

# **2024 ROOF REMEDIATION SPECIFICATIONS**

For

**LIVONIA PUBLIC SCHOOLS  
FRANKLIN HIGH SCHOOL  
LIVONIA, MICHIGAN**

Prepared For

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

RTA PROJECT NO. 21-032  
SEPTEMBER 21, 2023

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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: **Franklin High School and Cleveland Elementary 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 “Franklin High School and Cleveland Elementary Roof Replacement” will be received until 12:00 p.m. on the 11<sup>th</sup> day of October 2023, 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 starting at Franklin High School, 31000 Joy Road, Livonia, MI 48150, on **Tuesday, October 3, 2023, at 10:00 a.m.** Please meet at Door 1.

The Bid Opening will take place at **12:00 p.m.** on the **11th day of October 2023**, in the Patriot Room, 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 \$28,000.00 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

**“Franklin High School and Cleveland Elementary 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**

**Franklin High School and Cleveland Elementary 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 \$28,000.00.

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**

**Franklin High School and Cleveland Elementary 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 \_\_\_\_\_

**AFFIDAVIT OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT**  
**Michigan Public Act No. 517 of 2012**

The undersigned, the owner or authorized officer of the below named contractor (the "Contractor"), pursuant to the compliance certification requirement provided in the Livonia Public Schools' (the "School District") Request For Proposals For **Franklin High School and Cleveland Elementary Roof Replacement Bid** (the "RFP"), hereby certifies, represents and warrants that the Contractor (including its officers, directors and employees) is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the "Act"), and that in the event Contractor is awarded a contract as a result of the aforementioned RFP, the Contractor will not become an "Iran linked business" at any time during the course of performing the work or any services under the contract.

The Contractor further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the School District's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date it is determined that the person has submitted the false certification.

**CONTRACTOR:**

\_\_\_\_\_

(Name of Contractor)

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

Its: \_\_\_\_\_

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

STATE OF \_\_\_\_\_ )  
 )ss.

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

This instrument was acknowledged before me on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by\_\_\_\_\_.

\_\_\_\_\_

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

\_\_\_\_\_ County, \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

Acting in the County of : \_\_\_\_\_

**EQUAL OPPORTUNITY STATEMENT**

**Franklin High School and Cleveland Elementary 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 **Franklin High School and Cleveland Elementary Roof Replacement 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: \$ \_\_\_\_\_

BID PROPOSAL FORM

Name of Bidder \_\_\_\_\_

FIRM NAME AND ADDRESS OF BIDDER - This bid is submitted in the name of:

FIRM NAME \_\_\_\_\_

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

\_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

BY \_\_\_\_\_

*(SIGNATURE)*

TITLE \_\_\_\_\_

SIGNED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_

BID PROPOSAL FORM

Name of Bidder \_\_\_\_\_

TO: LIVONIA PUBLIC SCHOOLS  
15125 FARMINGTON ROAD  
LIVONIA, MICHIGAN 48154  
Attn: MR. PHILLIP FRANCIS

PROPOSAL FOR: 2024 ROOF REMEDIATION  
FRANKLIN HIGH SCHOOL  
LIVONIA, MICHIGAN

The undersigned having examined the Bidding Documents, including the Invitation to Bid, General Conditions, Technical Specifications and Plans, and being familiar with all conditions affecting this proposed Project, hereby proposed to furnish all labor, materials, tools, equipment, utilities, transportation or other facilities and services necessary to perform and complete the construction of the proposed project in accordance with the Bidding Documents, for the sums and under the conditions as follows:

**BASE BID** – The undersigned agrees to the performance of the Work as Stated for the Base Bid Sum of:

**Franklin High School**

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

\_\_\_\_ Number of work days to complete the project

Costs included within the lump sum base bid price to provide pollution insurance as shown within Article 5 of the contract:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

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).

(For the above, the amount shall be in both words and figures with the amount in words governing in the event of discrepancy.)

UNIT PRICES & ALTERNATES - 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 Price 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).

UNIT PRICES NO. 1 - (Wood Nailers) Add the sum of:

1" x 4" \_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per lineal foot

1" x 6" \_\_\_\_\_ Dollars (\$\_\_\_\_\_)

BID PROPOSAL FORM

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" Thick Plywood \_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per square foot

3/4" Thick Plywood \_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per square foot

UNIT PRICE NO. 2 - (Sheet Metal Plate)

Add the sum of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per square foot

UNIT PRICE NO. 3 - (Drain)

Add the sum of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per drain

UNIT PRICE NO. 4 - (Deck)

Add the sum of:

Steel \_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per square foot

Tectum \_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per square foot

UNIT PRICE NO. 5 - (1.5" insulation)

Add the sum of:

1.5 Insulation \_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
per square foot

BID PROPOSAL FORM

2.0 Insulation \_\_\_\_\_ Dollars (\$\_\_\_\_\_) per square foot

Tapered Insulation \_\_\_\_\_ Dollars (\$\_\_\_\_\_) per square foot

# INSTRUCTIONS TO BIDDERS

## 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 Invitation to Bid 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 by school/building 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 Proposal 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 – 2024 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 Invitation to Bid, 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.

## INSTRUCTIONS TO BIDDERS

3. Oral, telephone, telegraphic, 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 Contract 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 in behalf of any Bidder will be permitted subsequently by reason or error or oversight on the part of the Contractor, or on account of interferences by the activities of the Owner.

### 1.06 BIDDING DOCUMENTS

- A. 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



## INSTRUCTIONS TO BIDDERS

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.

### 1.07 BIDDING PROCEDURES

#### A. Form of Bids

1. Bids 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 filed 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 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.

## INSTRUCTIONS TO BIDDERS

- d. The remaining Bid Securities will be returned to the remaining Bidders within 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. Prior to the time and date designated for receipt of Bids, Bids submitted early may not be modified or withdrawn only by notice of the party receiving Bids at the place and prior to the time designated for receipt of Bids.

## 1.08 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 Invitation to Bid.

### 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 awards 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.

## INSTRUCTIONS TO BIDDERS

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 Bidder, if awarded a Contract will be required to agree to start active work on the Project June 20, 2022 and to be fully complete by August 22, 2022.

### 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.

## 1.09 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 the 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.

## 1.10 FORM OF CONTRACT BETWEEN OWNER AND CONTRACTOR

- A. A contract for the Work will be written on the Standard AIA Document A105, Standard Form of Agreement Between Owner and Contractor for Construction Projects, as modified where the basis of payment is a stipulated sum.

## INSTRUCTIONS TO BIDDERS

### 1.11 PERMITS

- A. Accepted Bidder will be required to obtain applicable building permits for the work of this project. The cost of the permits shall be included in the Base Bid.

**END OF INSTRUCTIONS TO BIDDERS**

# 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
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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 )*

## QUALITY CONTROL

### 1. FULL-TIME CONSTRUCTION OBSERVATION

- A. Beginning on the work start date and ending at construction completion, Roofing Technology Associates, Ltd., (RTA), will visit the site every workday to observe all phases of work, as defined below.

### 2. TIME AND SCHEDULE

- A. Contractor will be expected to meet any specified start and completion dates as set forth by the Owner. In the event the Owner has lost school days due to weather conditions or building issues that extend the school year, the Owner reserves the right to extend the start date out until the building is not being used for classes. This will not extend the completion date. This will be clarified during the pre-construction process if not sooner. Project once started are to be executed continuously without interruption unless approved by the consultant's office. Crew sizes are to be maintained within reason, as determined by the consultant, throughout the project as submitted in the approved contractor project work schedule.
- B. The schedule submitted by the Contractor will be used by the Owner for scheduling purposes of other events and projects that could be scheduled for the site. A work day is considered 8 hours of straight time work.
- C. To avoid confusion as to what is considered a "work day", a work day for this specification's purpose would be a day on which any type of roofing or sheet metal production (inclusive of required meetings, set-up, tear-down, punchlist, damage repairs and leak repairs for work areas) is performed. Days of inclement weather where the project foreman is on site securing materials and checking the integrity of the building are not to be considered working days.
- D. In the unlikely event the contractor does not complete the project(s) by the specified completion days, weekend mobilizations may be permitted with additional costs to the Owner and consultant to be covered by the Contractor. For example, the Owner's costs for custodial and security personnel, the consultant's time and any other costs will be the responsibility of the Contractor.

### 3. QUALITY CONTROL BUDGET

- A. Quality Control (inspection) costs have been established with the Owner directly. Schedule duration will be a factor in selecting a contractor as the Owner is paying for full-time on-site observation. NOTE: Contractor will be responsible for 100% of inspection cost if schedule duration exceeds working

days noted on bid. For example, if bidder states duration is 10 working days and project takes 15 working days to complete, the contractor is responsible for the cost of 5 days of on-site observations. **\$1,500 per day** will be deducted from the contract amount for days worked beyond the contractor's estimated work days.

**END OF SECTION**

### UNIT PRICES

State in the Bid Proposal Form, in the space provided, the amount to be added or deducted from the Base Bid for each Unit Price and shall include all material, labor, taxes, OHP, etc.

Unit Price No. 1 - Replace, as necessary and designated by the Owner's Representative, deteriorated wood nailers. The prices quoted shall be per lineal foot of wood nailer, installed including replacement labor and fasteners. Quote prices on the Bid Proposal Form for the following sizes:

1" x 4"  
1" x 6"  
1" x 8"  
2" x 4"  
2" x 6"  
2" x 8"  
2" x 10"  
2" x 12"  
½" plywood  
¾" plywood

Unit Price No. 2 - Install 18-gauge galvanized metal plates over small openings in the roof deck (less than 6-inches in diameter). The price quoted shall be per square foot of plate installed. Quote a price on the Bid Proposal Form.

Unit Price No. 3 – Replace, as necessary and designated by the Owner's Representative, deteriorated roof drains. The price quoted shall be per roof drain. The replacement roof drain shall be cast iron with a cast iron strainer and clamping ring to match the existing drain line size. Quote a price on the Bid Proposal Form including all materials and labor necessary to install the new drain per all local and state plumbing codes.

Unit Price No. 4 – Replace 1½-inch steel and Tectum deck as necessary and as directed by the Owner's Representative, to provide a structurally sound deck matching existing deck in configuration and thickness. The price quoted shall be per square foot cost, including replacement labor. Quote the price on the Bid Proposal Form.

Unit Price No. 5 – Replace, as necessary and designated by the Owner's Representative, deteriorated, wet or damaged insulation. The price quoted shall be per square foot of 1.5-inch. 2.0-inch thick and tapered polyisocyanurate insulation installed including replacement labor. Quote a price on the Bid Proposal Form.

## **TEMPORARY FACILITIES**

### **1. GENERAL**

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

### **2. ROADWAYS, DRIVES, PARKING AREAS AND SIDEWALKS**

2.01 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.

### **3. BARRICADES AND PROTECTION**

3.01 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.

3.02 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.

3.03 The Contractor shall do everything possible to protect the public, the workmen, the premises and adjoining property from injury or damage.

3.04 Properly protect all sidewalks, pavements, existing building areas, and 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.

### **4. VANDALISM**

4.01 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.

### **5. PROTECTION**

5.01 Provide and erect all required barricades and safety precautions in accordance with local, State and Federal Codes and other legal requirements.

- 5.02 Provide secure, weatherproof protection for existing buildings, finishes, walks, drives, landscaping, lawns, etc., to remain. Repair any damage to the satisfaction of the Owner.
- 5.03 Remove all protection and guards when work is completed and restore disturbed areas.
- 5.04 Whenever lifting materials or equipment over or near existing or occupied buildings, give advance notice and arrange to have any potentially endangered spaces vacated.

#### 6. TEMPORARY WEATHER PROTECTION

- 6.01 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.

#### 7. RUBBISH DISPOSAL, FIRE SAFETY

- 7.01 Trash containers shall be provided by the bidder.
- 7.02 During non-construction hours, trash containers shall be covered and sealed to prevent wind blown debris and access into trash containers.
- 7.03 The location of the trash containers shall be subject to the approval of the Owner.
- 7.04 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.
- 7.05 No open fire shall be permitted on the building site at any time.

#### 8. REMOVAL OF TEMPORARY WORK

- 8.01 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.



9. WORK ACTIVITIES

- 9.01 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.
- 9.02 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.
- 9.03 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.
- 9.04 Contractor's employee parking, delivery trucks and other construction vehicle parking shall only be at areas designated by the Owner's Representative.

10. RESTROOM FACILITIES

- 10.01 Contractors are responsible for providing temporary restroom facilities for their employees during the project. The Contractor shall include the costs for such facilities in their base bid amount.

## **ALTERATIONS**

### **1. GENERAL**

- 1.01 This section is a part of the entire set of Contract Documents and shall be coordinated with the applicable provisions of the other parts.
- 1.02 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.

### **2. GENERAL DESCRIPTION OF REQUIREMENTS**

- 2.01 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.
- 2.02 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 plans and specifications, to provide a weathertight roofing system.

### **3. SEQUENCE OF OPERATIONS**

- 3.01 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 buildings and to cause as little inconvenience to the public as practicable in their occupancy and use of the facilities.

### **4. EXISTING MATERIAL AND EQUIPMENT REMOVED**

- 4.01 Contractor shall remove all fixed equipment designated to be removed.
- 4.02 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.
- 4.03 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.
- 4.04 Contractor shall be responsible for all disconnecting, connecting, cutting, patching, finishing, moving and removing, and repairing, of both new and existing material and equipment as may be required to do all reroofing and

alteration work.

- 4.05 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.

5. SALVAGED MATERIALS

- 5.01 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.

6. EXISTING CONDITIONS

- 6.01 The Contractor shall check all dimensions and verify all conditions shown on the drawings at the site in relation to his work.
- 6.02 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.
- 6.03 Conditions other than those which are described in these specifications shall be identified in writing to the Owner before proceeding with the work. The Owner will provide approved alternate details as required by changed conditions. The contractor shall be responsible for any unauthorized changes he incorporates in the work.

## SECTION 07520 - ROOFING AND SHEET METAL

### PART I - GENERAL

#### 1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION

##### A. Work included

Furnish all labor, materials and equipment required, and furnish and install roofing and sheet metal, complete with all accessories and incidentals required, in accordance with the Drawings and these Specifications, including but not limited to the following:

1. Removal of existing roofing systems, insulation and base flashings.
2. Roof insulation, tapered and flat stock including tapered insulation saddles.
3. Single-ply roofing and base flashings.
4. Sheet metal fascia cap, coping, gravel stop fascia, counterflashing, etc.
5. Wood blocking and nailers.

##### B. Existing Roofing

1. See Roof Plan – Existing conditions are at the test cuts RTA made. Conditions may vary from the test cut locations.

#### 1.3 QUALITY ASSURANCE

##### A. Qualifications of Installers

Roofing installer must be currently approved by the manufacturer of the selected roofing system.

##### B. Standards

1. Accomplish work under this Section in strict accordance with the roofing manufacturer's published specifications and best trade practices to achieve a completely watertight roofing and flashing installation.
2. Provide materials which have been tested, listed and labeled by Underwriters Laboratories (UL).
3. Roof insulation shall be approved components by Factory Mutual for insulated deck construction and shall bear FM approval mark and meet I-60 wind uplift requirements.

##### C. General

1. Be responsible for measurements. Before ordering material, preparing shop drawings, or doing any work, verify at the site all dimensions which may affect the work. Assume full responsibility for the accuracy of figures. No allowance for

additional compensation will be considered for discrepancies between dimensions on the drawings and actual field dimensions.

2. Immediately refer to any conflicts among requirements of these specifications on drawings, those of regulatory agencies, material manufacturer's recommendations and good roofing practices to the Roof Consultant or Architect.
  3. Accomplish all work in strict compliance with the roofing manufacturer's latest published specifications and details reviewed by the Roof Consultant and shall follow the best trade practices to achieve a complete watertight roofing and flashing installation.
  4. Final results are the entire responsibility of the roofing contractor.
- D. Installer Qualifications: A single installer ("Roofer") shall perform work of this section; and shall be a firm with not less than 5 years of successful experience in installation of roofing systems similar to those required for this project and which is acceptable to or licensed by manufacturer of primary roofing materials.
1. Installer Certification: Obtain written certification from manufacturer of roofing system certifying that Installer is approved by manufacturer for installation of specified roofing system. The certification shall be submitted with the bid.
  2. Installer's Field Supervision: Installer must maintain full-time supervision on jobsite during times that roofing work is in progress. Supervisor must have a minimum of 5 years experience in roofing work similar in nature and scope to specified roofing.

#### 1.4 SUBMITTALS

##### A. Materials List

Before any materials of this Section are delivered to the jobsite, submit to the Roof Consultant a complete list of all materials, including manufacturer's names, to be furnished and installed under this portion of the work.

##### B. Manufacturer's Documentation

1. Submit copies of manufacturer's field reports and documentation of completion.
2. Submit manufacturer's report that the roof has been inspected and is suitable and acceptable for warranty specified.

##### C. Shop Drawings

1. Before any materials of this Section are delivered to the jobsite, submit complete shop drawings of sheet metal work to the Roof Consultant for review.
2. Submit shop drawings showing tapered insulation.
3. Applicator shall supply the roof system manufacturer with as-built shop drawings for final inspection. As-built shop drawings must be approved by the selected manufacturer.

## 1.5 INSPECTION

- A. Prior to final payment, and as a condition thereof, the Roofing Installer shall obtain final approval from Roofing Technology Associates, Ltd. indicating proper compliance with the Contract Documents. The Roofing Contractor shall coordinate inspection services during roof application.
- B. Preliminary Roofing Conference: Prior to scheduled commencement of roofing work, the Roofing Contractor, Architect, Roofing Consultant 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 Roof Consultant shall record discussion 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.
- C. The Roofing Consultant shall perform inspections as work is being performed to insure conformance with manufacturer's recommendations and recognized roofing procedures.
- D. The Roofing Consultant shall review and approve all shop drawing submittals.
- E. Notify Roofing Consultant whenever roofing work is to be done, in sufficient time to arrange inspections. Provide safe access to roof for inspection.
- F. Furnish Roofing Consultant with all pertinent job information prior to beginning work in accordance with Roofing Consultant directions.
- G. The Roofing Consultant shall perform any testing required to verify the integrity of the work and confirm that work is in conformance with manufacturer's recommendations.

## 1.6 JOB CONDITIONS

- A. Weather Condition Limitations: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.
1. Do not install materials when rain, cold, moisture, frost, snow or other climatic conditions prevent the adhesion of bitumen or the formation of a homogeneous

membrane. Proceed with roofing work only when weather conditions are in compliance with manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with requirements and the manufacturer's recommendations.

#### 1.7 PRODUCT HANDLING

- A. Store and handle roofing sheets in a manner which will ensure that there is no possibility of significant moisture pick-up. 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.

#### 1.8 WARRANTIES

- A. The Roofing Contractor, prior to final payment, shall furnish a two (2) year warranty covering insulation, roofing, flashing and sheet metal. Defects in materials or workmanship, which are discovered and made known to the Contractor during the guarantee period, shall be repaired or replaced and/or adjustments shall be made without delay upon written notification from the Owner and at no additional cost to the Owner.
- B. Furnish manufacturer's 20-year unlimited labor and material warranty to the Owner. Manufacturer's warranty shall warrant the new roofing, insulation and base flashing against failure or leakage of any kind for a period of twenty (20) years from date of final acceptance of the roof. All installation and materials installed shall meet the manufacturer's 20-year recommendations and requirements.

## PART II - PRODUCTS

#### 2.1 GENERAL

- 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 manufacturer to be equal or better than specified in every significant respect, and acceptable to Owner's Representative.
- B. Compatibility: Provide products which are recommended by the selected material manufacturer to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.

#### 2.2 SINGLE-PLY ROOF SYSTEM

- A. The roofing system to be utilized for this project shall be a fully-adhered EPDM system manufactured by the following manufacturer:
  - Carlisle SynTec Incorporated - Sure-Seal Design A Adhered Roofing System
  - Holcim Elevate - Rubbergard Max Fully-Adhered System
- B. All materials used in the roofing system shall be as furnished by the approved manufacturer.
- C. 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 manufacturer will furnish its 20-year total system warranty for the installation. Details must be submitted to the manufacturer for review prior to the start of roofing operations.

- D. Membrane shall be reinforced .060-inch thick, EPDM (Ethylene Propylene Diene Monomer) compounded elastomer. Membrane sheet sized shall be the largest sheet possible as determined by the job conditions.
- E. Roof membrane and base flashing seam tape shall be a minimum of 3-inches wide as manufactured by the selected roofing manufacturer.

### 2.3 ROOF INSULATION

- A. Roof insulation: where the existing roof and insulation area removed shall be rigid polyisocyanurate roof insulation (thickness designated on roof plans). The facer shall be glass fiber. Approved polyisocyanurate insulation manufacturers are:
  - Carlisle SynTec Incorporated – Polyisocyanurate HP
  - Holcim Elevate – ISO-95+
- B. The insulation system shall be a tapered polyisocyanurate insulation as manufactured by one of the following manufacturers or equal approved by the roofing manufacturer. Insulation shall be precut and tapered to form slopes a minimum of 1/8" per foot as noted on the plans. The insulation shall start at ½-inch thick at the drain insulation perimeter. Insulation high points shall meet. Maximum tapered insulation board thickness shall be 2½-inches.
  - Carlisle SynTec Incorporated – Polyisocyanurate HP Tapered
  - Holcim Elevate – Tapered ISO-95+
- C. The tapered insulation saddles shall be tapered polyisocyanurate insulation as manufactured by one of the following. Insulation shall be precut and tapered to form slopes a minimum of ¼-inch or ½-inch per foot as designated on the roof plan.
  - Carlisle SynTec Incorporated – Polyisocyanurate Tapered HP
  - Holcim Elevate - Tapered ISO-95+
- D. Coverboard insulation shall be one layer of ½-inch thick rigid polyisocyanurate roof insulation. The facer shall be glass fiber. Approved polyisocyanurate insulation manufacturers are:
  - Carlisle SynTec Incorporated – SecureShield HD Plus Polyiso
  - Holcim Elevate – ISOGARD HD coverboard
- E. Barrier board for the roof shall be ½-inch thick gypsum board as manufactured by:
  - Georgia Pacific – DensDeck Prime
  - US Gypsum - SECUROCK
- F. Insulation at the roof drains shall be tapered at ¼-inch or ½-inch per foot as designated on the drawings. The tapered insulation total width shall be 8-feet wide or as noted as manufactured by the above manufacturers.
- G. Tapered edge strips shall be asphalt-impregnated fiberboard. Tapered edge strips shall be 18-inches wide.

### 2.4 FASTENERS

- A. Fasteners for securing the insulation to the steel deck shall be screws and plates as provided by one of the following manufacturers:
  - Carlisle SynTec Incorporated – Sure Seal HP Fasteners
  - Holcim Elevate - Heavy Duty Fasteners



NOTE: White fasteners shall be used at interior exposed deck areas.

