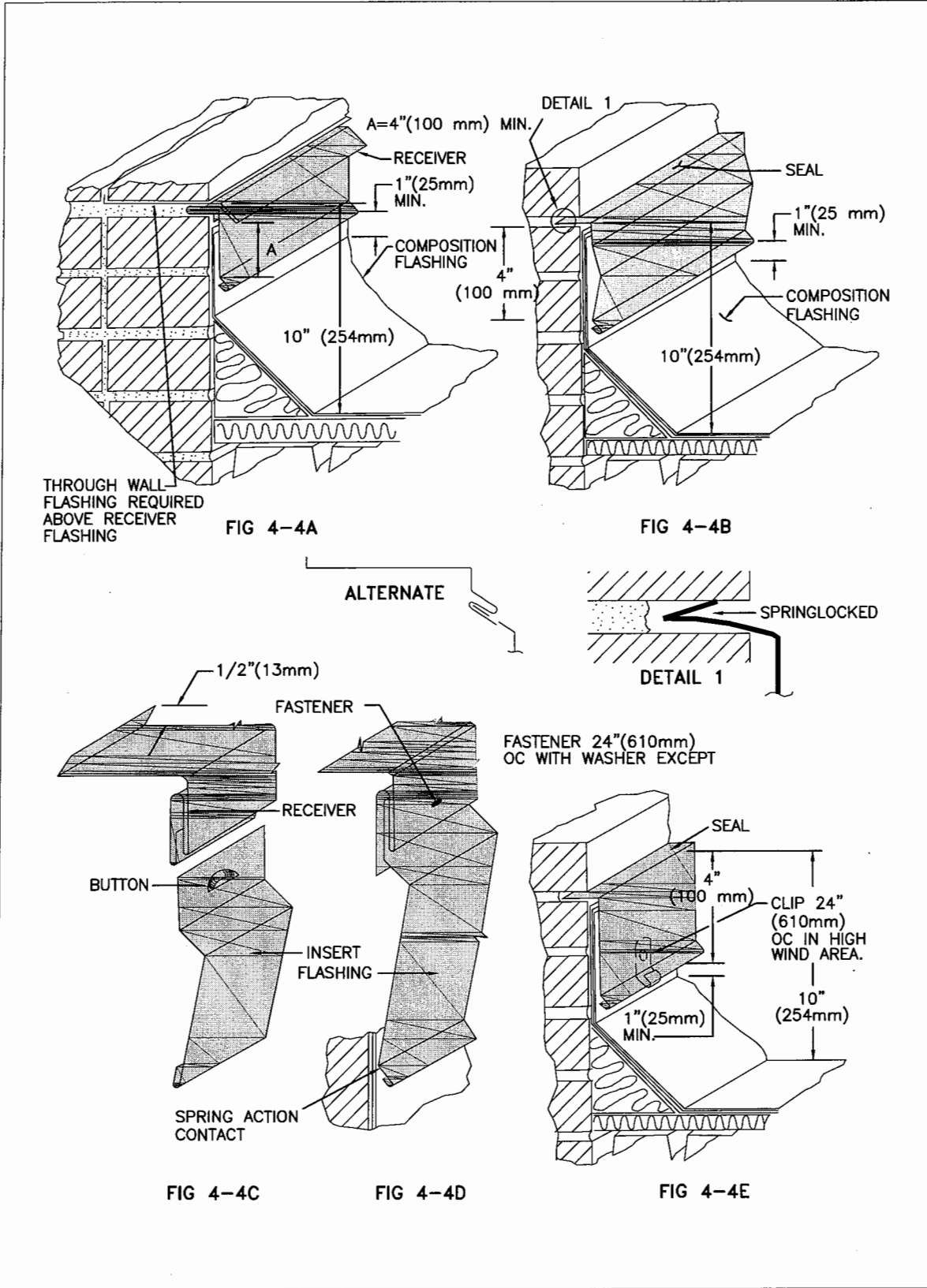
Figures 4-4C and D illustrate other alternatives for using two-piece counter flashings on new or existing

## FIGURE 4-4

construction. Figure 4-4C shows a snaplock receiver. Figure 4-4D shows a pocket receiver through which fasteners are installed at 24 in. (610 mm) maximum spacing after the counter flashing is inserted.

Figure 4-4E shows a method of installing a counter flashing in an existing masonry wall. Cut a reglet in the masonry joint to a depth of at least 1½ in. (38 mm). Insert the counter flashing into the reglet and hold it in place by spring action. See Detail 1. Then fill the reglet with a sealant. Notch and lap the counter flashing at corners and joints.