- B. Fasteners for securing wood and insulation to the Tectum deck shall be Polymer fasteners by one of the following manufacturers:
  - Carlisle SynTec Incorporated – Gyptec Fasteners and Plates
  - Holcim Elevate - Polymer Fastener
- C. Fasteners in contact with wood blocking and nailers shall be galvanized. The fasteners shall be zinc-coated in conformance with ASTM A153.
- D. The top layer of insulation and saddles shall be secured with low-rise foam adhesive as recommended by the selected roof manufacturer.

## 2.5 BASE FLASHING

- A. Flashing shall be a reinforced .060-inch thick EPDM flashing sheet as furnished by the approved manufacturer.

## 2.6 WOOD NAILERS

- A. Wood nailers and blocking shall be construction grade lumber S4S, S-dry moisture content.
- B. Plywood: APA panel roof sheathing, exterior exposure. Minimum thickness 5/8-inch.

## 2.7 SHEET METAL FLASHINGS

- A. Prefinished sheet metal counterflashing, coping, gravel stop/fascia, gutters and downspouts, etc. shall be formed of 24-gauge galvanized, baked enamel finish sheet metal. The sheet metal shall be Pac Clad as manufactured by Peterson Aluminum or approved equal. The colors shall be selected by the Owner's Representative. Fascia extension shall be 22-gauge galvanized sheet metal.
- B. Premanufactured sheet metal fascia cap, water dam cant and fascia extensions shall be Perma-Tite Fascia System 200 as manufactured by Metal-Era Roof Edge or approved equal. The fascia cap shall be 24-gauge prefinished galvanized with premanufactured interior and exterior corners. Provide fascia stiffening band for fascia over 8-inches.
- C. Vent stack flashings, pitch pans and other items shall be 24-gauge galvanized steel or as specified.
- D. Continuous cleats shall be formed of 22-gauge galvanized metal.

## 2.8 SEALANT

- A. Sealant for sheet metal flashings shall be a high performance, one-component polyurethane-base, non-sag elastomeric sealant as manufactured by one of the following manufacturers or approved equal:
  - Sika Corporation, Sikaflex - 15LM
  - Mameco International, Vulkem 921

## 2.9 VAPOR RETARDER

- A. Vapor retarder and any necessary primer shall be manufactured and approved by the selected roof system for us in their roof system. Approved manufacturers are:

- Carlisle SynTec Incorporated – VapAir Seal 725TR
- Holcim Elevate, - V-force

## 2.10 MISCELLANEOUS

- A. Roof walkways/traffic pads shall be constructed from rubber walkpads approved by the selected roof system manufacturer.
- B. Plates for small holes in the deck shall be 18-gauge galvanized steel.
- C. Replacement roof drains shall be cast iron and match the existing drains in size. The new drains shall be Zurn Z-125 drains with a cast iron dome and underdeck clamp or an approved equivalent.
- D. Plumbing vent flashings shall be prefabricated boots as manufactured by the selected roof manufacturer.
- E. Batt insulation to be installed between the expansion joint curb shall be unfaced fiberglass.
- F. Vapor retarder to be installed between the expansion joint curbs to contain the batt insulation shall be a 6 mil polyethylene.
- G. Gas pipe and conduit supports shall be PHP Systems roller pipe supports sized for the pipe being supported or approved equal.
- H. New roof hatch shall be Bilco Company Type S-50 aluminum.

## PART III - EXECUTION

### 3.1 DELIVERY AND STORAGE

- A. Material shall be delivered to the site in the original unopened containers or wrappers, clearly labeled with the manufacturer's name, brand name, and such identifying numbers as are appropriate. Materials damaged in handling or storage shall not be used. Cardboard containers should be stored on pallets in a dry area.
- B. The rigid roof insulation shall be protected from the weather and standing moisture at all times. Completely cover insulation materials stored outside using a waterproof tarpaulin covering. Extend covering down to the pallet so that no material remains exposed and properly secure to resist wind uplift. Unprotected, moist or otherwise damaged materials or materials with evidence of moisture damage, such as staining, will be conspicuously marked for permanent removal from the job.
- C. Provide a 6-foot high chain link fence system around the storage and set-up areas.

### 3.2 DEMOLITION AND SUBSTRATE PREPARATION

- A. Remove the existing roof membrane, base flashings, insulation and miscellaneous debris shall be completely removed down to the deck at designated areas and as shown on the Roof Plan. Back out all fasteners in the seams and insulation.

NOTE: PVC seams with fasteners may exist below the top PVC Roof.

NOTE: Limit the amount of water sprayed on the built-up roof to prevent leaks in the building.

NOTE: There is conduit on the deck surface (High School)

NOTE: There are toggle bolts on the Tectum deck areas.

- B. Existing sheet metal fascia cap, fascia extensions, coping, scuppers, gutters and downspouts and other sheet metal flashing accessories shall be removed and discarded.
- C. Deteriorated wood nailers shall be completely removed and discarded. Securely install new treated wood nailers as necessary to match the existing nailers in size and shape, or as directed by the Owner's Representative.
  - 1. Wood nailer replacement shall be bid as a Unit Price extra.
- D. Closely inspect all roof decking. Remove deteriorated deck and replace deck with matching material type and thickness as directed by the Owner's Representative to provide a structurally sound roof deck.
  - 1. Roof deck replacement shall be bid as a Unit Price extra.
- E. Remove debris, scrap and rubbish from the roof area and building ground daily. Upon completion of work, remove excess material and waste from site and clean finished surfaces marked by roofing work.
- F. Plumbing vent flashings and sheet metal flange, sleeve and umbrellas shall be removed and discarded.
- G. Temporarily displace mechanical ventilator unit covers to accommodate the removal and replacement of the existing base flashings and to allow for installation of additional nailers where required to raise the height of the curb. Mechanical units which are required to be disconnected shall be disconnected and reconnected by a mechanical contractor employed by the Roofing Contractor and included in the Base Bid. The mechanical contractor shall be the owner's mechanical contractor.
- H. Raise supply lines (conduits and gas lines) as needed to accommodate the height of the new roof system. The cost for this work shall be included in the base bid.
- I. Remove clamping rings from existing roof sumps and thoroughly clean drain bowls and clamping rings. Discard the plastic drain strainer.
- J. Remove obsolete penetrations and discard. Fill openings in the deck with new steel deck.
- K. Remove roof hatches designated to be replaced and discard.
- L. The Roofing Contractor is required to follow NESHAP regulations for any asbestos containing material (test results in Appendix).
- M. Save gas support that have rollers and are in a good condition.

### 3.3 INSTALLATION PROCEDURES

- A. General: Comply with manufacturer's instructions, except where more stringent requirements are indicated herein.
- B. Details relating to the installation of the new roof system shall be approved by the selected roofing material manufacturer and the Roof Consultant and installed in such a manner that the manufacturer will furnish a warranty for the installation. Details must be submitted to the Roof Consultant and Manufacturer for approval prior to the start of reroofing operations.

- C. 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.
- D. 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 and adjoining the membrane.
- E. 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.
- F. At the end of each day's roofing installation, protect edge of incomplete work, including membrane and insulation. Provide temporary seal to the adjacent built-up roof; remove at the beginning of next day's work. Where the new membrane hangs over the perimeter edge, the membrane shall be secured with screws and plates spaced 24-inches on-center or a termination bar fastened 24-inches on-center.
- G. Materials must be stored dry and protected with tarps and on pallets at all times. No work shall commence when inclement weather is threatening. Wet or damaged materials will be removed from the job site.
- H. The Roofing 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 and cover interior where debris is falling inside.
- I. Provide a minimum of 1-inch thick insulation and ¾-inch thick plywood walkway systems to protect the existing roof where traffic crosses the roof to the dumpster.

### 3.4 STEEL ROOF DECK

- A. Install steel roof deck where deteriorated roof deck was removed or obsolete penetrations were removed. The new steel deck shall be installed to span a minimum of three supports (two spans). The panel ends should overlap, or nest in, the existing roof deck over the purlin if possible; otherwise, a butt joint over the center of the purlin is acceptable. The new deck shall be secured 12-inches on-center (every other rib) to each support with 5/16-inch self-tapping screws. New deck installed within 10-feet of the perimeter shall be secured 6-inches on-center (every rib) to the structural steel supports with 5/16-inch self-taping screws. Side laps of the deck shall be secured a maximum of 3-feet on-center with No. 12 screws. If not possible, the new panels must be trimmed lengthwise to overlap the top surface existing decking a minimum of 2-inches down the entire length. Fasten the overlapped decking with sheet metal screws a maximum of 24-inches on-center.
- B. Install Tectum deck replacement in accordance with the manufacturer requirements.
- C. Install 18-gauge galvanized plates over holes (less than 12-inches in diameter) or at isolated areas of deterioration in the roof deck or small obsolete penetrations. The plates shall extend a minimum of 6-inches beyond the deteriorated area in each direction. The plates shall be mechanically fastened in place with self-tapping screws.

### 3.5 NAILERS / HATCH

- A. Install new wood nailers and plywood as designated on the attached details and roof plan. The nailers shall be secured with 16d nails spaced 12-inches on-center and staggered in two rows to existing wood nailers. The new wood nailer shall be attached to the steel deck with screws spaced 12-inches on-center. Nailers shall be secured 12-inches on-center with expansion anchors to the stone copings.
- B. Install new wood nailers at mechanical curbs which are not 8-inches above the finished roof. The nailers shall be a minimum of 1.5-inches thick and shall be of sufficient width to provide a curb height of 8-inches above the roof. Secure the new nailer with appropriate fasteners.
- C. Install wood nailers at the roof hatches to match the insulation thickness. Install the new roof hatches at locations shown on the roof plans in accordance with the manufacturer's requirements.
- D. Install the rail curbs on the steel deck and secure the screws. Install wood nailers on the top of the curbs to attain the same height to support the mechanical unit or ducts.
- E. Plywood shall be secured to the masonry parapet walls with expansion anchors spaced 12-inches on-center along the top and bottom of the wall.

### 3.6 NOT USED

### 3.7 INSULATION INSTALLATION

- A. End joints of the boards shall be staggered between rows and layers of insulation boards. Insulation boards shall be neatly cut to fit around penetrations.
- B. The insulation boards shall be closely butted with a maximum joint space of 1/4-inch. Joint spaces which exceed 1/4-inch shall be filled with insulation material. Provide relief cuts in the insulation board as necessary to allow the insulation to conform to irregular deck surfaces. At locations where less than a full-sized sheet of insulation is required, use the largest size practical to fill in the area.
- C. Install roof drain tapered insulation at the roof drains and secure with screws and plates.
- D. Install the flat stock and tapered rigid isocyanurate roof insulation over the substrate at designated areas.
- E. Mechanically fasten the base layers of insulation to the steel and wood deck in accordance with the manufacturer's requirements. The top layers of insulation and insulation on concrete, Tectum and gypsum decks shall be set into low rise foam adhesive. White fasteners shall be used where the steel deck is exposed on the interior.
- F. Install tapered saddles at locations designated on the roof plan over the top of the insulation. Fasten saddles in the same manner as detailed above.
- G. Insulate the sides of the mechanical units and walls that are currently insulated. Mechanically fasten the insulation to the curbs or walls.
- H. The rigid roof insulation shall be protected from the weather and standing moisture at all times. No more insulation shall be laid than can be completely covered with roofing materials on the same day. At the end of each day's work, temporary water cut-offs shall be installed at the edges of all insulation to provide a watertight seal. Such cut-offs shall be removed when the work is again started.

- I. Install tapered edge strip as designated on the details and secure with three fasteners and plates per section of the tapered edge strip or foam adhesive.

### 3.8 SINGLE-PLY ROOF MEMBRANE INSTALLATION

- A. Roofing membrane system shall be installed following the application requirements of the selected roof membrane material manufacturer. The latest printed instructions will govern the application procedure. The seams shall be sealed with a minimum of 3-inch wide in-seam tape.
- B. Perimeter roof membrane securement shall be accomplished with the roof membrane manufacturer's reinforced securement strips. Adhere the securement strip to the insulation and/or wall substrate with bonding adhesive. Fasten the securement strips in accordance with the roof membrane manufacturer's approved fasteners.

### 3.9 FLASHING INSTALLATION

- A. Vertical walls shall be neatly flashed in strict compliance with the manufacturer's specifications and attached details utilizing cured and uncured EPDM. The upper edges of the flashings shall be secured 8 inches on-center into wood. At the masonry walls, the upper edges shall be secured with a termination bar fastened 12-inches on-center. Flashings shall extend a minimum of 8 inches above the roof surface on curbs.
- B. Roof drains shall be flashed following the manufacturer's recommendations. The roof membrane shall be tightly secured in the roof drain clamping ring.

Install new cast iron drain strainers on the drains where missing and plastic drain strainers were discarded. The strainers and clamping rings shall be securely fastened to the drain bowls. Replace any broken clamping rings.

- C. Flash all penetrations (pipes, conduits, etc.) passing through the membrane. Factory prefabricated pipe seals shall be used to flash all pipes where installation is possible. All flashings and terminations shall be done in accordance with approved manufacturer's details. Extend plumbing vent stack a minimum of 6-inches above the roof surface.
- D. Install new galvanized sheet metal flange, sleeve and umbrella on the exhaust stack. The new sheet metal flashing shall be installed in accordance with SMACNA Figure 8-9C. The seams shall be soldered. A stainless steel drawband shall secure the umbrella and be caulked.
- E. Sheet metal pitch pans 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 24-gauge galvanized sheet metal and shall be kept to the minimum size necessary to seal the penetrations which are being flashed. Provide corner stiffeners in the flange of the pitch pans (see SMACNA Figure 8-11C). Seams in the pitch pans shall be soldered. The flanges shall be stripped-in to the roof membrane in accordance with the manufacturer's requirements. The bottom half of the pitch pan shall be filled with non-shrink grout and the top half shall be filled with an approved elastomeric sealant.

### 3.10 SHEET METAL INSTALLATION

- A. Sheet metal work shall be performed in accordance with the latest edition of SMACNA "Architectural Sheet Metal Manual".
- B. Prefinished sheet metal counterflashings shall be installed in accordance with the counterflashing details and SMACNA Figure 4-4. The counterflashing shall be secured 12-inches on-center (maximum). Corners in the counterflashing must be formed, lapped and sealed as necessary to provide a continuous system that is watertight. Adjacent sections of counterflashing shall lap a minimum of 4-inches. Caulk the top of the

counterflashings. Sections of the counterflashing shall not be fastened together. Cut new reglet 1 ½-inches into masonry walls.

- C. Install prefinished sheet metal slip counterflashing on the mechanical units that do not cover the top of the base flashing by 3-inches. The new sheet metal shall be fastened 16-inches on-center.
- D. Install new sheet metal coping at the locations indicated on the drawings. Fabricate the coping as shown in the RTA details and SMACNA Figure 3-1. Install the coping with standing seams. The outside face of the coping shall have a hemmed bottom edge and be held in place with a continuous 22-gauge galvanized cleat. The continuous cleat shall be secured to the wood blocking with screws spaced 12-inches on-center. The fascia shall cover the same area as the existing fascia. Apply a continuous bead of sealant in the standing seams.
- E. Install vee sheet metal at the expansion joints. Secure the sheet metal 12-inches on-center with nails on both flanges. Install foam rod stock in the vee secured with bonding adhesive.
- F. The perimeter edges shall be neatly trimmed with a prefinished 24-gauge galvanized steel gravel stop/fascia where shown on the details. The gravel stop fascia shall have a 4-inch flange, ½-inch hemmed drip edge and fascia long enough to cover the existing fascia area in accordance with SMACNA Figure 2-1. The maximum length of each section of gravel stop/fascia shall be 10-feet. A back-up plate shall be installed at the end joints of the gravel stop/fascia in accordance with SMACNA Figure 2-5C. A continuous bead of elastomeric caulk shall be provided between the flanges at each joint. The flange shall be stagger nailed 3-inches on-center. The flange shall be sealed in accordance with the manufacturer's recommendations.
- G. Sheet metal fascia extensions shall be 22-gauge prefinished galvanized steel and installed at designated locations and any fascia over 10-inches wide. The extensions shall be installed in accordance with SMACNA requirements and cover the existing fascia area. Fascia extensions shall be fabricated and installed in accordance with SMACNA Figure 2-7. A back-up plate shall be installed at the end joints.
- H. The perimeter edges shall be neatly trimmed with the specified premanufactured sheet metal fascia cap. The galvanized sheet metal cant dam shall be secured 6-inches on-center in the flange and 12-inches on-center in the fascia with galvanized ring shank nails. The EPDM membrane shall be fully adhered to the cant and fascia. The fascia cover shall be crimped at the drip edge 18-inches on-center. The installation shall be in accordance with the manufacturer's requirements. The fascia shall cover the existing fascia area.
- I. New gutters shall be installed at designated gutter locations. The new gutter shall be fabricated from prefinished 24-gauge galvanized steel with a profile similar to SMACNA Figure 1-2, Style D. The gutters shall be 5-inches deep by 5-inches wide and the front of the gutters shall be 2-inches below the back edge of the gutter. The end joints in the gutter shall be lapped 1-inch, caulked and riveted 1-inch on-center. The gutter shall have a 4-inch wide flange. Install expansion joints in accordance with SMACNA Figure 1-5 and 1-7.

The flange of the gutter shall be stagger-nailed 3-inches on-center with galvanized roofing nails. The flange shall be sealed with two stripping layers, 5-inch and 9-inches wide, in accordance with the roofing manufacturer's requirements. Spacers shall be fabricated from 1/8-inch x 1-inch galvanized steel. The spacers shall be installed 18-inches on-center bolted to the fascia and screwed into the wood nailer with 2-inch long stainless steel ¼-inch lag bolts in accordance with SMACNA Figure 1-16B. Expansion joints shall be installed every 50 lineal feet of gutter in accordance with SMACNA.

- J. Install new sheet metal scuppers and conductor heads in accordance with SMACNA Figure 1-28. The scupper shall be flashed in accordance with the manufacturer's requirements.
- K. The downspouts shall be rectangular and 3-inches by 4-inches in size in accordance with SMACNA Figure 1-32B. The downspouts shall be attached to the scupper and gutters in accordance with SMACNA Figure 1-33, Figure 1. The new downspouts shall have two hangers installed per section or downspouts in accordance with SMACNA Figure 1-35G, 1/8-inch by 1-inch galvanized, primed and painted to match the downspouts. The fasteners for masonry walls shall be Rawls ZAMAC Nailin fasteners, 2-inches long.
- L. Install sheet metal multiple pipe penetration flashing box in accordance with SMACNA Figure 8-9A. The seams shall be soldered. The box shall be filled with batt insulation and bird screen covering the opening.

### 3.11 MISCELLANEOUS INSTALLATION

- A. Mechanical ventilator units shall be returned to their original positions and secured to the existing curbs with EPDM gasketed screws, a minimum of one on each side of the curb.
- B. Install rubber walkpads at the mechanical unit access panels, doors, downspouts and hatches. Install 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.
- C. Caulk the sheet metal collars at the exhaust stacks.
- D. Mechanical units currently set upon pads shall have rubber walkpads installed below the existing pads.
- E. Install pipe roller supports beneath supply lines. The supports shall be spaced 10-feet on-center.
- F. Install vapor retarder and batt insulation in the expansion joints.
- G. Strip-in the seams of the existing gutters at Grant Elementary with 5-inch EPDM.

### 3.12 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. Installation of the roofing system is not restricted because of cold temperatures. Follow precautions as stated for storage and expose only enough cement and adhesive to be used within a 4-hour period during cold temperatures.
- D. Splicing and bonding surface must be dry.
- E. 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 manufacturer's requirements should be followed closely.
- F. An open flame may not be used to dry the roof membrane or to heat the flashing materials.

**END OF SECTION**



## **APPENDIX**

### Roof Plans

Franklin High School.....	Plate 1
Counterflashing - Reglet .....	Detail 1
Expansion Joint - Flush.....	Detail 6
Wall Flashing – Sheet Metal Siding.....	Detail 8
Transition .....	Detail 9
Expansion Joint.....	Detail 10
Perimeter Edge.....	Detail 12
Sawtooth Perimeter Edge .....	Detail 13
Area B4 Addition - Counterflashing .....	Detail 14
Area B4 - Transition .....	Detail 15
Area A - Counterflashing.....	Detail 16
Sheet Metal Siding.....	Detail 34
Perimeter Edge.....	Detail 37
Clerestory Flashing.....	Detail 38

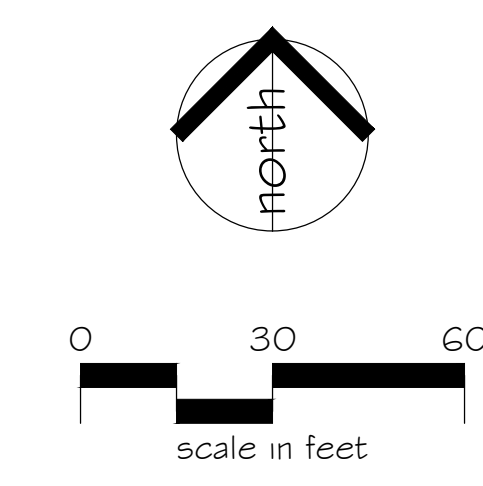
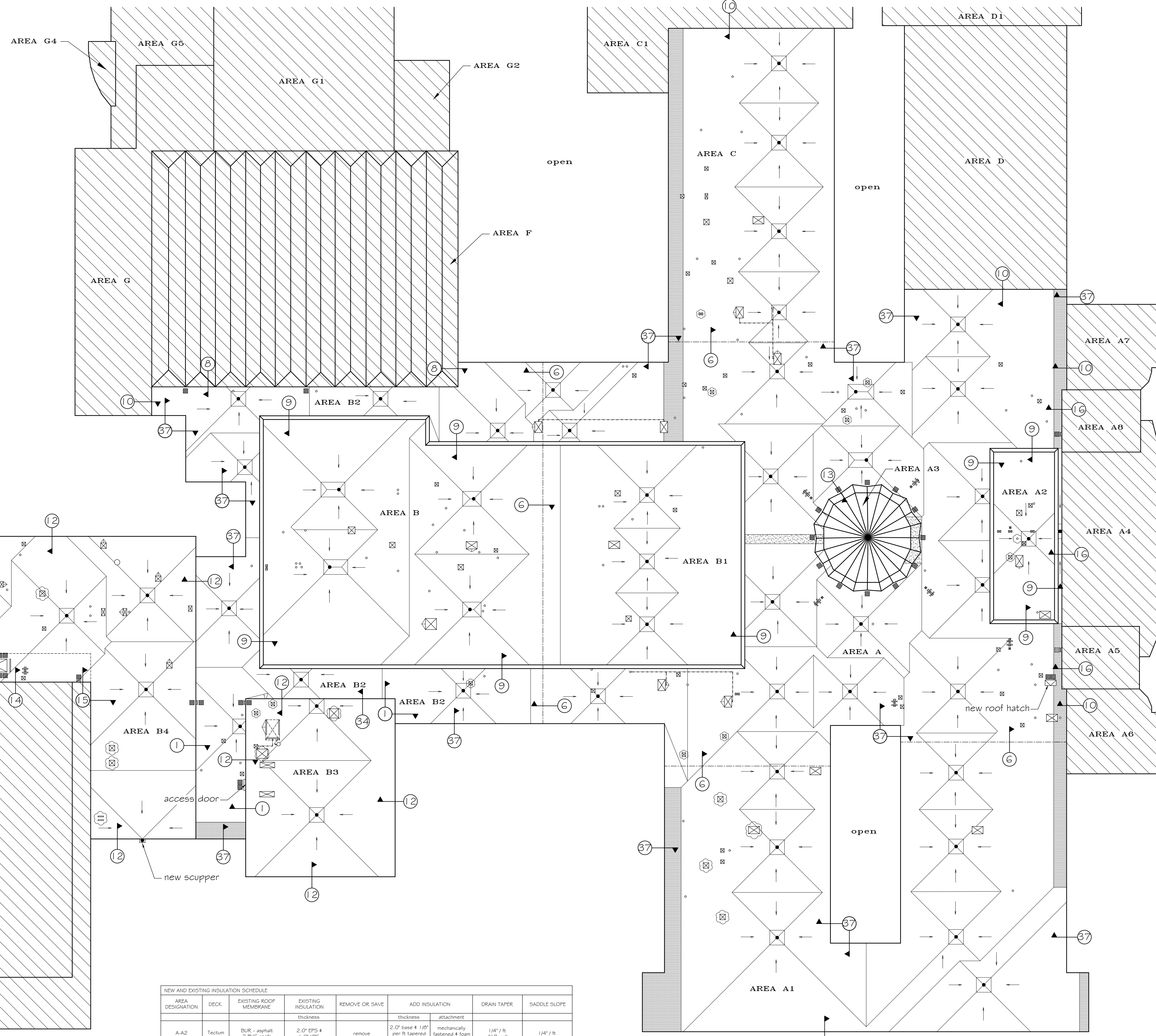
Architectural Sheet Metal Manual – Sheet Metal and Air Conditioning Contractors National Association, (SMACNA), Seventh Edition, 2012

Rectangular Gutter Styles (F-Styles) .....	Figure 1-2
Allowance for Gutter Expansion.....	Figure 1-5
Batt Type Gutter Expansion Joint .....	Figure 1-7
Hanging Gutter Installation – Heavy Gutter.....	Figure 1-16
Conductor Head – Typical .....	Figure 1-25
Scupper Through Fascia with Conductor Head.....	Figure 1-28
Downspouts – Shop Fabricated.....	Figure 1-32
Downspouts – Gutter Connections .....	Figure 1-33
Downspout Hangers – Shop Fabricated .....	Figure 1-35
Formed Gravel-Stop Fascia – Design Data .....	Figure 2-1
Formed Gravel-Stop Fascia – Design Data .....	Figure 2-5
Formed Gravel-Stop Fascia – Soffit Installation.....	Figure 2-7
Formed Metal Copings – Design Data .....	Figure 3-1
Counterflashing Systems – Installation .....	Figure 4-4
Roof Penetration Flashing – Pipes.....	Figure 8-9
Equipment Support Flashing.....	Figure 8-11

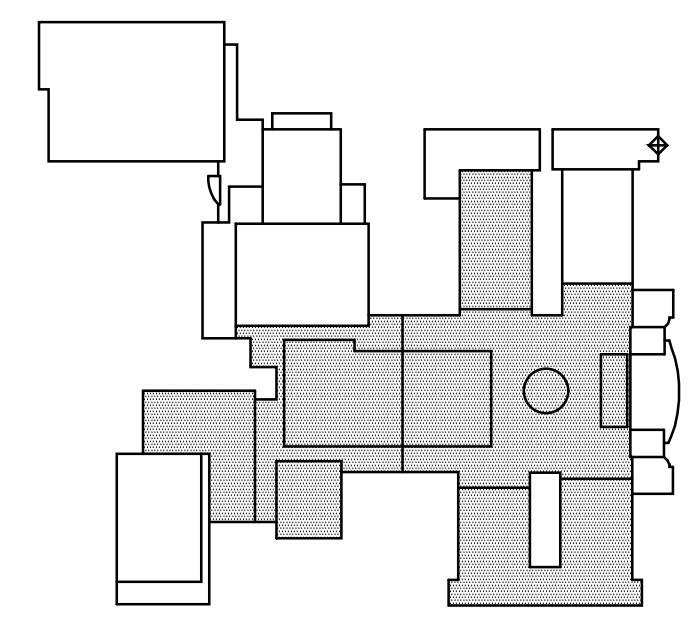
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ARCH ENVIRONMENTAL GROUP

Asbestos Test Results .....Pages 1 - \_\_\_\_




- LEGEND:**
- roof drain
  - scupper
  - round penetration
  - ⊠ mechanical unit
  - ⊞ elevated equipment
  - ⊞ roof hatch
  - ⊞ obsolete
  - - - expansion joint
  - - - supply line
  - slope of tapered insulation
  - RTA detail
  - ▨ walk pads
  - ▨ 8.5" flat stock insulation
  - ▨ 6.0" flat stock insulation
  - ▨ not in contract

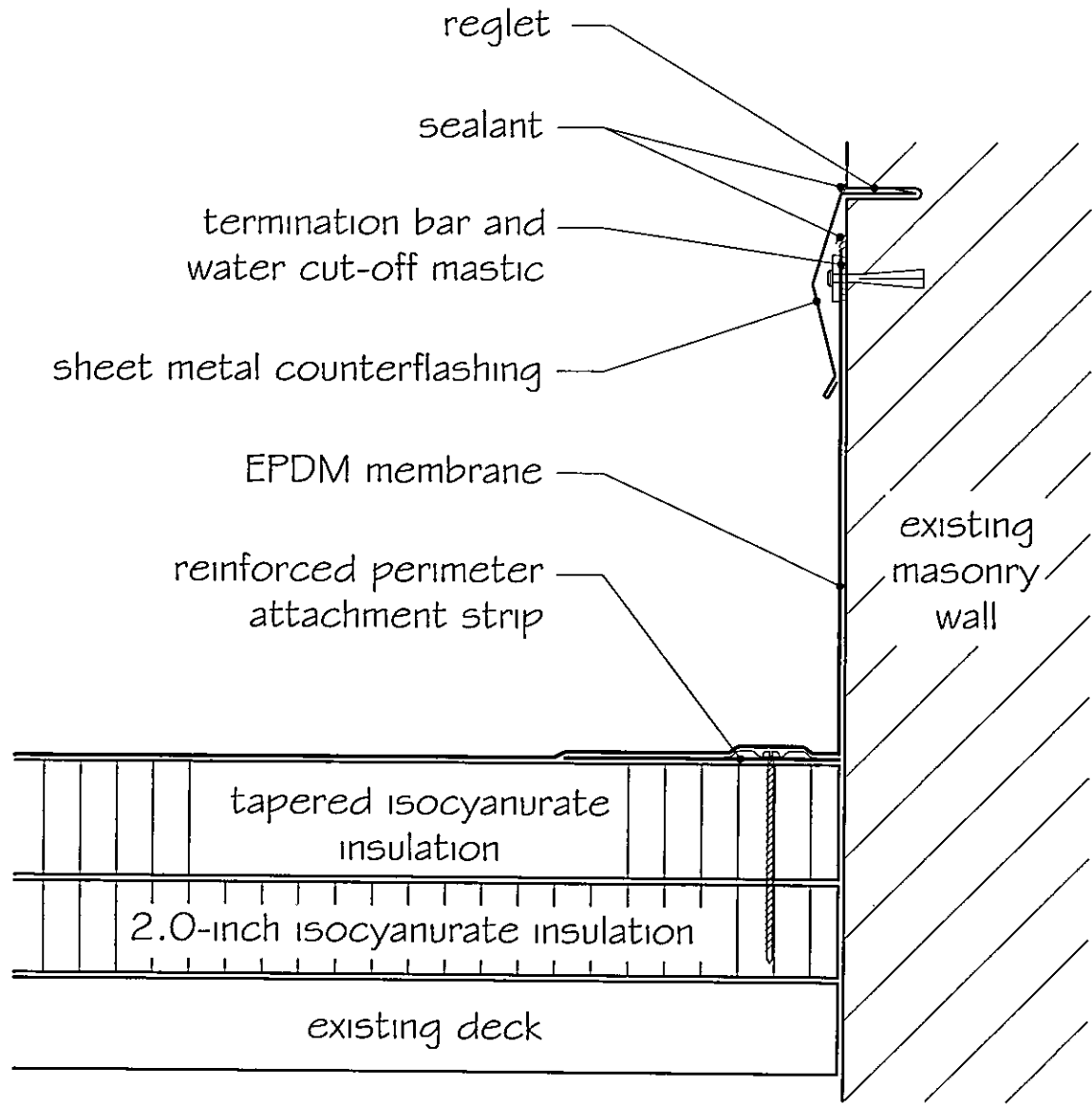


**KEY PLAN**  
not to scale

- GENERAL NOTES:**
1. All areas and dimensions shown are approximate and based upon rough field measurements taken by representatives of Roofing Technology Associates, Ltd.
  2. 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.

NEW AND EXISTING INSULATION SCHEDULE							
AREA DESIGNATION	DECK	EXISTING ROOF MEMBRANE	EXISTING INSULATION thickness	REMOVE OR SAVE	ADD INSULATION thickness attachment	DRAIN TAPER	SADDLE SLOPE
A-A2	Tectum	BUR - asphalt 2 PVC roofs	2.0" EPS # 1.0" XPS	remove	2.0" base # 1.0" per ft tapered isocyanurate mechanically fastened & foam adhesive	1/4" / ft (F Panel)	1/4" / ft
A3	Tectum	BUR - asphalt 2 PVC roofs	1.0" EPS # 1.0" XPS	remove	2 layers of 2.0" isocyanurate mechanically fastened & foam adhesive	NA	NA
B-B4	Tectum	BUR - asphalt 2 PVC roofs	2.0" EPS # 1.0" XPS	remove	2.0" base # 1.0" per ft tapered isocyanurate mechanically fastened & foam adhesive	1/4" / ft (F Panel)	1/4" / ft
B4 Addition	Steel	PVC	gypsum board 2 layers of 2.0" ISO # tapered ISO	tapered ISO only	1.0" per ft tapered ISO mechanically fastened & foam adhesive	NA	NA
C	Tectum	BUR - asphalt 2 PVC roofs	2.0" EPS # 1.0" XPS	remove	2.0" base # 1.0" per ft tapered isocyanurate mechanically fastened & foam adhesive	1/4" / ft (F Panel)	1/4" / ft

 <b>ROOFING TECHNOLOGY ASSOCIATES, LTD.</b> 38031 SCHOOLCRAFT ROAD LIVONIA, MICHIGAN 48150-1065 (734) 591-4444	<b>ROOF PLAN</b>	
	LIVONIA PUBLIC SCHOOLS FRANKLIN HIGH SCHOOL 31000 JOY RD. LIVONIA, MICHIGAN	
Project No: 21-032	Drawn By: APW	Plate No:
Date: APRIL 2021	Checked By: MCB	



**COUNTERFLASHING - REGLET**  
not to scale

NOTE: components shown are new unless noted as existing

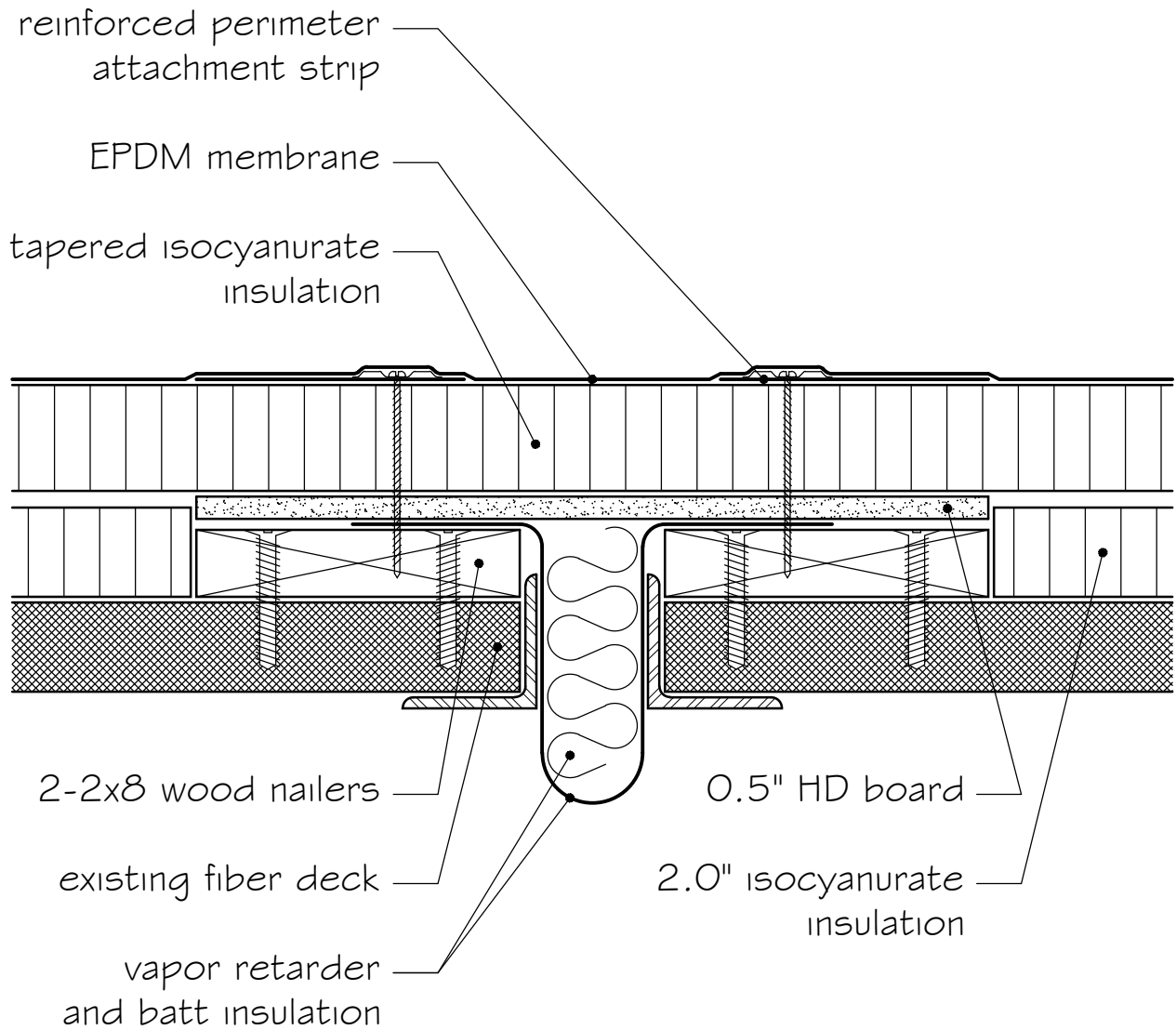


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VARIOUS SCHOOLS

<i>Project No:</i>	21-032	<i>Drawn By:</i>	APW	<i>Detail No:</i>
<i>Date:</i>	5-26-21	<i>Checked By:</i>	MCB	

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EXPANSION JOINT - FLUSH  
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LIVONIA, MICHIGAN

Project No: 21-032

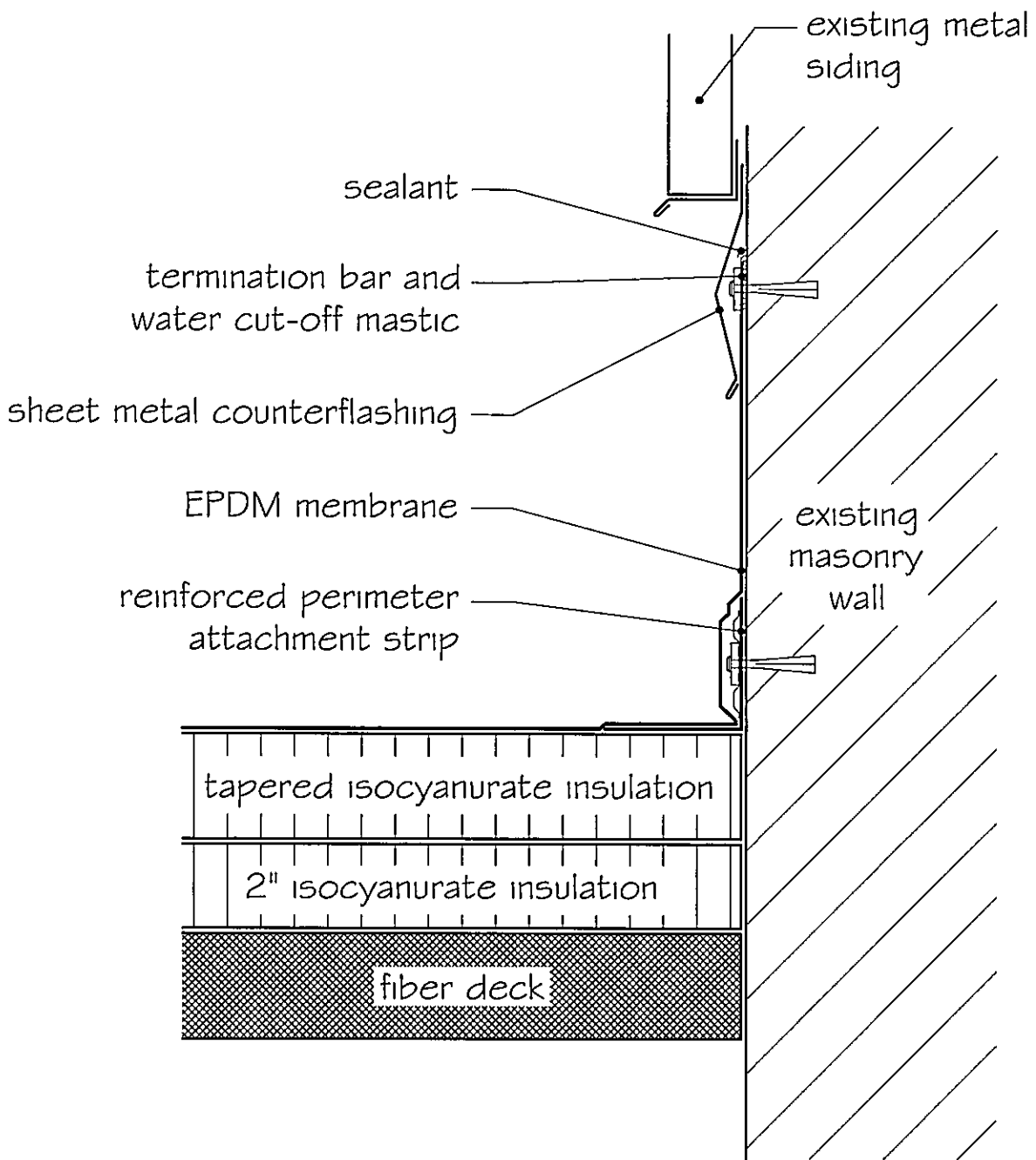
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**WALL FLASHING - SHEET METAL SIDING**  
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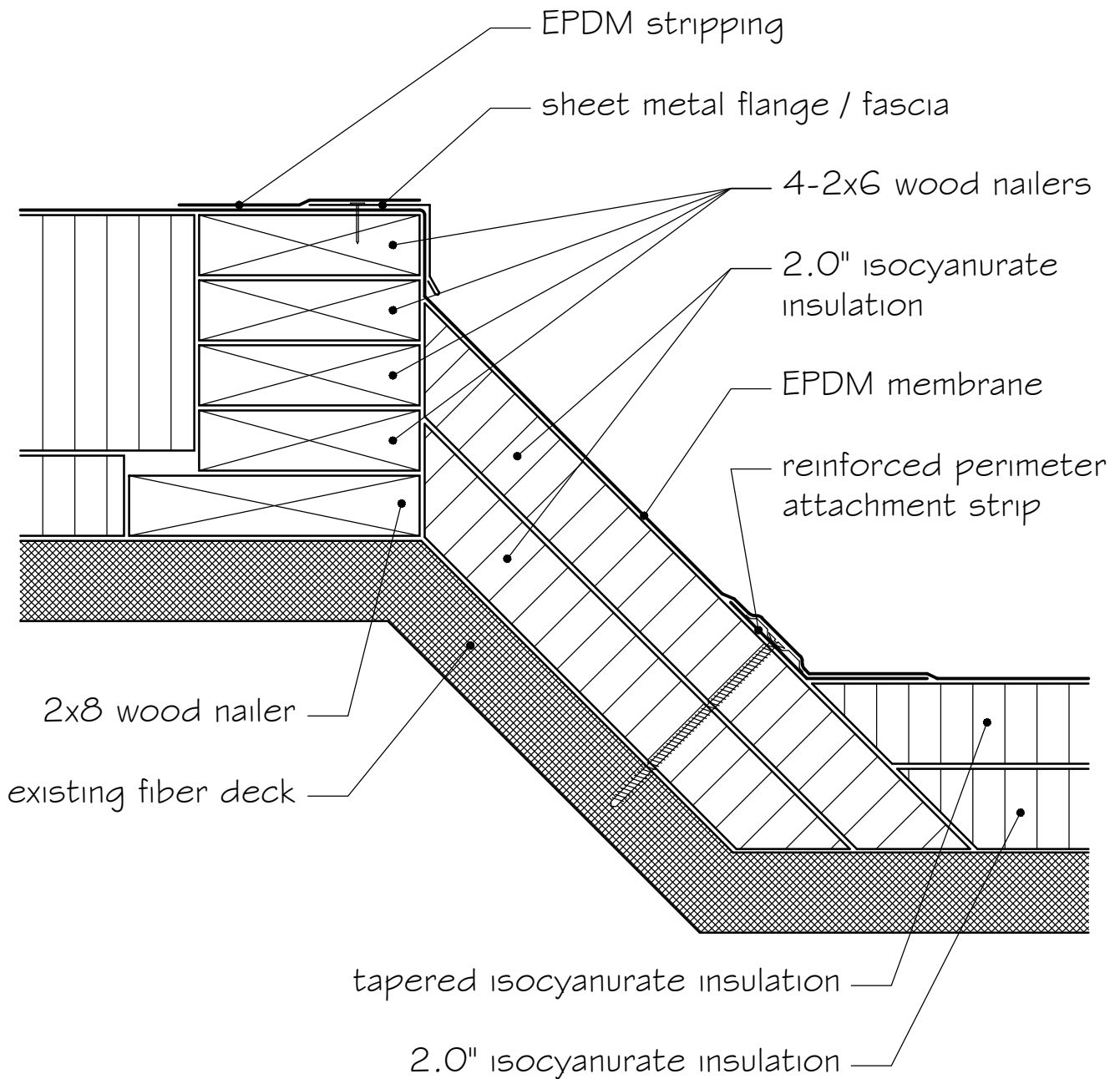
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<i>Project No:</i> 21-032	<i>Drawn By:</i> JPW	<i>Detail No:</i>  8
<i>Date:</i> JUNE 2021	<i>Checked By:</i> MCB	