The recommended minimum gage for counter flashing shown in Figure 4-4 is 16 oz. (0.55 mm) copper, 26 ga (0.5512 mm) galvanized steel, or 26 ga (0.477 mm) stainless steel. Flashing receivers should be of 16 oz. (0.55 mm) copper, 26 ga (0.477 mm) galvanized steel, or 28 ga (0.396 mm) stainless steel.



**FIGURE 4-4 COUNTER FLASHING SYSTEMS — INSTALLATION**

## COUNTER FLASHING SYSTEMS — INSTALLATION

Figure 4-5A shows counter flashing installed using a metal reglet which is furnished by the sheet metal contractor for installation by others. The reglet is attached to the forms before the concrete is poured. Reglet corners should be mitered.

The counter flashing is held in place by wedges and the reglet filled with a sealant.

The counter flashing is notched and lapped at inside corners and joints. Outside corners are notched and seamed.

The Alternate Detail shows another method of installing counter flashing. The counter flashing is snapped in place and the reglet filled with a compatible sealant.

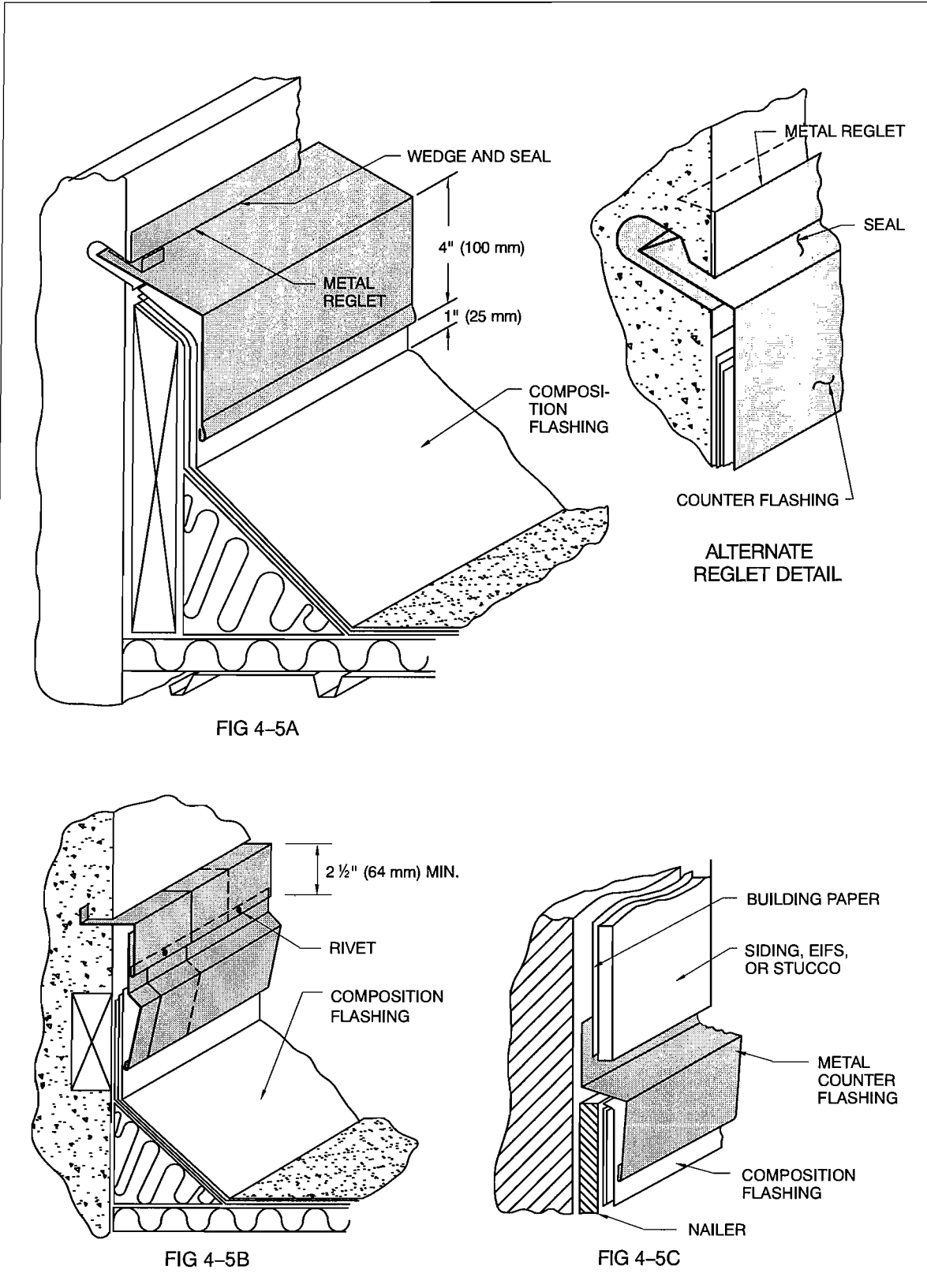
Reglets installed in concrete forms usually need to be fastened 12 in. (305 mm) OC to avoid being dislodged