TRANSITION  
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LIVONIA, MICHIGAN

Project No: 21-032

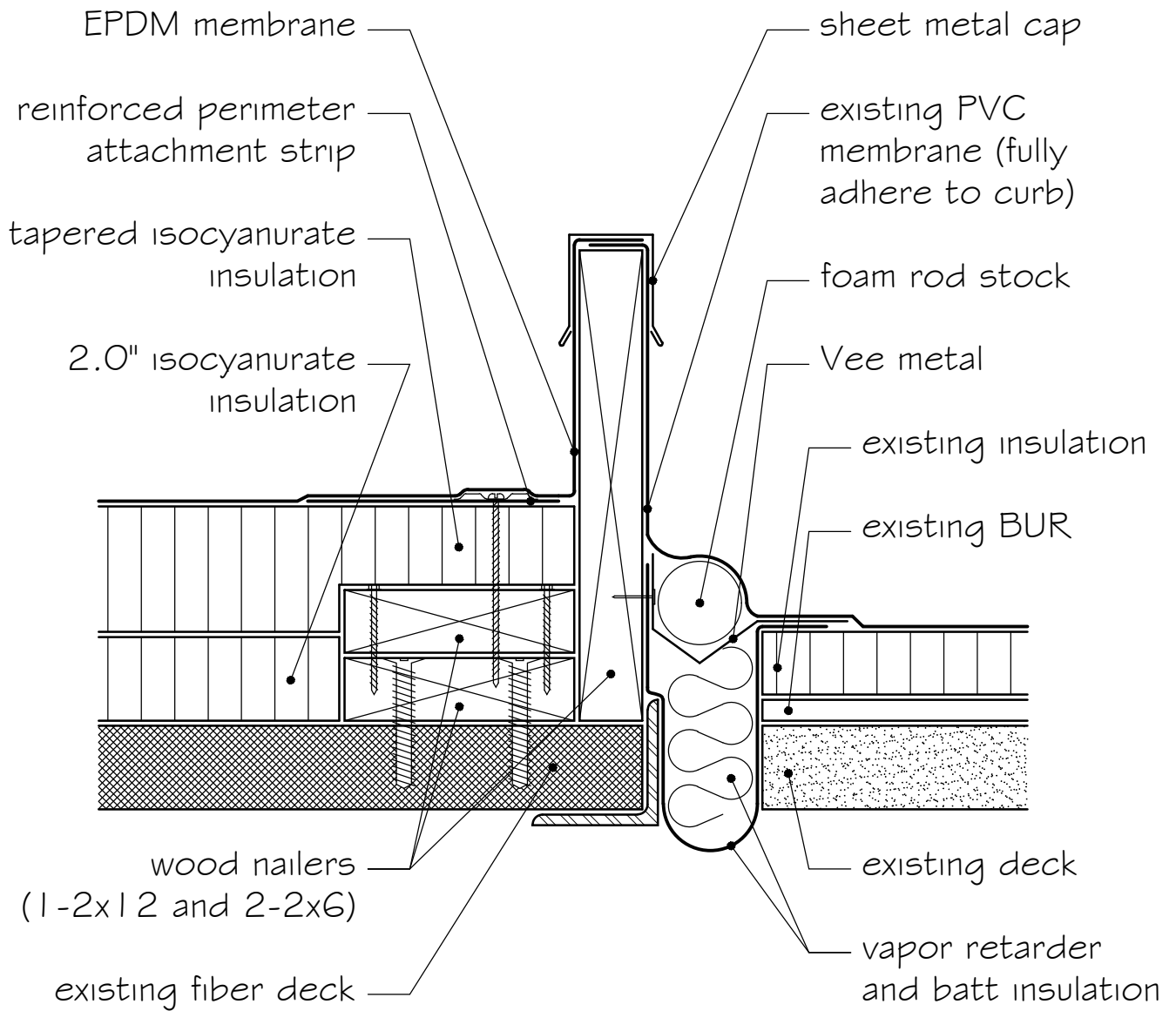
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**EXPANSION JOINT**  
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NOTE: components shown are new unless noted as existing



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LIVONIA, MICHIGAN

Project No: 21-032

Drawn By: JDS

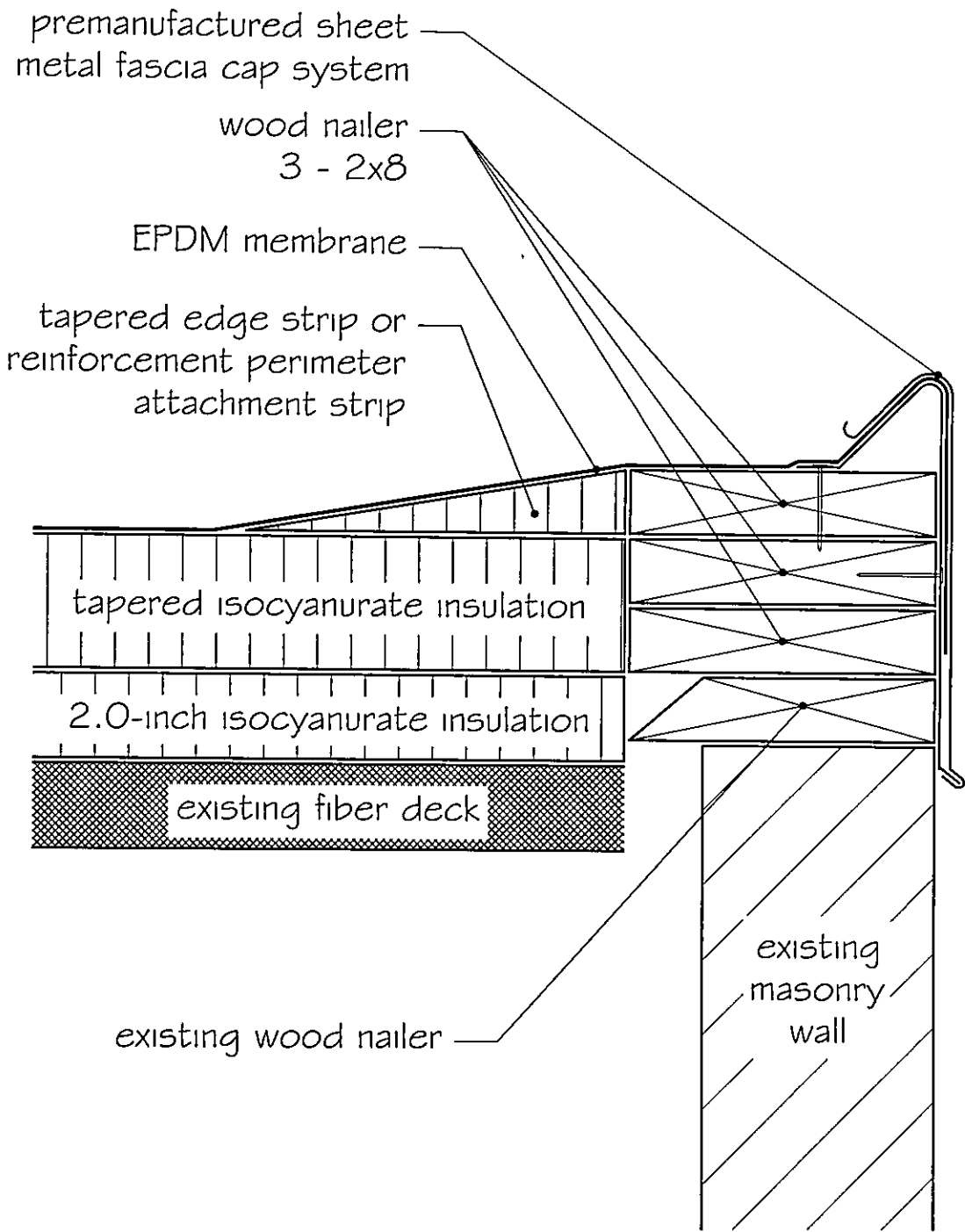
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**PERIMETER EDGE**  
not to scale

NOTE: components shown are new unless noted as existing

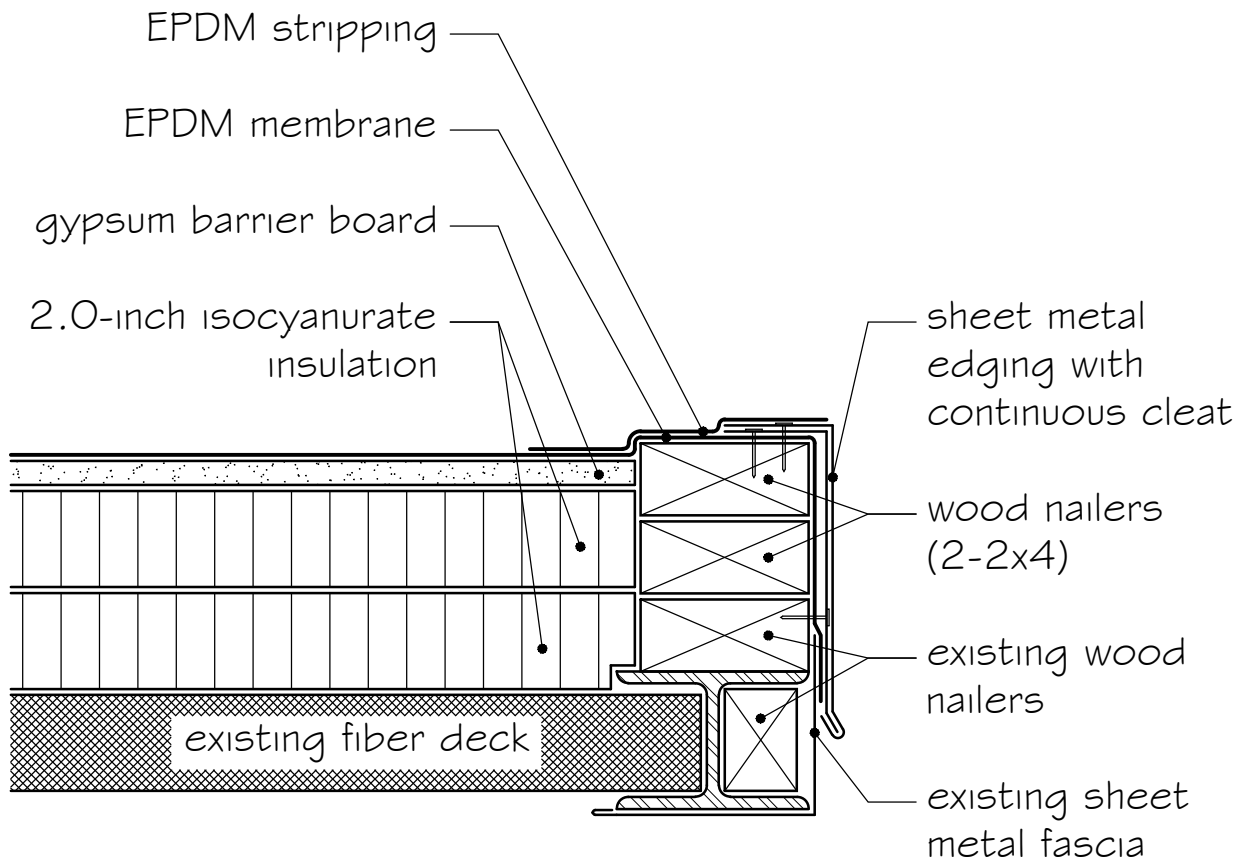


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31000 JOY ROAD  
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<i>Date:</i>	JUNE 2021	<i>Checked By:</i>	MCB		



SAWTOOTH PERIMETER EDGE  
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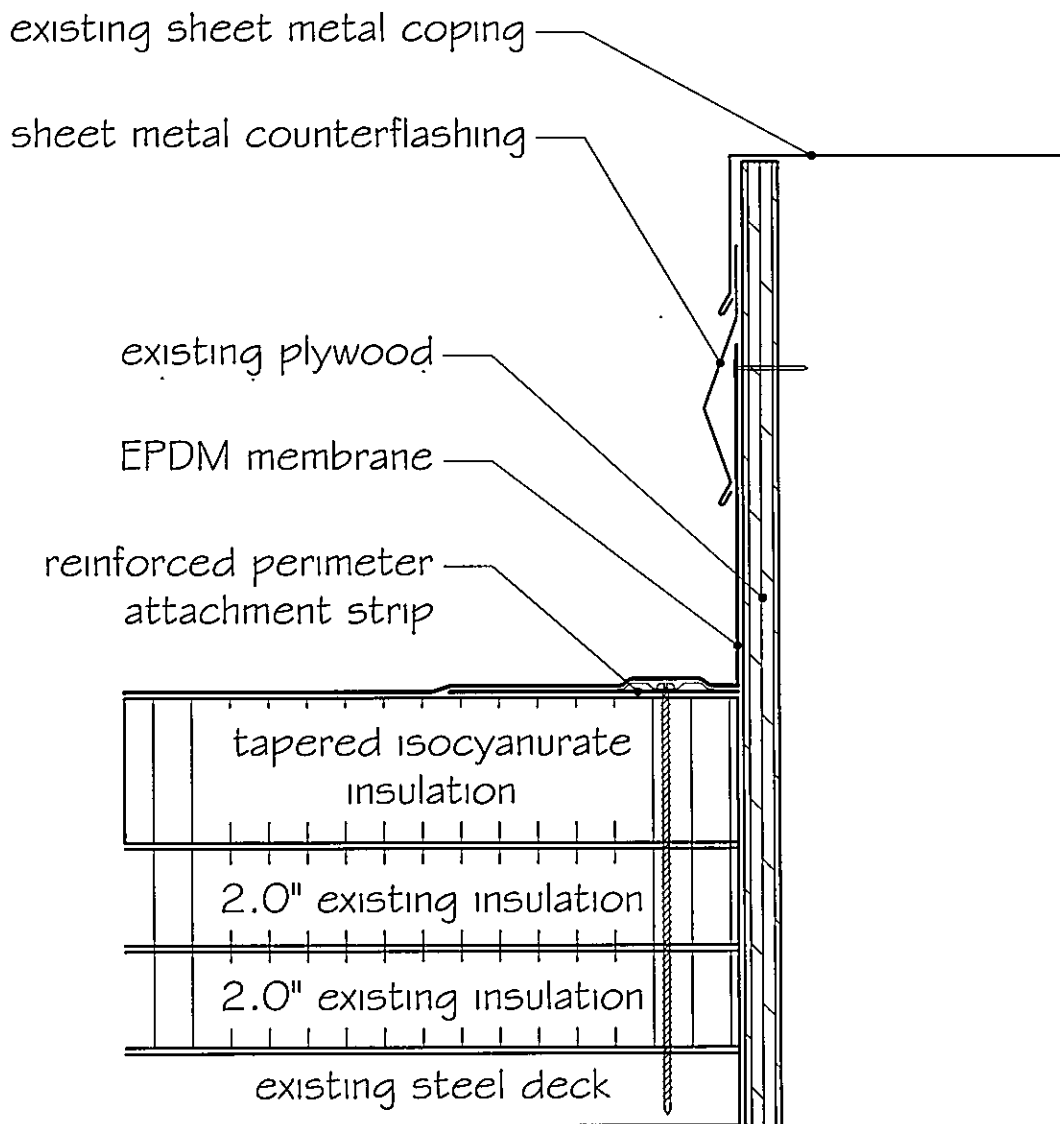
Drawn By: JDS

Detail No:

Date: 7-16-21

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13



AREA B4 ADDITION - COUNTERFLASHING  
not to scale

NOTE: components shown are new unless noted as existing



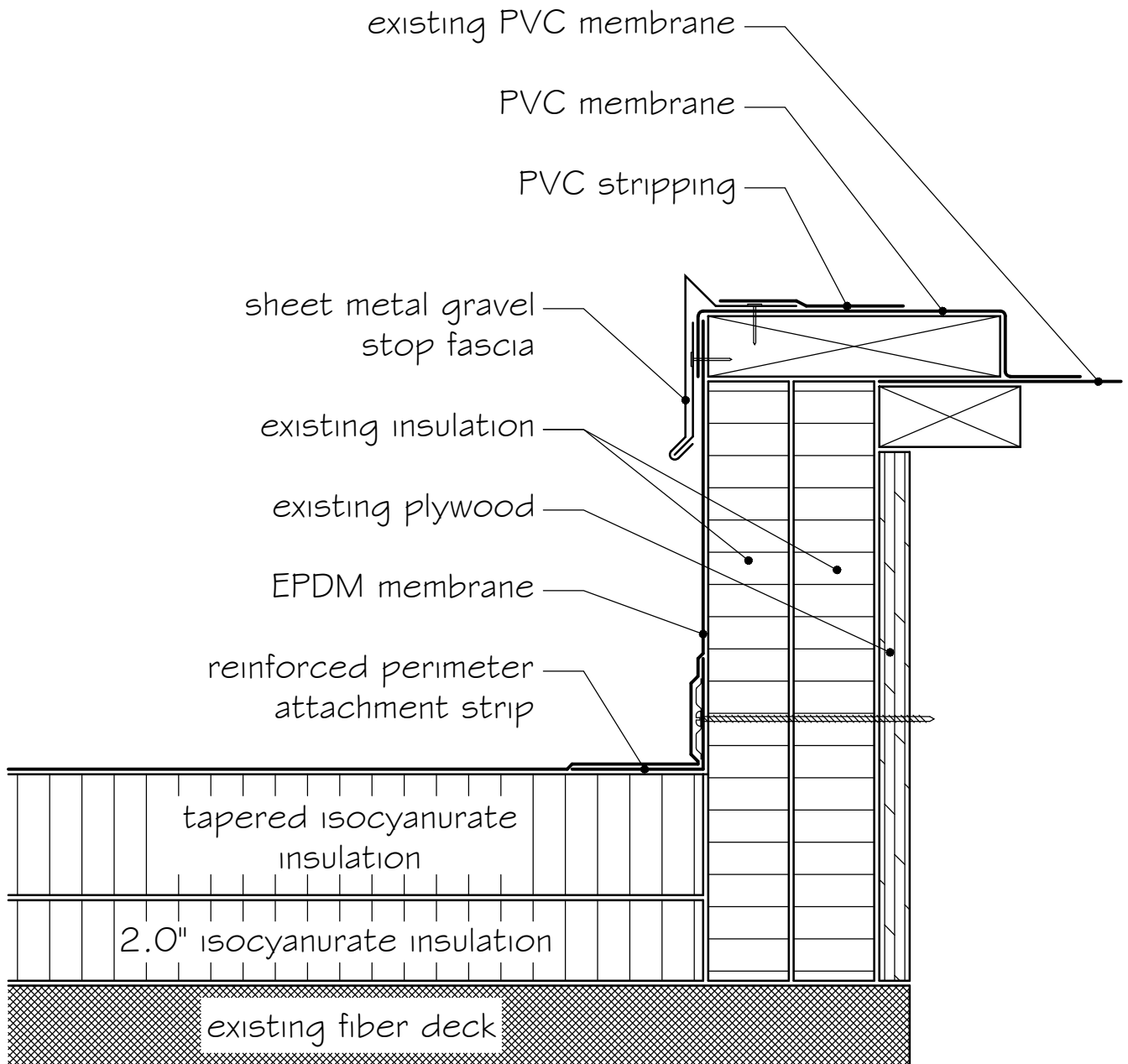
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AREA B4 - TRANSITION  
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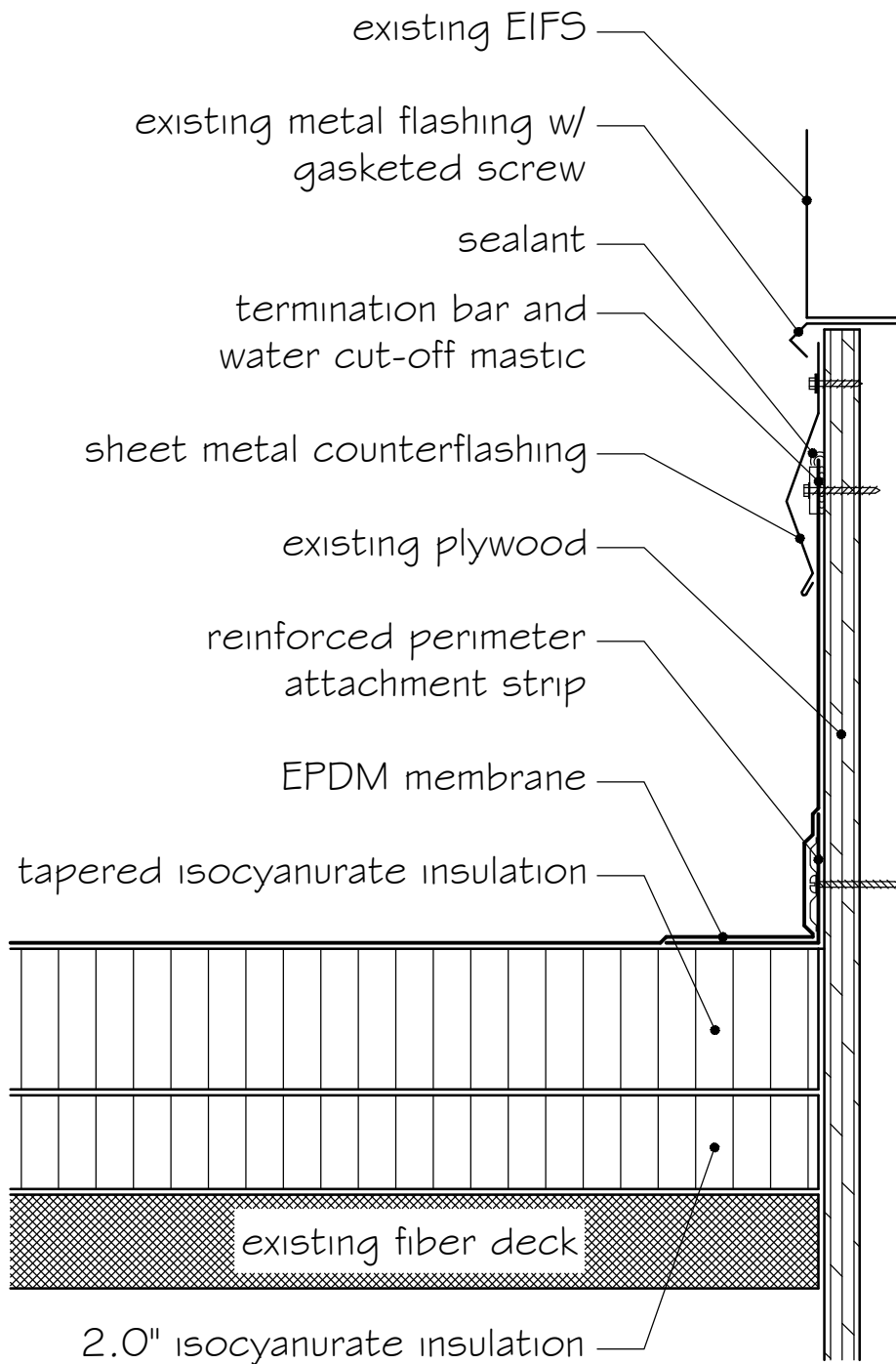
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Date: 5-26-21

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15



**AREA A - COUNTERFLASHING**  
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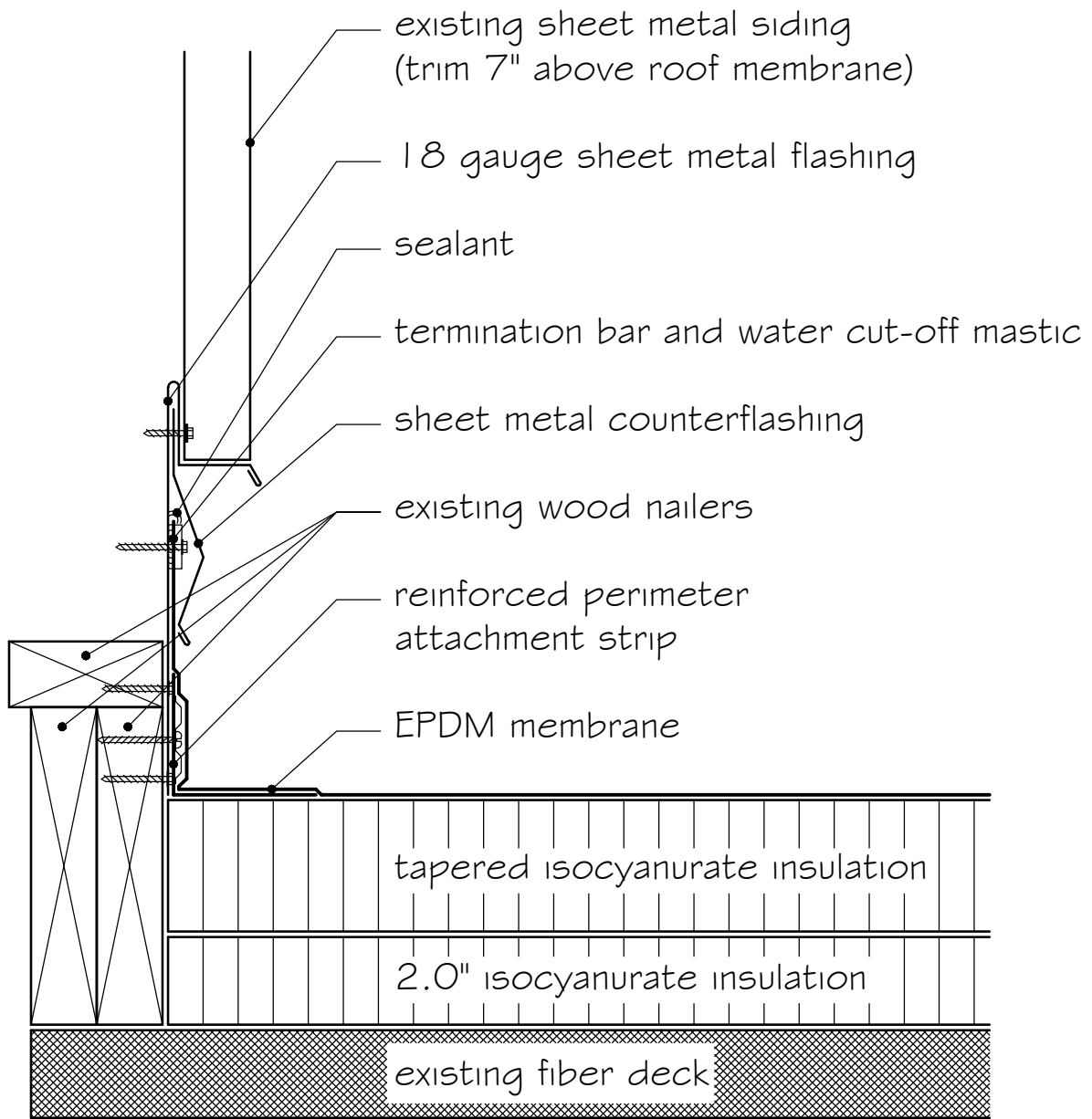
Drawn By: JDS

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Date: 5-26-21

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16



SHEET METAL SIDING  
not to scale

NOTE: components shown are new unless noted as existing

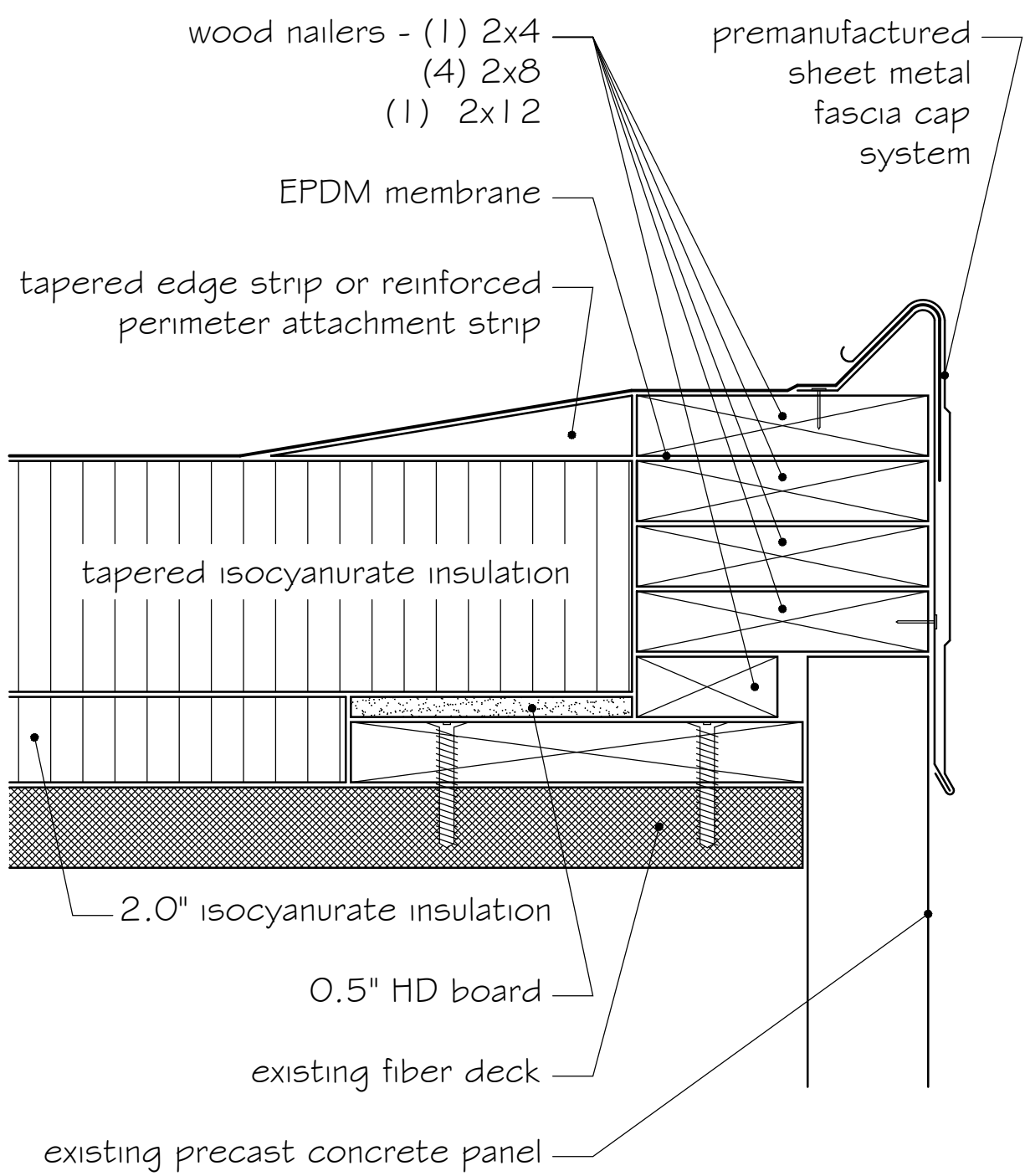


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<i>Date:</i>	8-19-21	<i>Checked By:</i>	MCB		



**PERIMETER EDGE**  
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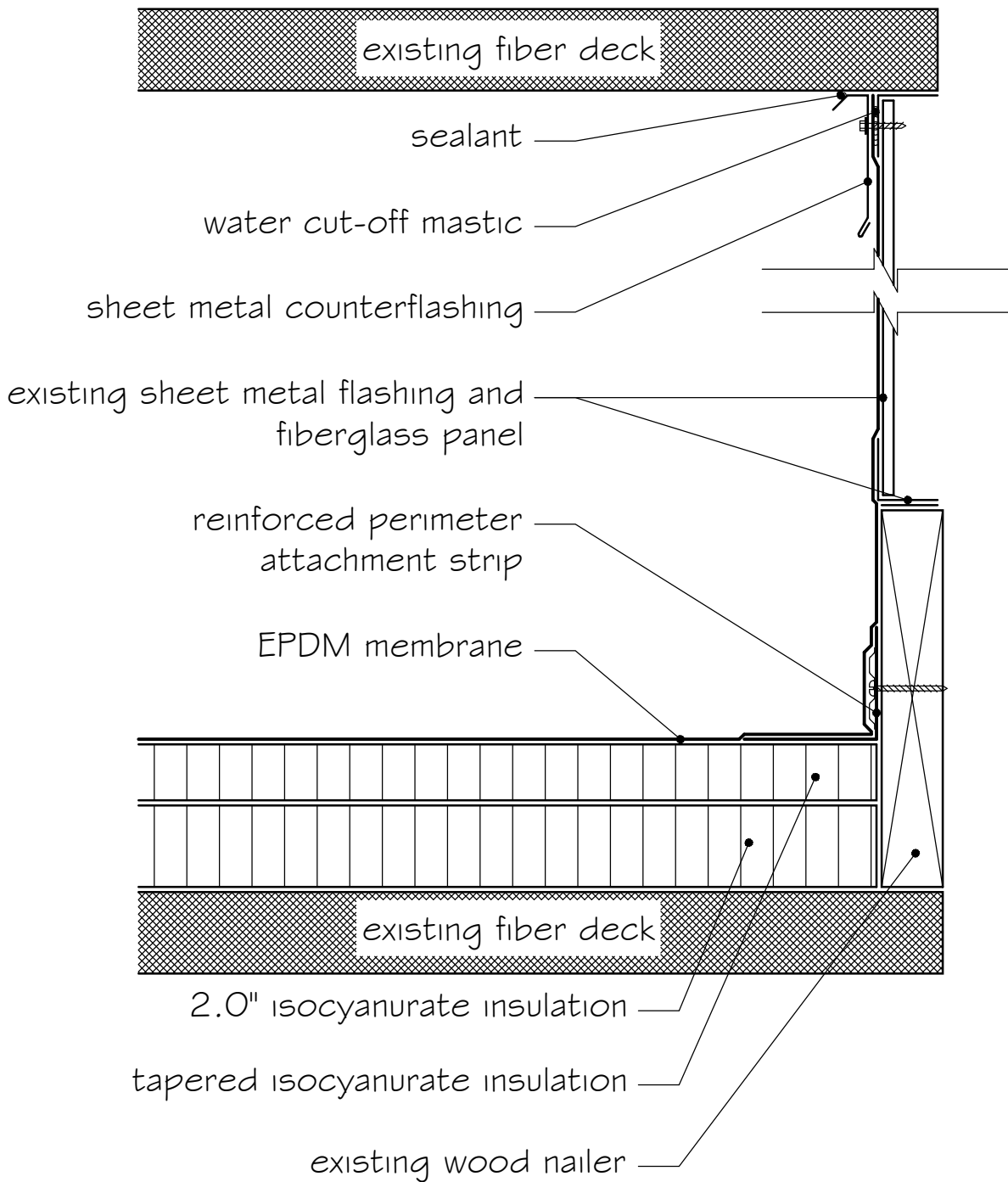
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**CLERESTORY FLASHING**  
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38



## RECTANGULAR GUTTER STYLES

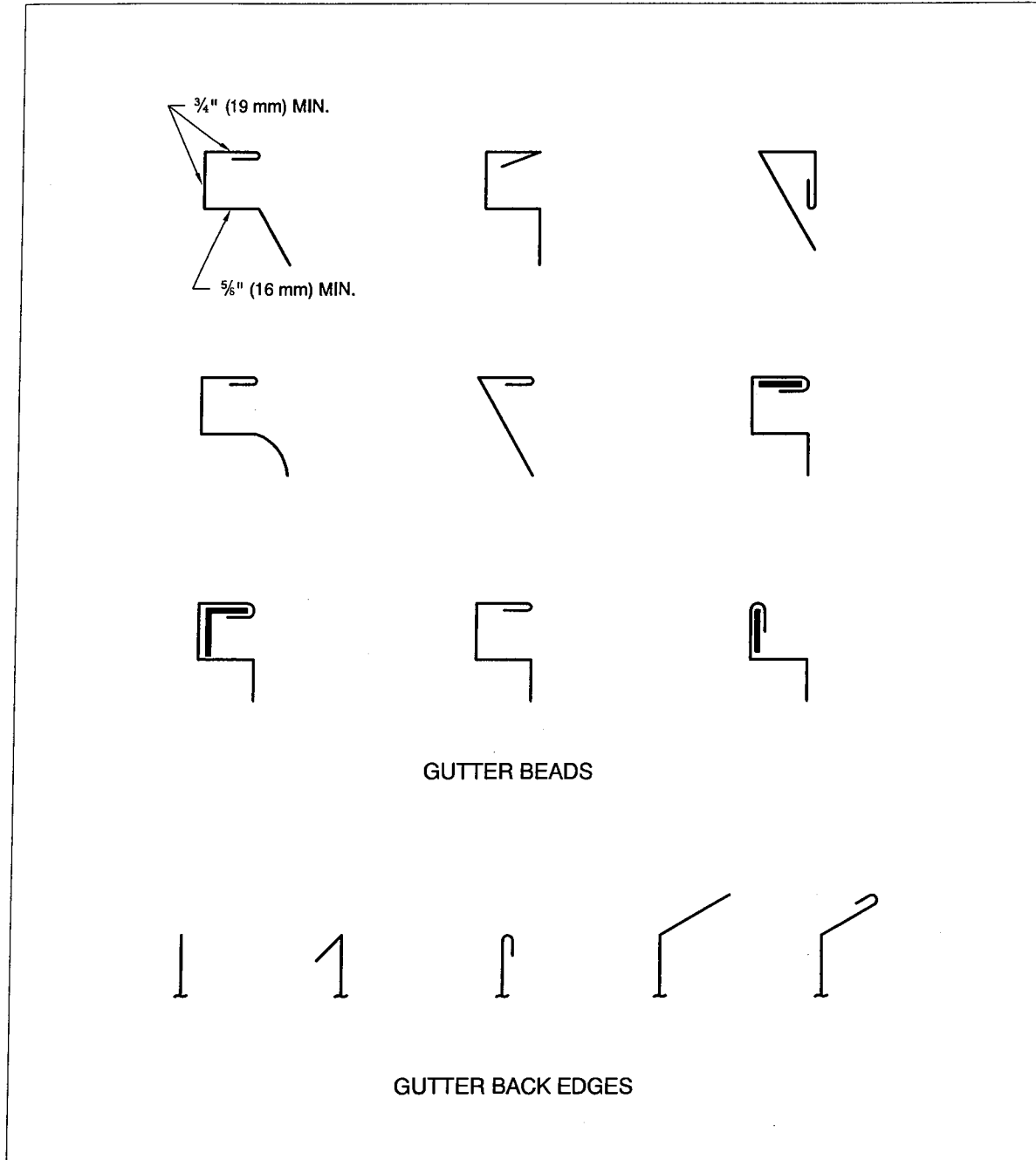
Twelve of the most commonly used rectangular gutter styles are shown on Figure 1-2. Other less common styles are also used.

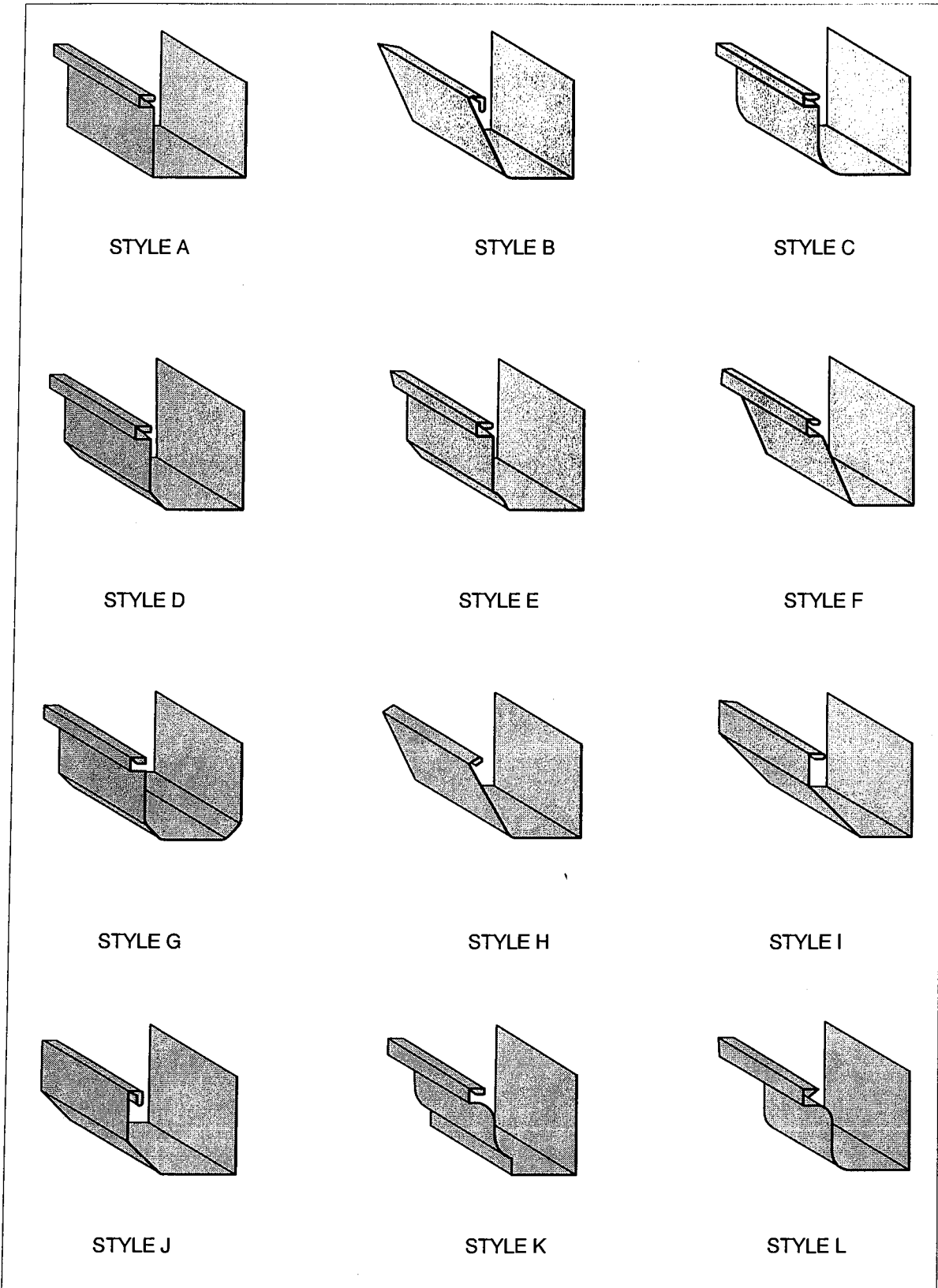
The minimum dimensions are provided below on one gutter bead to illustrate the appropriate size of the individual breaks. Very small dimensional beads cannot be

FIGURE 1-2

fabricated. Gutter beads must be designed to accommodate the installation of the gutter spacer.

The more longitudinal breaks a gutter has, the more rigid it will be. Less rigidity in the gutter can be compensated for by a stronger support system. Therefore, styles like "A" should be of heavier gage material and more rigidly supported than styles like "G" or "J".