## FIGURE 4-5

by vibration of concrete mix. Figure 4-5B shows a complete counter flashing system for use with poured concrete walls. The flashing receiver is furnished by the sheet metal contractor for installation by others. This receiver is attached to the forms before the concrete is poured. The down leg of the receiver is butted at corners. After the roofing and composition flashing are in place, the counter flashing is riveted to the receiver. The counter flashing is lapped at all joints and is lapped and sealed at corners.

Figure 4-5C shows a counter flashing method that can be used for exterior wall coverings of several types, both metallic and non-metallic.

The recommended minimum gage for counter flashing shown in this figure is 16 oz. (0.55 mm) copper, 26 ga (0.477 mm) stainless steel, or 26 ga (0.5512 mm) galvanized steel.



**FIGURE 4-5 COUNTER FLASHING SYSTEMS — INSTALLATION**

## BUILDING EXPANSION JOINTS—ROOF

## FIGURE 5-5

Figure 5-5A illustrates a roof expansion joint installed on a wood curb extending 8 in. (203 mm) (minimum) above the roof.

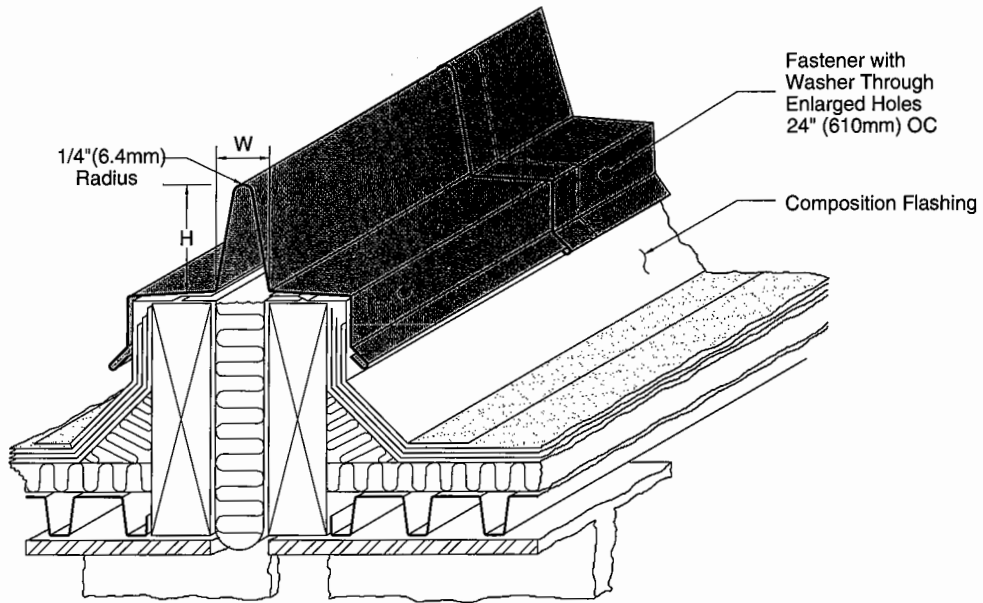
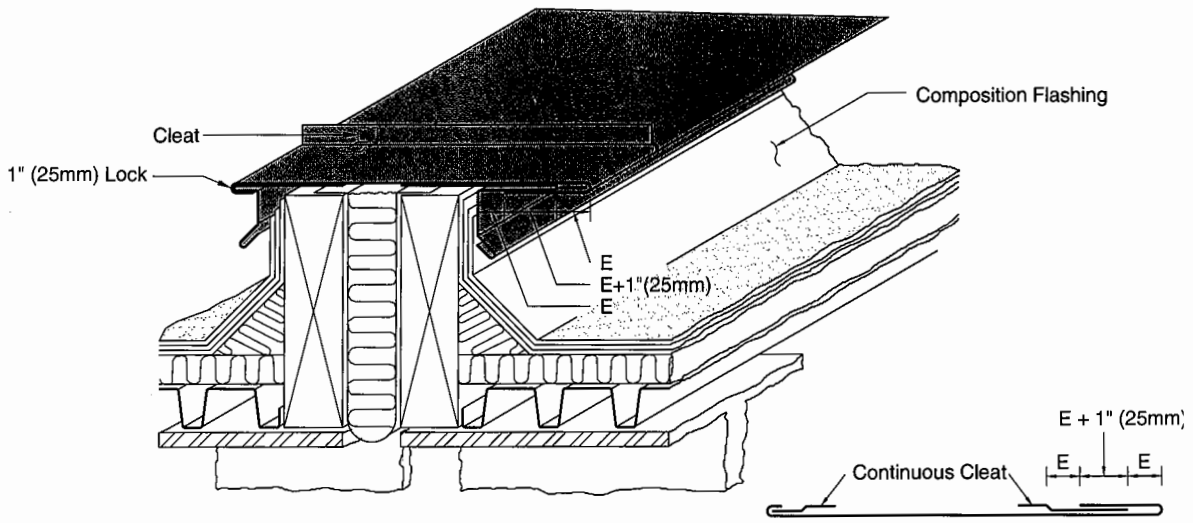
After composition base flashing is in place, the flanges for the expansion joint are attached to the wood curbs using fasteners with washers through slotted holes 24 in. (610 mm) o.c. The cap is locked to flanges to complete the expansion joint. Sections are generally formed in 10 ft. (3.1 m) lengths, lapped and sealed.

In Figure 5-5B the expansion joint is fabricated in one piece and attached to the wood curb with

fasteners and washers through the slotted holes 24 in. (610 mm) o.c. Sections are generally formed in 10 ft. (3.1 m) lengths, lapped and sealed.

The height (H) of the expansion bellows should be twice the horizontal working width (W) of the expansion joint.

Minimum recommended gage for expansion joint shown on this plate is 26 ga (.477 mm) stainless steel, 16 oz. (.55 mm) copper, 24 ga (.607 mm) galvanized iron, or 0.040 in. (1.016 mm) aluminum.



**BUILDING EXPANSION JOINTS-ROOF**

**FIGURE 5-5**





## BUILDING EXPANSION JOINTS — ROOF-TO-WALL

## FIGURE 5-6

Expansion joints on this plate are designed to allow independent movement of the roof structure. This joint must also be used at the junction of low and high rise buildings. Metal is used to waterproof these joints.

In Figure 5-6A the expansion joint is between a concrete curb and a concrete wall. Composition base flashings are brought up over the top of the curb. A counter flashing is nailed through the base flashing into the wood nailer.

The expansion joint cover is anchored to the concrete wall and extends past the counter flashing to allow for roof movement. In high wind areas the sloped cover should be of a thicker metal to resist wind uplift.

Joints between lengths in this cover are lapped and sealed. Corners are mitered and sealed. Counter flashing

over expansion joint cover is installed as shown on Figure 4-4. The expansion joint in Figure 5-6B is between a wood curb and a masonry wall. Composition base flashings are brought up over the top of the curb. The counter flashing is formed to serve also as a continuous cleat. Counter flashing is nailed through the base flashing into the wood curb.

The expansion joint cover is hooked over the continuous cleat and inserted into a flashing receiver. See Figure 4-4A for detail of receiver. Joints between lengths in the cover are lapped and sealed. Corners are mitered and sealed.

Minimum recommended gage for expansion joint cover is 22 ga (0.759 mm) galvanized steel, 16 oz. (0.55 mm) copper, 0.050 in. (1.27 mm) aluminum, and 24 ga (0.635 mm) stainless steel, or coated metal.