**FIGURE 1-2 RECTANGULAR GUTTER STYLES**

## 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:

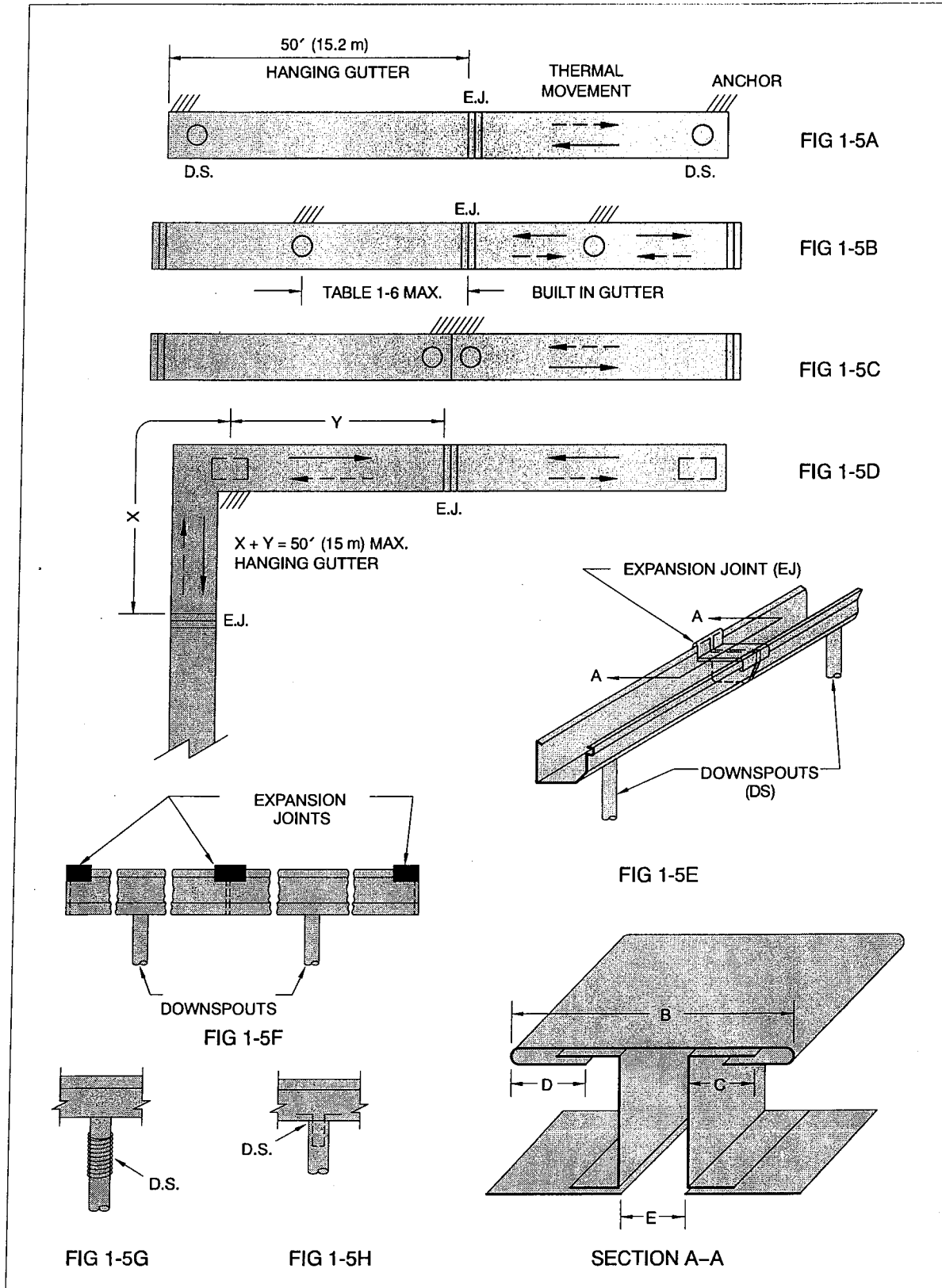
B – Width of the cap for the expansion joint.

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
120 (49)	1/8"	3 mm	1/2"	13 mm	3/16"	5 mm	5/8"	16 mm
100 (38)	3/16"	5 mm	5/8"	16 mm	3/16"	5 mm	13/16"	21 mm
75 (24)	3/16"	5 mm	3/4"	19 mm	1/4"	6 mm	11/16"	27 mm
35 (1.7)	1/4"	6 mm	15/16"	24 mm	5/16"	8 mm	1 3/8"	35 mm
0 (-17)	1/4"	6 mm	1 1/8"	29 mm	3/8"	10 mm	1 1/16"	43 mm
B	2"	50 mm	3 1/4"	83 mm	2 3/4"	70 mm	4 1/2"	114 mm
C	1/2"	13 mm	13/16"	21 mm	1 1/16"	17 mm	1 1/8"	29 mm
D	1/2"	13 mm	13/16"	21 mm	1 1/16"	17 mm	1 1/8"	29 mm

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



**FIGURE 1-5 ALLOWANCES FOR GUTTER EXPANSION**

## 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 Table 1-7.

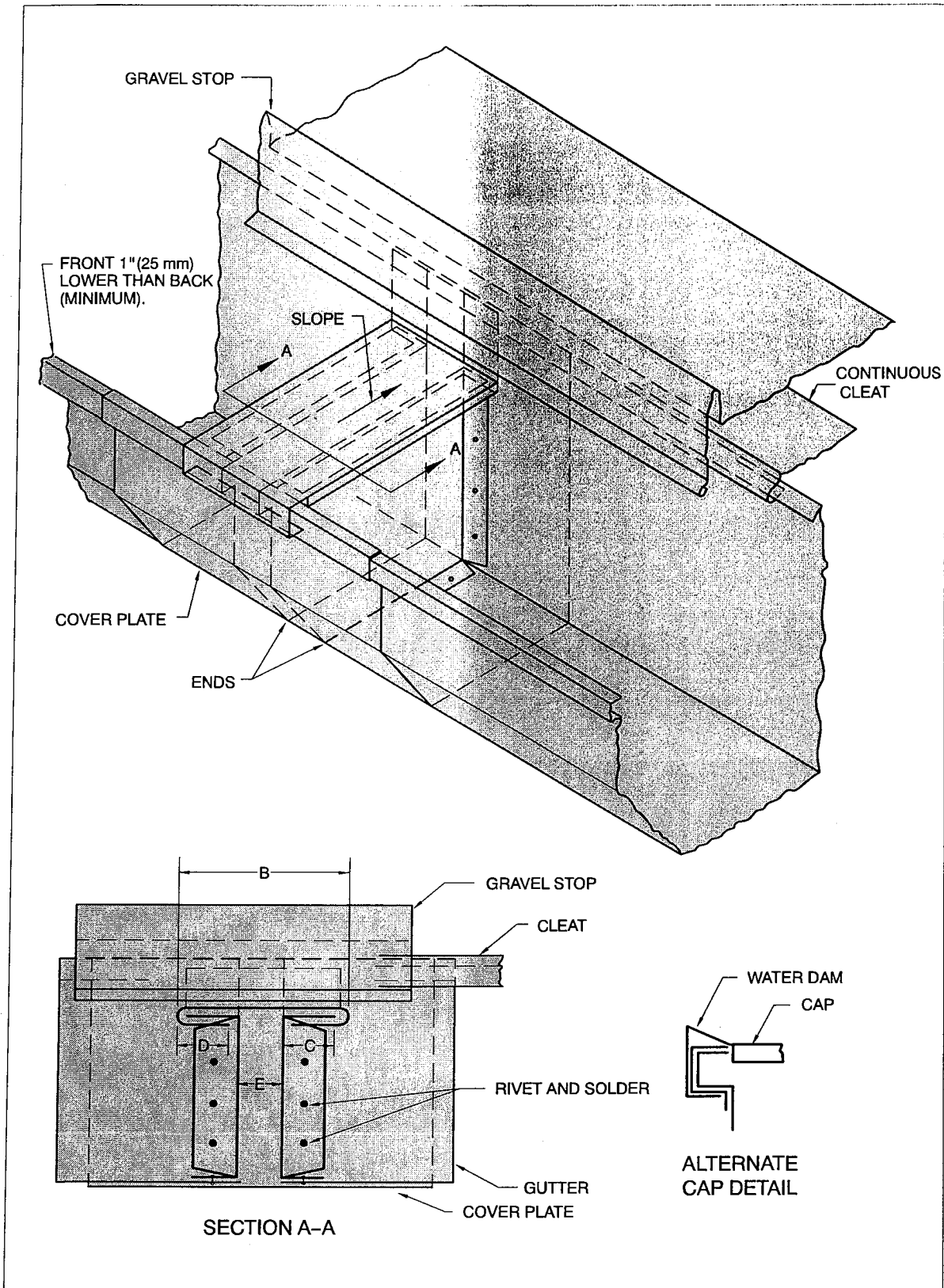
A cover plate is used primarily to hide the exposed expansion joint. Where appearance is not an important factor, the cover plate may be eliminated. The cover plate must not be attached in a manner that will restrict

**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**

## HANGING GUTTER INSTALLATIONS — HEAVY GUTTER

## FIGURE 1-16

Figure 1-16 illustrates two methods for installing gutters of welded construction.

In Figure 1-16A, the gutter is supported by straps placed on 30 in. (760 mm) centers and sized according to Table 1-8. Straps are tack welded to the bead and screwed to a nailer through slotted holes in back of the gutter. For additional support, the gutter is screwed to a wood nailer through slotted holes. These screws are spaced alternately with the straps.

The gutter in Figure 1-16B is supported by  $\frac{3}{16} \times 2$  in. (5 × 50 mm) brackets on 24 in. (610 mm) centers. A continuous angle is welded along the lower back edge of the brackets to keep the gutter away from the face of the building. The bracket is bolted to the bead of the gutter

through slotted holes. Gutter brackets are welded to upper continuous angle at time of installation. Gutter is further supported by a continuous cleat attached to the nailer. Spacers ( $\frac{3}{16} \times 1$  in. [5 × 25 mm]) are fastened to the gutter and are spaced on 24 in. (610 mm) centers alternately with brackets.

This type of gutter is recommended for warehouses and similar buildings and may be as large as 12 × 12 in. (305 × 305 mm).

Information on rectangular gutter design is given on Figures 1-1 and 1-2.

Expansion joints must be provided in gutters; see Figures 1-5 and 1-10.

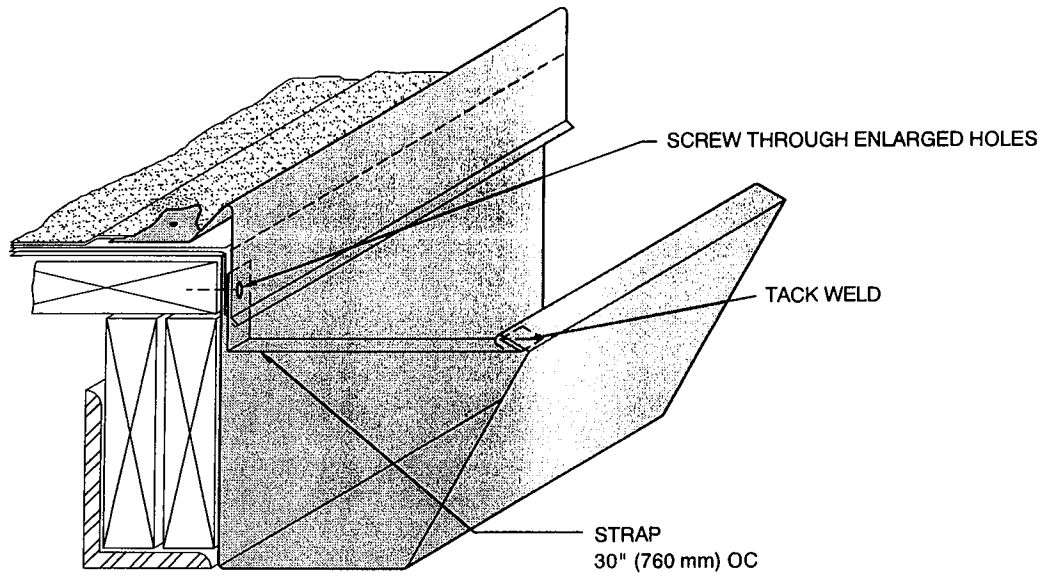


FIG 1-16A

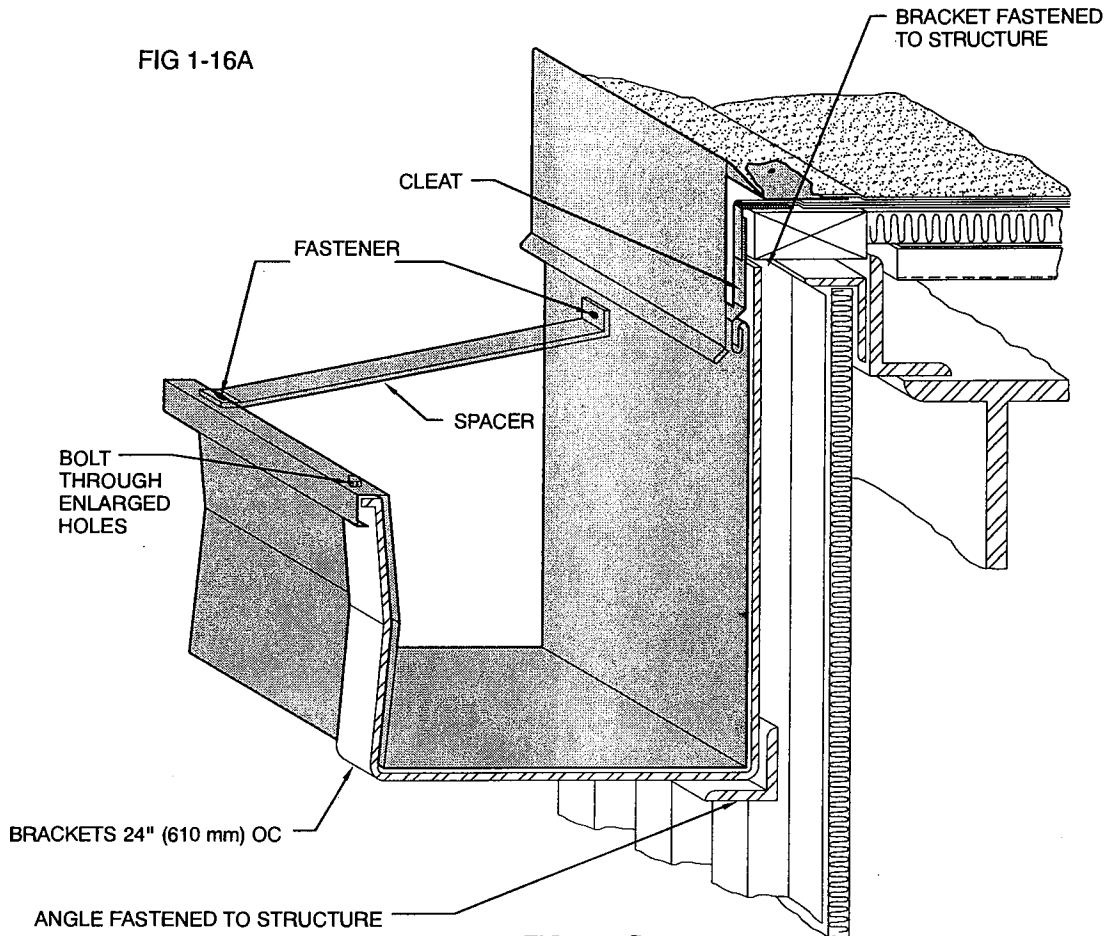


FIG 1-16B

FIGURE 1-16 HANGING GUTTER INSTALLATIONS — HEAVY GUTTER



## CONDUCTOR HEADS — TYPICAL

Conductor heads are used to collect water from scuppers or gutters for discharge into downspouts.

Figure 1-25 illustrates some of the many designs used for conductor heads. It is recommended that the depth of its top opening equal  $\frac{2}{3}$  of its width.

Although all designs shown here use rectangular outlet tubes, these can be varied to conform to the shape of any selected downspout. The outlet tube should have a minimum length of 4 in. (100 mm).

The overflow indicator openings shown in Figures 1-25B and 1-25C are recommended for use in heavy icing areas and for drains that may become plugged by leaves or other debris to indicate that the drainage is obstructed. Overflows may be incorporated in any of the conductor heads shown. If built-in overflow is not used, set the top of the conductor head 1 in. (25 mm) below

FIGURE 1-25

the scupper to permit overflow. The use of the removable screens with conductor heads is optional.

Conductor heads and downspouts should be fabricated of the same material. The recommended minimum for construction of conductor heads is 24 ga (0.701 mm) galvanized steel, 0.032 in. (0.812 mm) aluminum, 16 oz (0.55 mm) copper, or 26 ga (0.396 mm) stainless steel, or coated metal using the thickness listed for the base metal.

Conductor heads should be installed according to methods outlined in Figures 1-26, 1-27, and 1-28. The typical proportions of conductor heads are:

Face width: 3 to 4 times downspout width

Face depth: 2 times downspout width

Height: 3 to 4 times downspout width

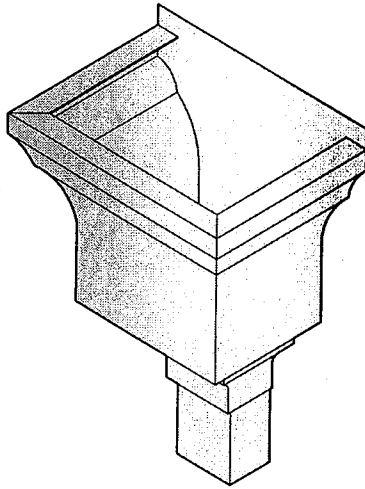


FIG 1-25A

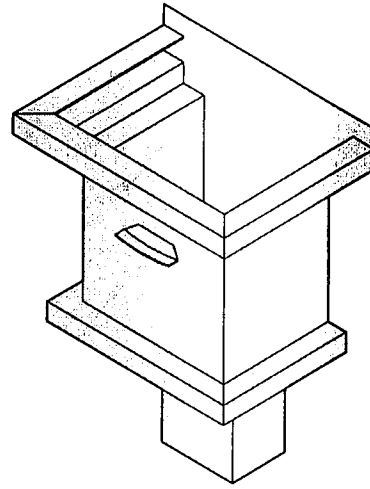


FIG 1-25B

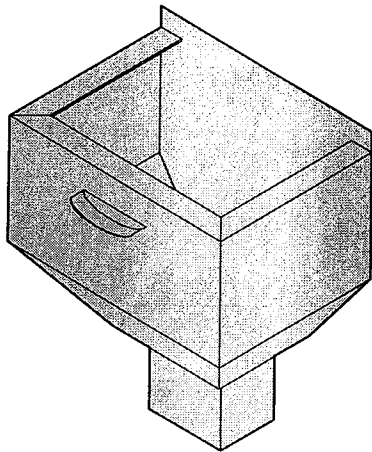


FIG 1-25C

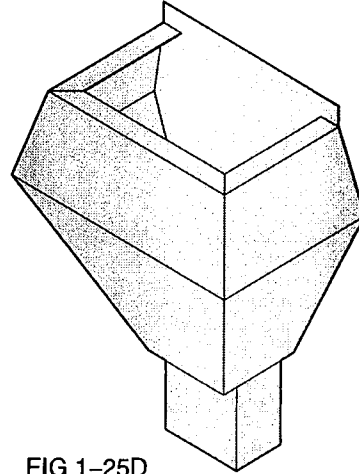


FIG 1-25D

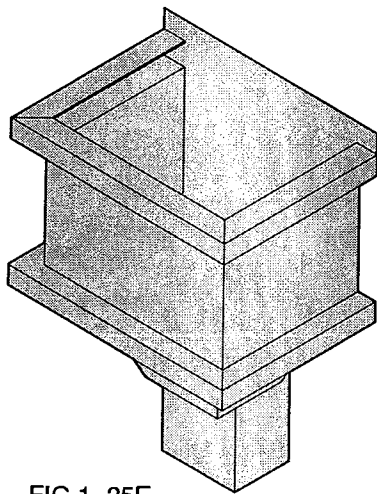


FIG 1-25E

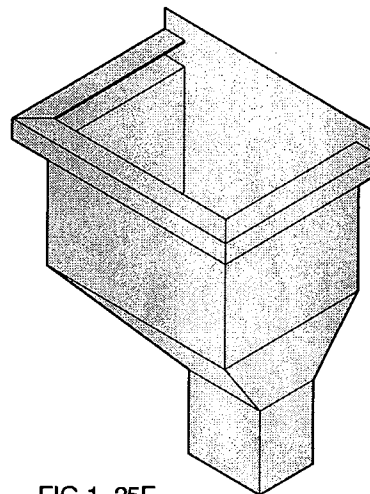


FIG 1-25F

FIGURE 1-25 CONDUCTOR HEADS — TYPICAL

## SCUPPER — THROUGH FASCIA WITH CONDUCTOR HEAD

## FIGURE 1-28

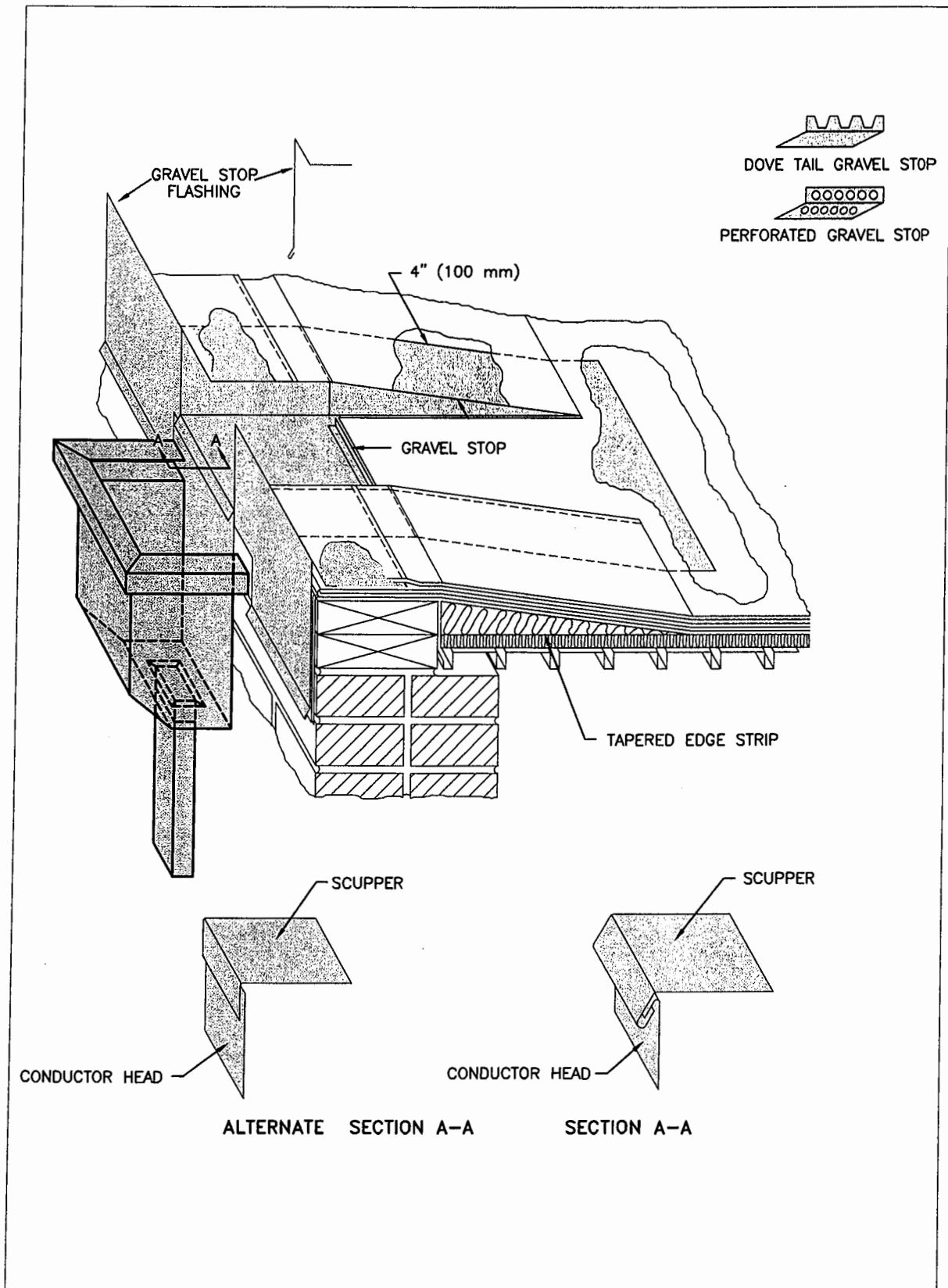
Figure 1-28 illustrates a typical installation of a scupper through a raised roof edge and gravel stop, discharging into a conductor head and downspout. Overflow openings in conductor heads (Figures 1-25B and 1-25C) are recommended for use in heavy icing areas and for drains that may become plugged by leaves or excessive debris.