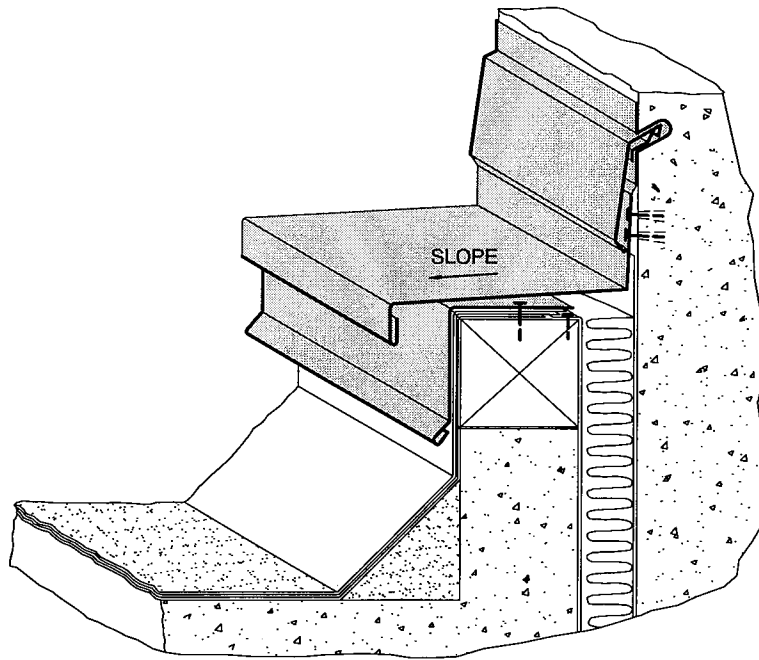


FIGURE 5-6A

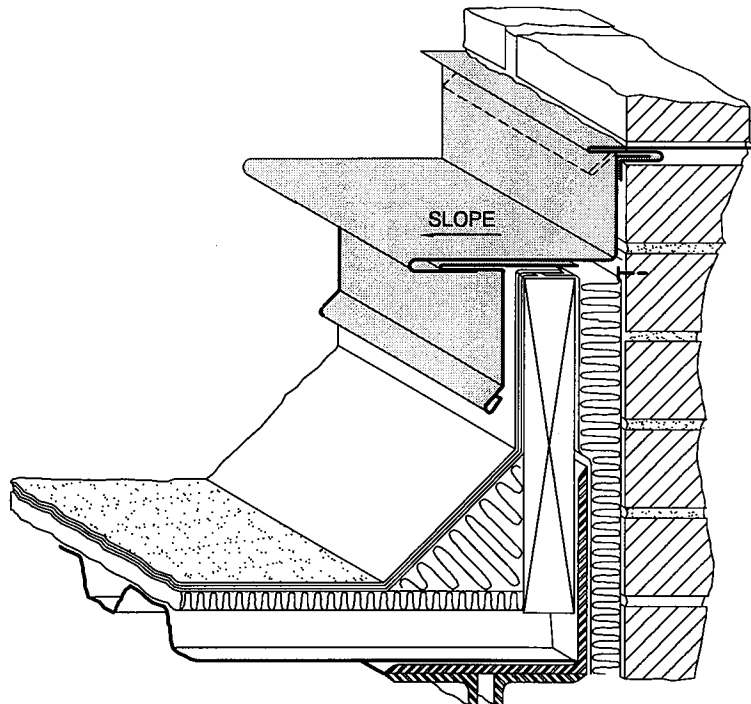


FIGURE 5-6 B

FIGURE 5-6 BUILDING EXPANSION JOINTS — ROOF-TO-WALL

## ROOF PENETRATION FLASHING — PIPES

Figure 8-9A illustrates a method for flashing a roof opening without a curb. This method is recommended only if the pipes are turned horizontally within 24 in. (610 mm) of the roof and the opening is not greater than 18 × 18 in. (460 × 460 mm).