The conductor head should be a minimum of 2 in. (50 mm) wider than the scupper. Scupper is fabricated with a flange, which extends onto tapered edge strip and back 4 in. (100 mm) on roof.

Conductor head may be fitted around scupper as shown

in Section A-A, or may be locked to scupper as illustrated in Alternate Section A-A. Conductor head is anchored to the nailer through the gravel stop.

All bare metal joints are soldered except in aluminum construction. In aluminum construction welded joints are used. A compatible sealant is used on precoated metal joints. Conductor head, gravel stop, downspout, and scupper should be fabricated of the same material. A gravel stop is fastened to the floor of the scupper. Recommended minimum for construction of scuppers is 24 ga (0.701 mm) galvanized steel, 0.040 in. (1.016 mm) aluminum, 16 oz (0.55 mm) copper, or 26 ga (0.477 mm) stainless steel, or coated metal.



**FIGURE 1-28 SCUPPER — THROUGH FASCIA WITH CONDUCTOR HEAD**

## 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. Mitters 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.

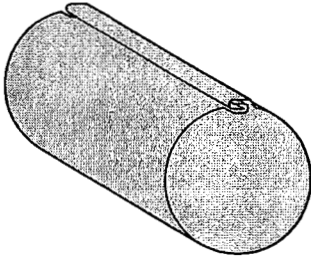


FIG 1-32A

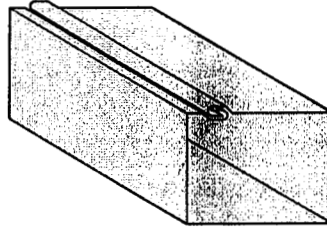


FIG 1-32B

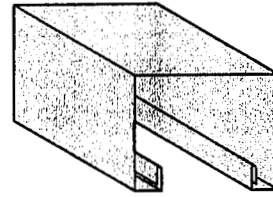


FIG 1-32C

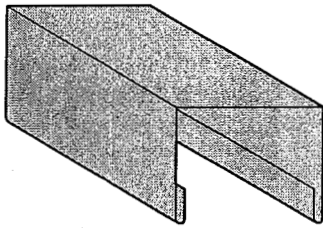


FIG 1-32D

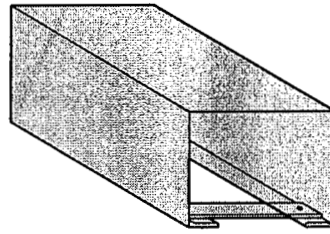


FIG 1-32E

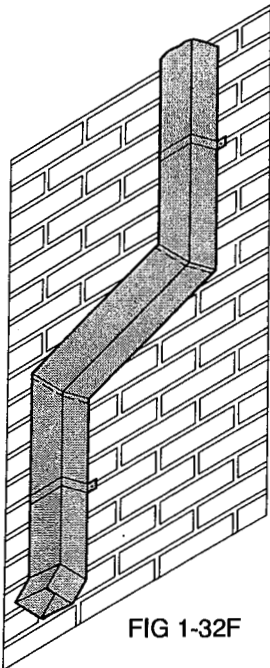


FIG 1-32F

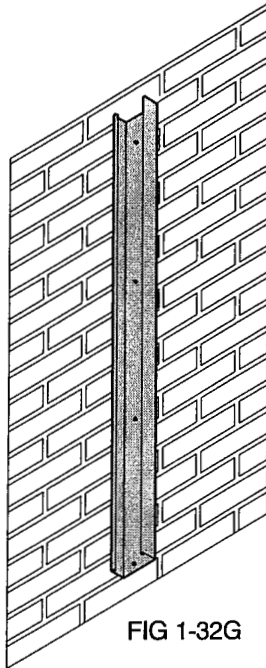


FIG 1-32G

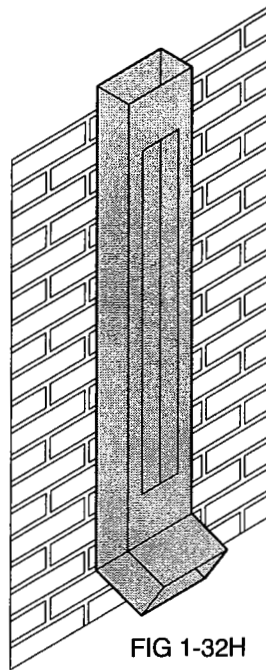


FIG 1-32H



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.

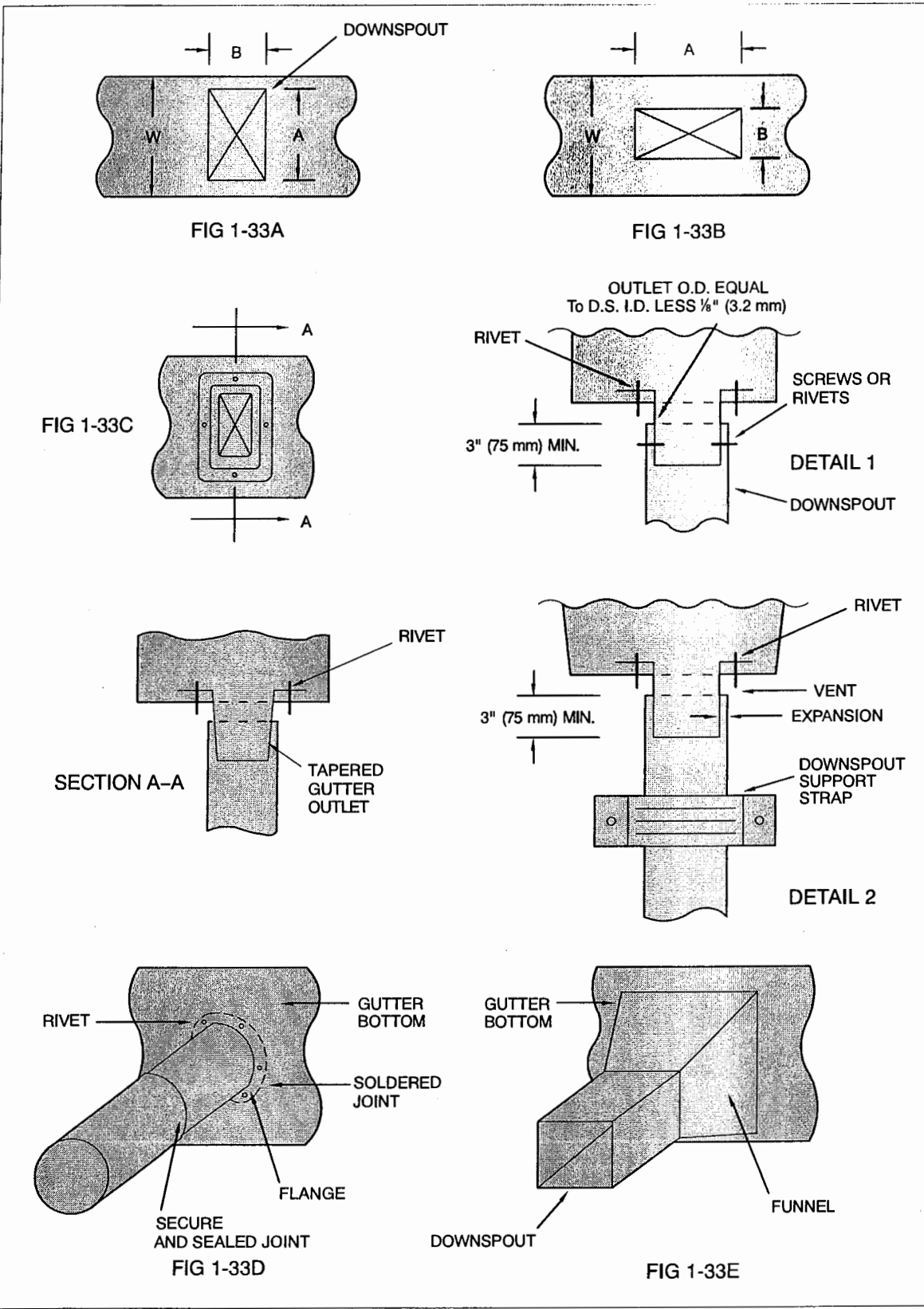
## FIGURE 1-33

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.



**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.

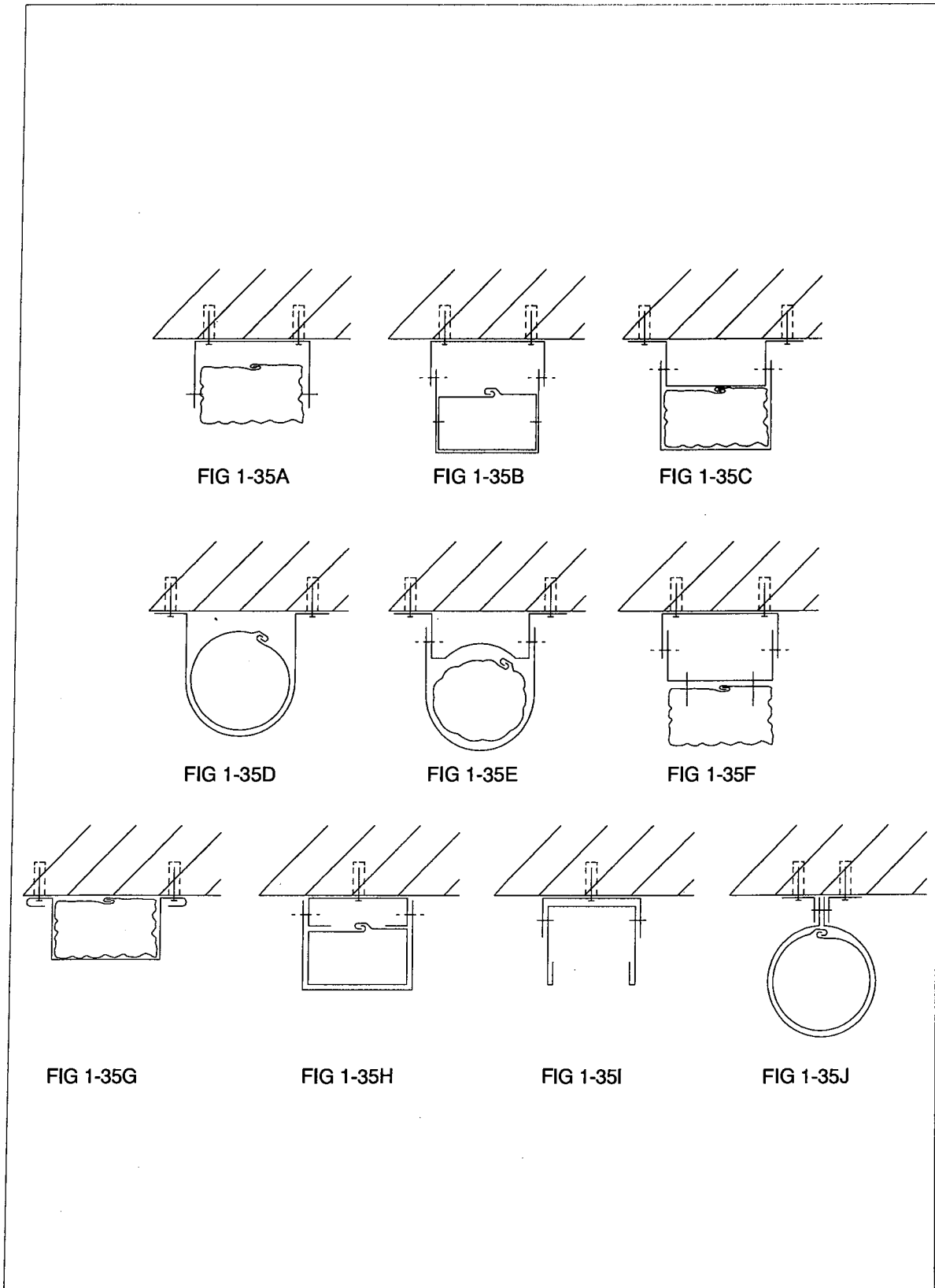
Figures 1-35A, B, C, and G show hangers used for rectangular or square downspouts. Figures 1-35D, E, and J have been designed for round downspouts. These hangers should be fabricated of  $\frac{1}{16} \times 1$  in. (1.6  $\times$  25 mm) flat stock (minimum) and be of the same material as the downspout.

## 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**

## ROOF EDGING AND PERIMETERS — DESIGN DATA

## FIGURES 2-1 TO 2-8

Roof drainage systems should be designed so that water does not flow over the edges of built up roofs. For a roof that drains over the edge, the service life may be shortened, gravel scouring and staining from pitch drippage are more likely, and thermal cycles may be more adverse.

Research has shown that some roofing membranes may crack at the gravel-stop roof flange edges or joints. Roofing system problems are more common at laps. Roof edges should be designed to avoid or to control draining.

The preferred methods for preventing such draining are:

- a. Non-draining roof edge systems cap fascia with elevated roof edge. Figure 2-6.
- b. Draining roof edge systems, listed in order of preference:
  1. Scuppered edge with elevated fascia cap. Figure 1-29.
  2. Scuppered parapet wall. Figures 1-26 and 1-30.
  3. Scuppered edge with elevated gravel-stop. Figures 1-11, 1-28, and 1-29.
  4. Gravel-stop on flat built up roof. Figures 1-12 to 1-14.

The details in this list respond to concerns about water proofing and maintenance. Risk of roof ponding is an independent consideration. Basic alternatives for designing a roof edge-fascia system are outlined in Figures 2-1 to 2-4. Additional details are provided in Figures 2-5 to 2-8. Some details are repeated for emphasis. The details presented are not intended to preclude consideration of other details that have a known and acceptable service record.

## General Design Guidelines:

- a. Wall Plate: Use raised edge nailer at roof edges minimum 2 × 6 in. (50 × 152 mm) to control drainage and to get gravel-stops out of standing water. Nailers that slope to the roof side are better than level ones.
- b. Gravel-stops:
  1. Use 3/4 in. (19 mm) height minimum.

2. Use 30° to 45° included angle when brake forming. The 180° bend form is difficult to seal at lap joints and would normally be considered only for curved fascia.
  - c. Roof flanges: Install them on top of the roofing plies.

Additional sealing strips are required. When water drains over a gravel-stop into a gutter, the bottom roof ply is extended into the gutter unless the back edge of the gutter is continuously cleated and run under the roof plies. This diverts pitch drippage.

1. Width: 3 3/4 in. (95 mm) minimum, 4 1/4 in. (108 mm) maximum, recessed 1/2 in. (13 mm) behind nailer edge.
2. Fastening: annular ring or barbed shank; minimum 1 in. (25 mm) long roofing nails 3/4 in. (19 mm) minimum penetration into nailer spaced 3 in. (75 mm) OC in a staggered pattern; rows should be approximately 3/4 in. (19 mm) from the edges of the roof flange, except with single ply roof, see Figure 2-1.
3. Joints: end lap 3 in. (100 mm) with a single lap. 1/4 in. (6.4 mm) clearance between end butts with 12 in. (305 mm) backup plates, 6 in. (152 mm) cover plates or both. Use appropriate sealant below the flange and in the laps. 10 ft (3 m) maximum intervals between joints. Use fasteners that do not penetrate the flanges in backup plates and cover plates.
4. Corners: corners must be formed, mitered, lapped, notched, sealed, welded, or soldered as necessary to provide a continuous system that is not more susceptible to leaks than straight sections.

## d. Fascia:

1. Material Thickness: Use Table 2-1, face limit dimensions to determine thickness relative to style and type of joints. 4 in. (100 mm) flat vertical height is the maximum for an uncleated or unlocked edge. Combinations of 4 to 12 in. (100 to 305 mm) (as shown in Figure 2-2) widths designated within the limits of Table 2-1 and details in Figure 2-1. Angles formed in the face add rigidity and reduce out-of-flat appearance.
2. Vertically and horizontally oriented joints: See Table 2-1 and Figures 2-2 to 2-5. Over 12 in. (254 mm) fascia height, joints that are used on metal wall systems or on roofs with pitches over 6 in. per ft (152 mm per 305 mm) are acceptable if they are compatible with end connections.



3. Stiffening: Forms of horizontal stiffening should drain rather than retain water. At joints, alignment should be maintained and openings in butts and laps should be avoided.

4. Drip edges: use these in the absence of an offset or in the presence of a cleat. Water will adhere to a horizontal surface that intersects a wetted vertical plane at a 90° angle.

5. Cleats: horizontal cleats should be continuous. Continuous means in lengths not to exceed 10 ft (3 m) with ¼ in. (6.4 mm) clearance between ends. Cleat end locations should not coincide with locations of vertical joints and seams if the gaps will be visible. Cleat gage must be at least fascia gage. An optional method is extend the cleat up to the top edge of the roof and turn a horizontal leg at a 90 degree angle over the top edge of the roof. This will add rigidity to the fascia. See Figures 2-1A and 2-1B for cleat detail.

6. Laps: Vertical laps of metal drip edges onto continuing vertical faces should be at least 1 in. (25 mm) to minimize wind-driven water entry. This is particularly important near absorbent materials such as wood.

7. Corners: Fascia corners must provide the same degree of waterproofing as straight sections and joints. They may be

- formed (folded);
- welded;
- seam locked;
- mitered, lapped, riveted 1 in (25 mm) on center and soldered;

- lapped 1 in. (25 mm) minimum, sealed and riveted 1 in. (25 mm) OC.

8. Joint sealant: Joints should be sealed with a metal roofing grade of sealant. Do not use asphalt or bituminous base compounds that would weep out of the joints.

e. Soffit: See Figures 2-3, 2-4, and 2-7.

Metal soffit covers should be designed of solid, stamped, or perforated metal or fitted with intermittent vents as appropriate for the end use. Drip edges at fascia-to-soffit transitions can be folded to continue the same finish that is on the fascia. Because soffits are not subject to direct sunlight, less accommodation for expansion and contraction may be used. Use sufficient fastening to maintain flat surfaces and align joints. Specify exposed or concealed fasteners.

Research has shown that gravel-stop-fascia designs vary between localities because of local practices and climatic conditions. Architects should contact local sheet metal contractors for prevailing area practices. Generally, gravel-stop-fascia is formed in 10 ft (3 m) sections. Provision should be made for expansion between sections of gravel-stop-fascia (Figure 2-5).

Figure 2-1A illustrates a gravel-stop-fascia system installed on a raised 2 × 8 in. (50 × 203 mm) nailer which has been cut to form a cant. Figure 2-1B illustrates a gravel-stop-fascia system installed on a raised 2 × 6 in. (50 × 152 mm) nailer with a preformed tapered edge strip. In all cases, the metal roof flange of the gravel-stop is held back a minimum of ½ in. (13 mm) from the edge of the nailer.

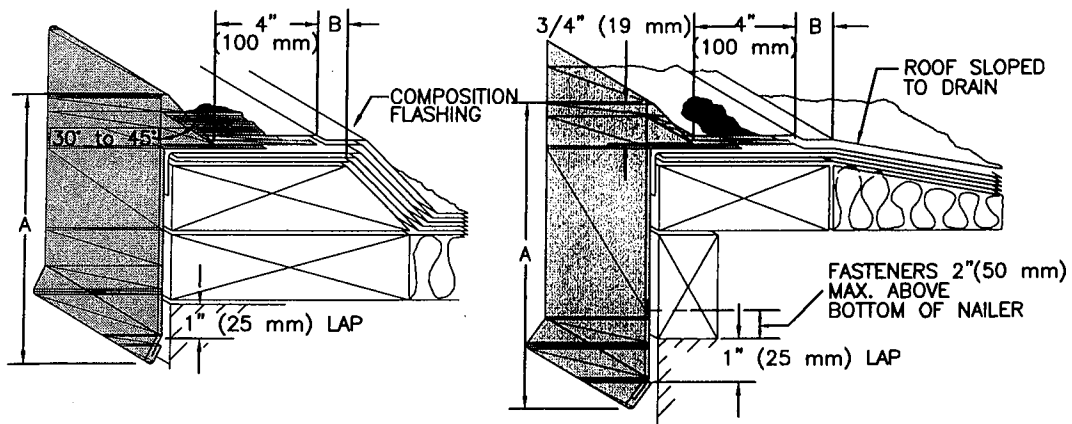
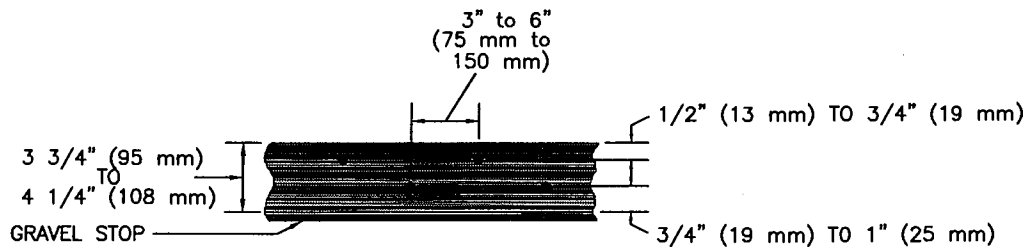
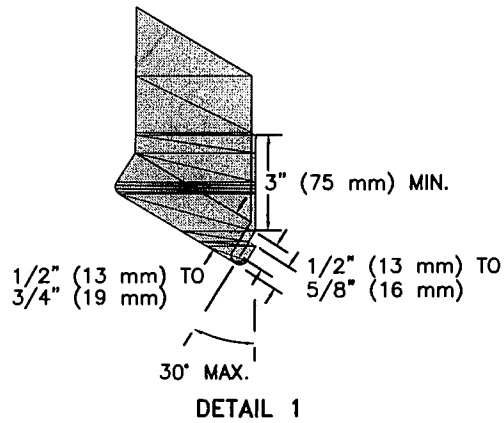


FIG 2-1A

FIG 2-1B

A = 4" (127 mm) MAX. UNCLEATED  
 A = 12" (300 mm) MAX. CLEATED  
 B = 1/2" (13 mm) MIN.



THESE REQUIREMENTS VARIES BY ROOF SYSTEM.  
 REFER TO THE MEMBRANE MANUFACTURER'S INSTRUCTIONS.