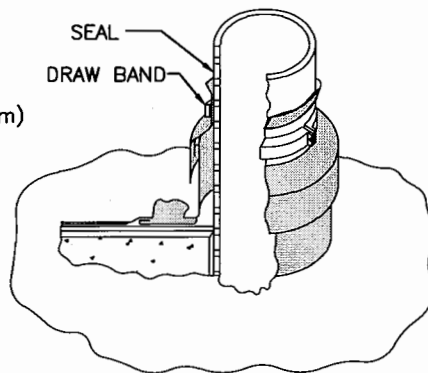
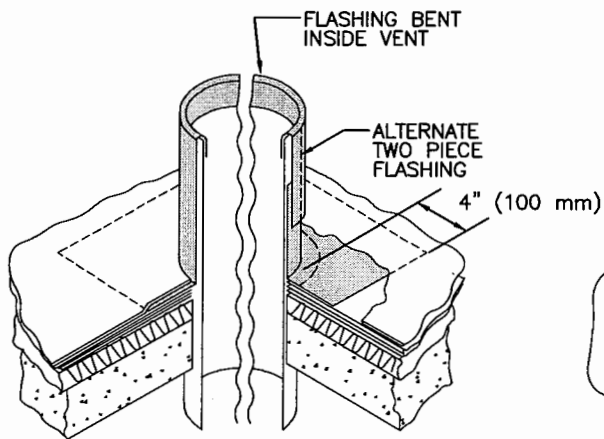
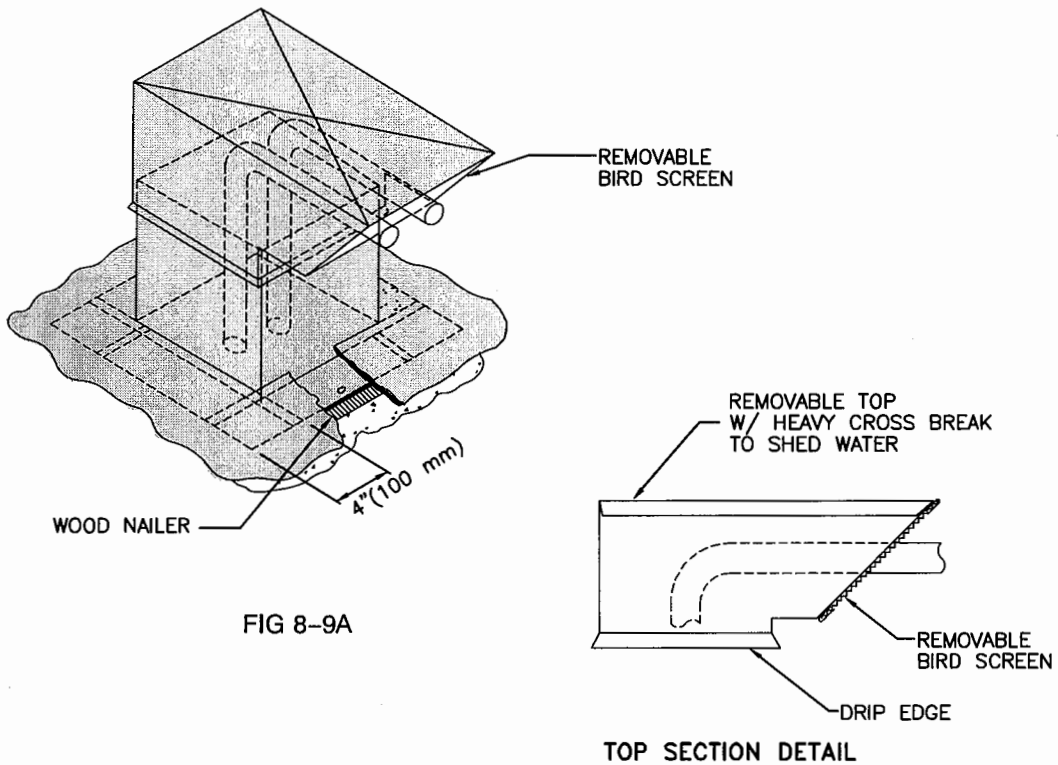
The flashing is made in pieces with base portion being flanged 4 in. (100 mm) onto the roof. The flange is fastened through the roofing felts and is then stripped in by the roofer. The top section is a formed metal hood over the metal pipe. The pipes should be sloped away from the penetration.

The recommended minimum gage for flashing in Fig-

## FIGURE 8-9

ure 8-9A is 16 oz. (0.55 mm) copper, 26 ga (0.477 mm) stainless steel, or 24 ga (0.607 mm) galvanized steel.

Figure 8-9B illustrates two methods of flashing a vent pipe. The flange extends 4 in. (100 mm) on the roof and is stripped in by the roofer. Turn the top of the flashing down inside the vent pipe. The flashing may be of a one-piece or a two-piece style. When a vent pipe extends above the roof so far that it is impractical to completely cover it with flashing (Figure 8-9B), it is recommended that it be flashed as shown in Figure 8-9C, minimum 2 in. (50 mm). The minimum height of the base flashing in Figures 8-9B and 8-9C is 8 in. (205 mm) above the roof's surface.



**FIGURE 8-9 ROOF PENETRATION FLASHING — PIPES**

## EQUIPMENT SUPPORT FLASHING

Figure 8-11A shows a method for flashing pipe stanchions. Attach a watertight counter flashing (umbrella) over a stripped-in metal base (roof jack) flashing on a concrete deck. The roof jack top should be 8 in. (203 mm) above the roof. The umbrella should lap the jack 4 in. (100 mm) and have ¼ in. (6.4 mm) minimum clearance.

Figure 8-11B illustrates a method for flashing equipment supports. Install composition base flashing over a cant and up 4 in. (100 mm) on the side of the support. Fabricate metal flashing to cap the support and extend 4 in. (100 mm) over the base flashing. Seam and solder all corners. This flashing may be used to cover columns that have been stubbed through the roof.

The bottom elevation of support structures and equipment supported should be selected by the designer with regard to access to the roof surface for maintenance and repair. Table 8-1 is a guide.

The designer should consider ease of access to the roof's surface for maintenance and repair when selecting the height of the equipment support structures. Consult Table 8-1.

Figure 8-11C illustrates the use of a pitch pan to flash a small penetration through the roofing where it is impossible to use other types of flashings.

## FIGURE 8-11

Extend the flange onto the roof 4 in. (100 mm) and fasten it over the roofing felts. The flange is stripped in by the roofer. The sides should extend up from the roof a minimum of 4 in. (100 mm). All joints should be seamed and sealed.

A pitch pan should be 2 in. (50 mm) greater in length and width than the support it is flashing. It is filled by the roofer. A bonnet flashing should be used to cover a pitch pan. It is easier to fit this to a pipe stanchion than to other shapes of support.

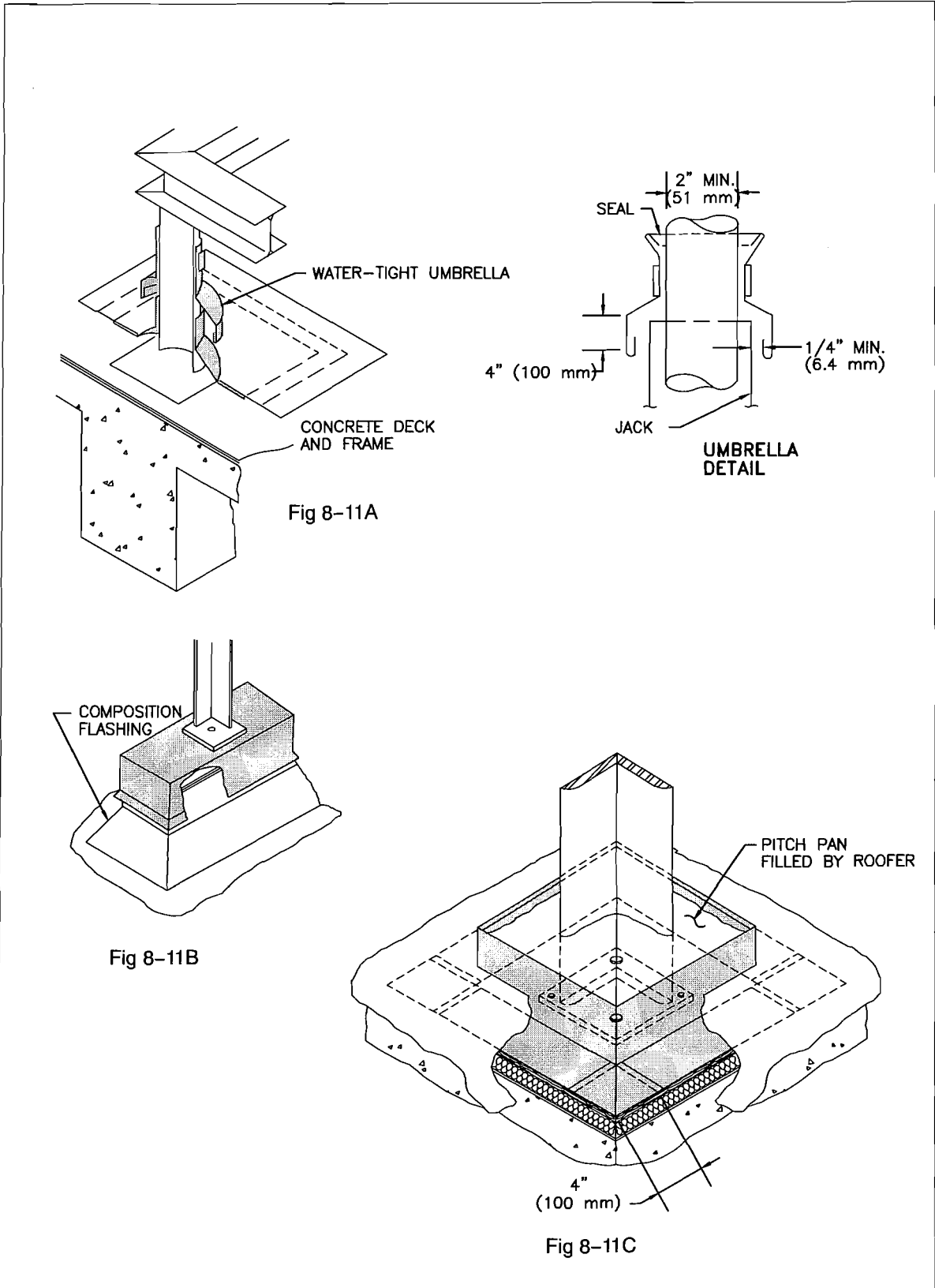
**Precaution:** Pitch pans are not inherently maintenance free. Building managers should set up a program of routine inspection and maintenance.

Manufactured rubber boots that effectively seal against supports and shield the roof jacks are acceptable as umbrellas. Such products must resist ozone and ultraviolet rays and have a suitable service temperature.

The gage of metal used will depend on the size of the flashing. The recommended minimum gage is 16 oz. (0.55 mm) copper, 26 ga (0.477 mm) stainless steel, or 24 ga (0.607 mm) galvanized steel.

Width of Equipment		Height of Legs	
inches	mm	inches	mm
Up to 24	Up to 610	14	360
25 to 36	635 to 910	18	460
37 to 48	930 to 1220	24	610
49 to 60	1240 to 1520	30	760
60 and wider	1520 and wider	48	1220

**Table 8-1 Rooftop Equipment Elevation**



**FIGURE 8-11 EQUIPMENT SUPPORT FLASHING**

## ALLOWANCES FOR GUTTER EXPANSION

## FIGURE 1-5

It is essential to provide expansion joints in all gutter installations to allow for movement due to temperature changes. The following provisions apply equally to eave and built-in gutters.

In planning expansion joint locations, recognize that an expansion joint acts as a dam in the gutter. This will influence the number and placement of downspouts and drains.

Figures 1-5A to G represent basic arrangements for expansion control in both hanging gutters and built-in gutters. The system of gutters, downspouts, and their supports must have the flexibility and strength to accommodate expansion.

If the downspout is rigidly connected to the gutter and it is anchored at the gutter outlet, anchoring the gutter at that point is necessary unless the connection will withstand the expansion force.

If the downspout and gutter outlet are designed for flexibility, such as with a flexible section of downspout or with an open vented connection, plan for relative movement of the components. See Figures 1-5G and 1-5H. Figure 1-5G shows a downspout overflow vent with some provision for expansion movement between the gutter and the downspout. Figure 1-5C illustrates that the rule of 50 ft. (15 m) maximum length of gutter per downspout is satisfied by locating two gutter outlets at

the same anchor point. No expansion joint is used in this arrangement. One efficiently draining, funnel shaped gutter outlet and one downspout might be used at this anchor point with no dam in the gutter. See Figure 1-5H.

Figure 1-5D indicates that an expansion joint should be located no more than "X" or "Y" from an inside or outside gutter corner, where X + Y is a maximum of 50 ft (15 m). Locating a downspout at the corner avoids waterflow around a corner, which is less efficient.

The "E" value, Table 1-7, gives expansion joint dimensions for Section A-A of Figures 1-5, 1-6, 1-7, 1-8 and 1-10. Expansion coefficients for commonly used metals are given in Appendix A, Table A-8. In Table 1-7, the 50 ft (15 m) allowances are for the Figure 1-5A arrangement with 50 ft (15 m) distance between downspouts. The 10 ft (3 m) allowances are for the Figure 1-5B situation with downspouts centered in two 10 ft (3 m) sections of built-in gutter. For other lengths, interpolate between the tabled values.

Dimension letters other than E shown in Section A-A and in the table below the double line are:

- B – Width of the cap for the expansion joint.
- C – Flange turned on the upper part of the gutter end.
- D – Flange turned on the cap.

Temp. °F, (C)	Copper or Stainless Steel		Aluminum		Steel	
	10 ft. (3 m)	50 ft. (15 m)	10 ft. (3 m)	50 ft. (15 m)	10 ft. (3 m)	50 ft. (15 m)
E@170 (77)	1/16" 2 mm	3/16" 5 mm	1/16" 2 mm	3/16" 5 mm	1/16" 2 mm	3/16" 5 mm
120 (49)	1/8" 3 mm	1/2" 13 mm	3/16" 5 mm	5/8" 16 mm	1/8" 3 mm	7/16" 11 mm
100 (38)	3/16" 5 mm	5/8" 16 mm	3/16" 5 mm	13/16" 21 mm	1/8" 3 mm	1/2" 13 mm
75 (24)	3/16" 5 mm	3/4" 19 mm	1/4" 6 mm	1 1/16" 27 mm	3/16" 5 mm	5/8" 16 mm
35 (1.7)	1/4" 6 mm	15/16" 24 mm	5/16" 8 mm	1 3/8" 35 mm	3/16" 5 mm	3/4" 19 mm
0 (-17)	1/4" 6 mm	1 1/8" 29 mm	3/8" 10 mm	1 1/16" 43 mm	3/16" 5 mm	13/16" 21 mm
B	2" 50 mm	3 1/4" 83 mm	2 3/4" 70 mm	4 1/2" 114 mm	1 3/4" 44 mm	2 1/2" 64 mm
C	1/2" 13 mm	13/16" 21 mm	1 1/16" 17 mm	1 1/8" 29 mm	7/16" 11 mm	5/8" 16 mm
D	1/2" 13 mm	13/16" 21 mm	1 1/16" 17 mm	1 1/8" 29 mm	7/16" 11 mm	5/8" 16 mm

**Table 1-7 Installation Values For "E" of Figures 1-5, 1-6, 1-7, 1-8, 1-9 and 1-10**