**BASIC FLANGE NAILING PATTERN**

**FIGURE 2-1 FORMED GRAVEL-STOP-FASCIA — DESIGN DATA**

Metal Thickness (Nom.)				Joint (J) for Fascia Dimension of:	
Ss ga (mm)	Al in. (mm)	Cu oz. (mm)	Steel* ga (mm)	9" Max. (230 mm)	Over 9" to 12" (300 mm)
28 (0.38)	0.025 (.64)	12 (0.41)	26 (0.55)	J 1, 2, 4, 5, 9, 11, 11A, 12	J 8-12
26 (0.46)	0.032 (.81)	16 (0.55)	24 (0.70)	J 1, 2, 4, 5, 9, 11, 11A, 12	J 8-12
24 (0.58)	0.040 (1.0)	20 (0.69)	22 (0.85)	J 1, 2, 4, 5, 9, 11, 11A, 12	J 8-12
22 (0.74)	0.063 (1.6)	24 (0.82)	20 (1.0)	J 1, 2, 4, 5, 9, 11A, 12	J 1-11, 11A, 12
20 (0.89)	0.080 (2.0)	32 (0.92)	18 (1.3)	J 2, 4, 5, 11A, 12	J 1-7, 10, 11A, 12
18 (1.2)	0.100 (2.5)	48 (1.6)	16 (1.6)	J 2, 4, 5, 11A, 12	J 1-7, 10, 11A, 12
16 (1.5)	0.125 (3.2)		14 (2.0)	J 2, 4, 5, 11A, 12	J 2, 4, 5, 12
14 (1.9)			12 (2.8)	J 2, 4, 5, 11A, 12	J 2, 4, 5, 12
12 (2.7)			10 (3.5)	J 2, 4, 5, 11A, 12	J 2, 4, 5, 12

\*Galvanized coated metal 1" = 25 mm

J1	J2	J3	J4	J5	J6	
4" LAP	BUTT + BACK-UP PLATE	4" JOGGLE (OFF-SET FLUSH)	BUTT + COVER PLATE	6" COVER + 12" 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 2-1 Gravel-Stop and Cap Fascia Design

NOTE:

See Appendix L for gage and other requirements when fascia must meet wind uplift specifications.

## 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).

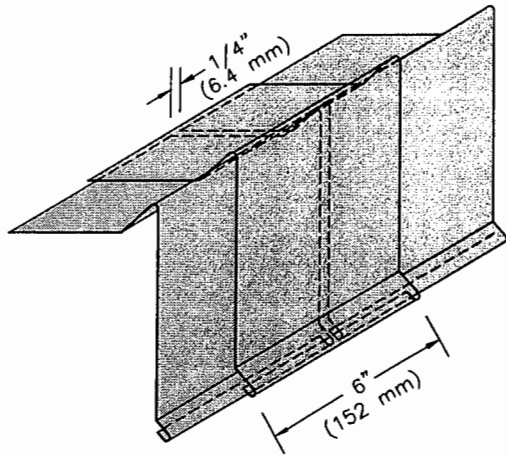


FIG 2-5A

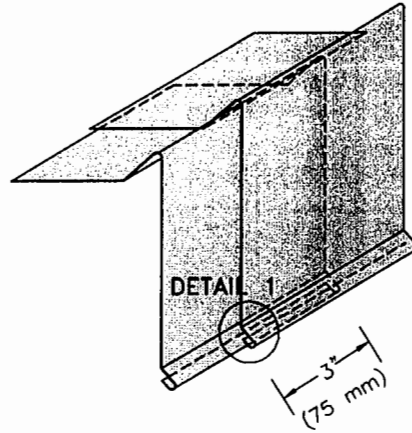
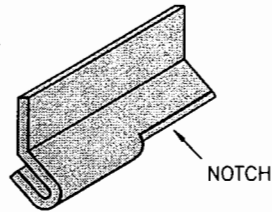


FIG 2-5B



DETAIL 1

ALL JOINT LAPS  
TO BE SEALED

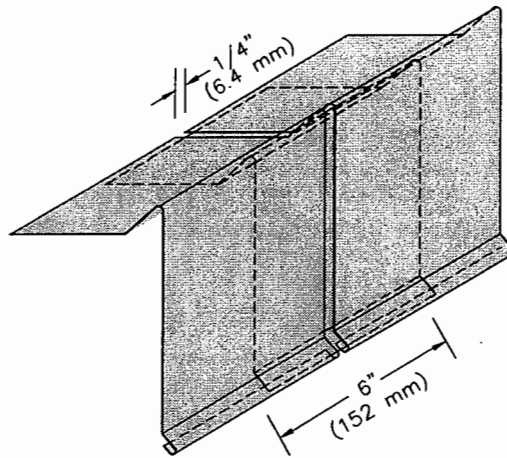


FIG 2-5C

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



## FORMED GRAVEL-STOP-FASCIA — SOFFIT INSTALLATION

## FIGURE 2-7

Figure 2-7 illustrates various installations of fascia systems with soffits. Figure 2-7A shows a two-piece fascia system. The lower piece serves as a soffit closure and part of the fascia.

The lower piece is attached along its upper edge and through the soffit portion using fasteners and slotted holes. A drip edge is formed at the lower end of each piece.

Shown in Figure 2-7B is another fascia with a soffit

closure. In this system, a heavy-gage metal can be used for the fascia to maximize surface flatness. See Table 2-1 for face limits.

Figure 2-7C illustrates a two-piece fascia system. This system may be used on wide fascia. The soffit cover is attached using masonry anchors. The roof edges are designed for specific needs. Details of fascia design is given on Figure 2-4. Joints in the soffit may be lapped or butted over a back-up plate depending on the thickness of the soffit metal.

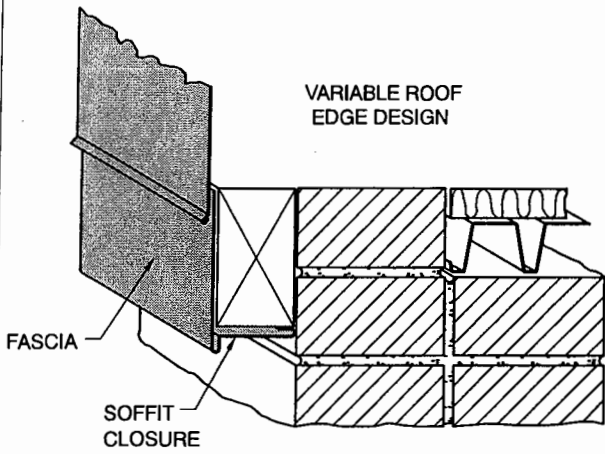


FIG 2-7A

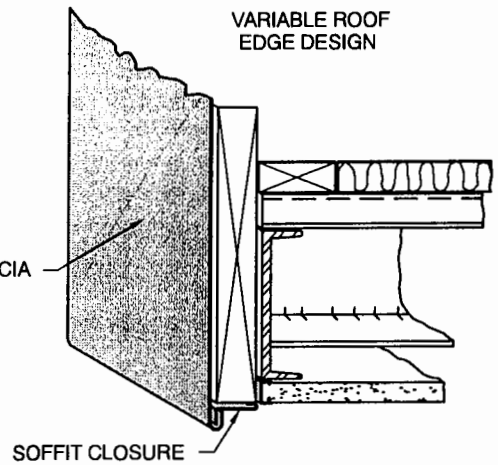


FIG 2-7B

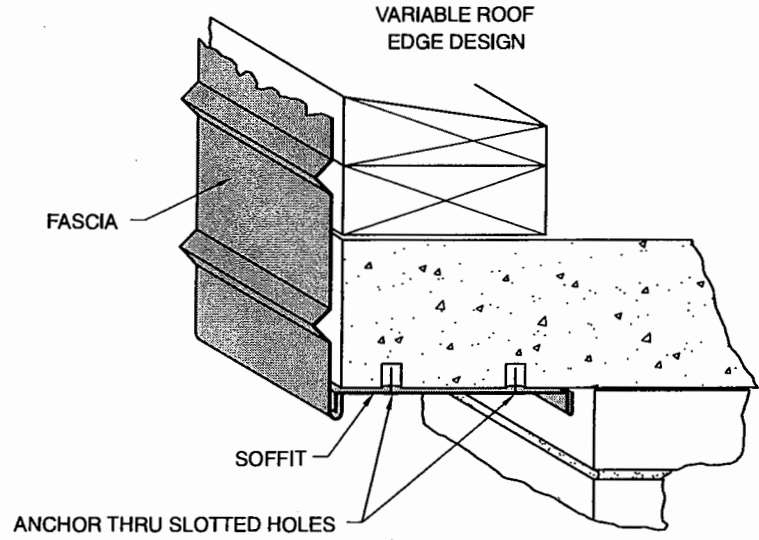


FIG 2-7C

FIGURE 2-7 FORMED GRAVEL-STOP-FASCIA — SOFFIT INSTALLATION

**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**

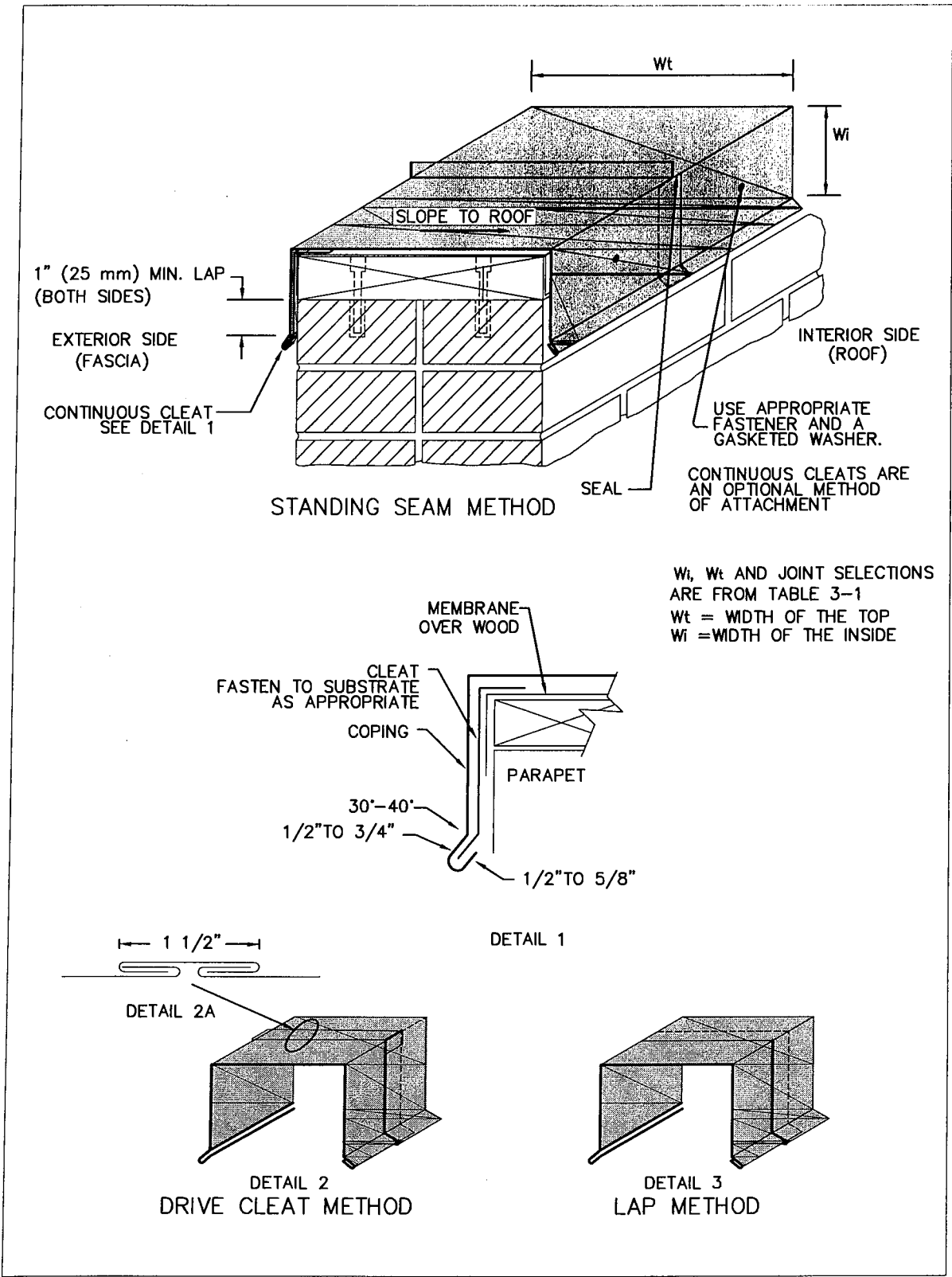
All single lap joints should be 3 in. (76 mm) minimum width. All back-up plates should be 6 in. (152 mm) width. All cover plates should be 6 in. (152 mm) minimum width.

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.

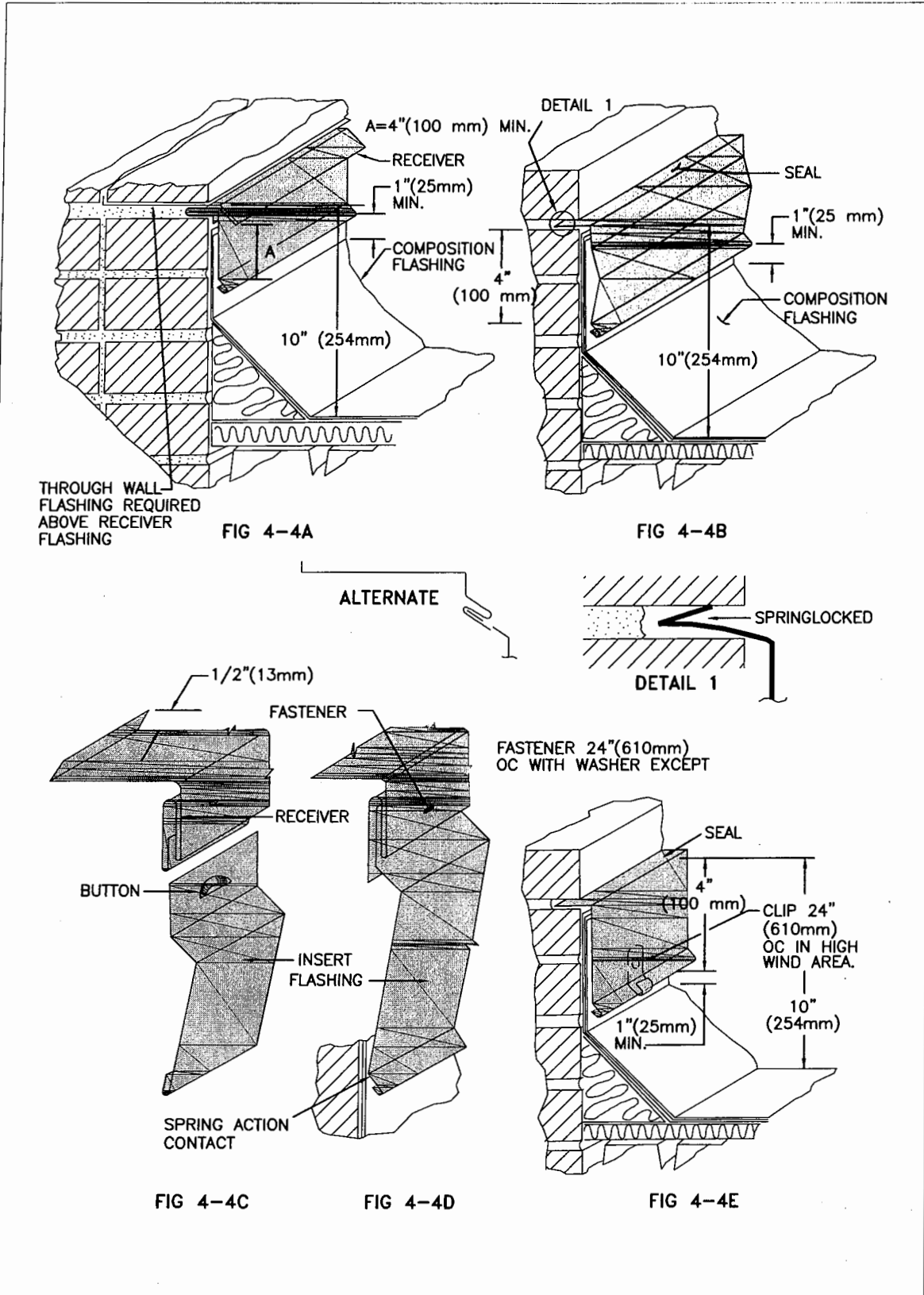
Figures 4-4C and D illustrate other alternatives for using two-piece counter flashings on new or existing

## 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**

## 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.

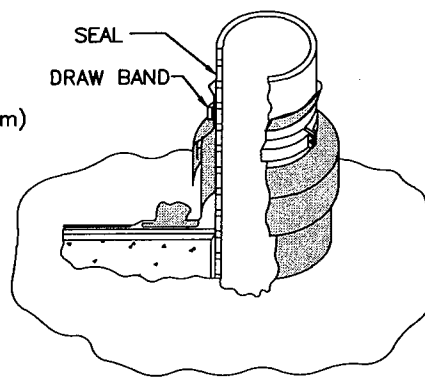
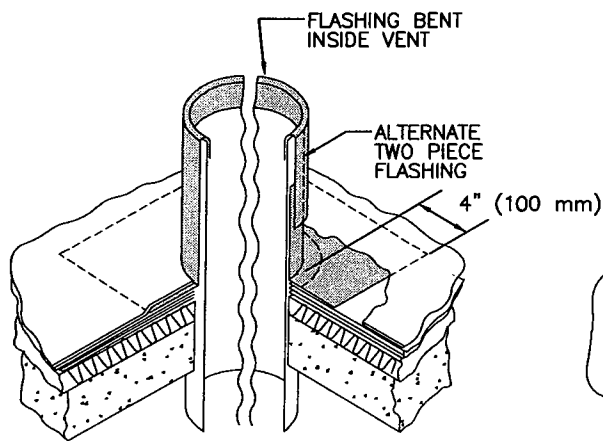
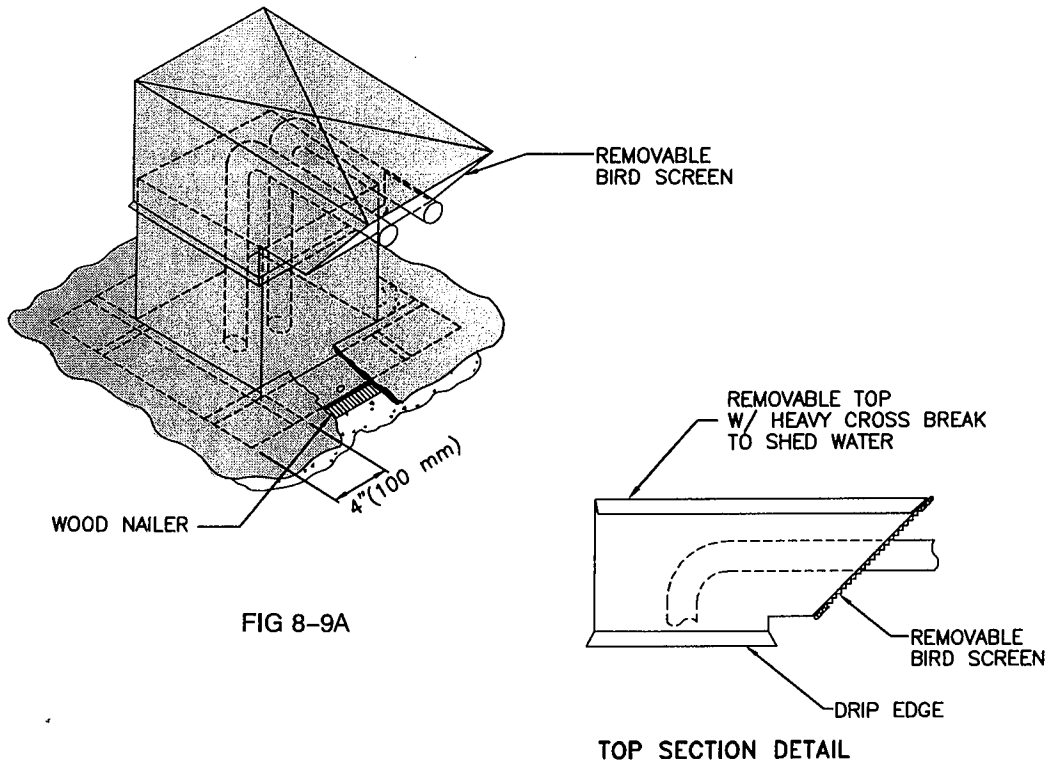
The recommended minimum gage for flashing in Fig-

## 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**

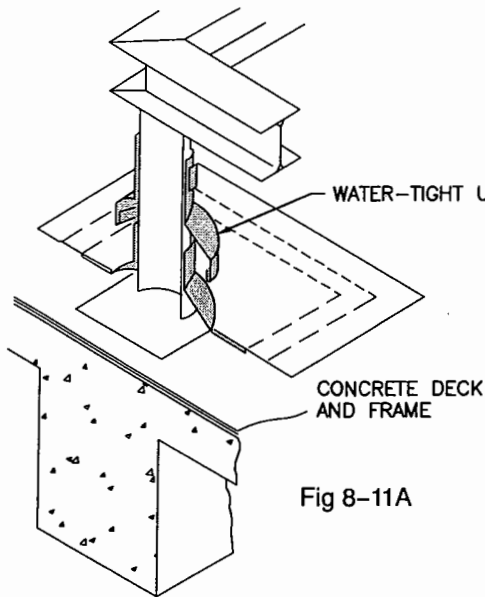


Fig 8-11A

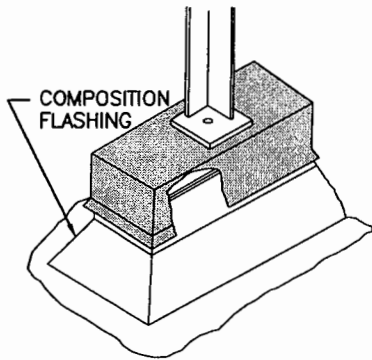
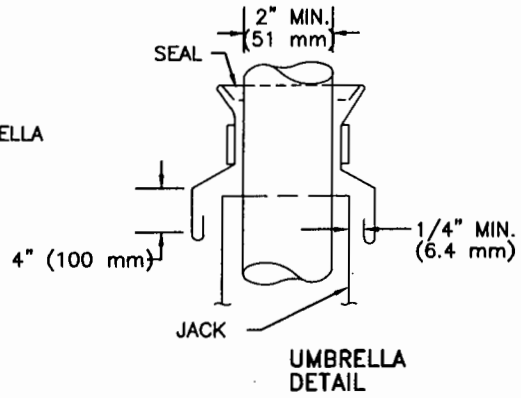


Fig 8-11B

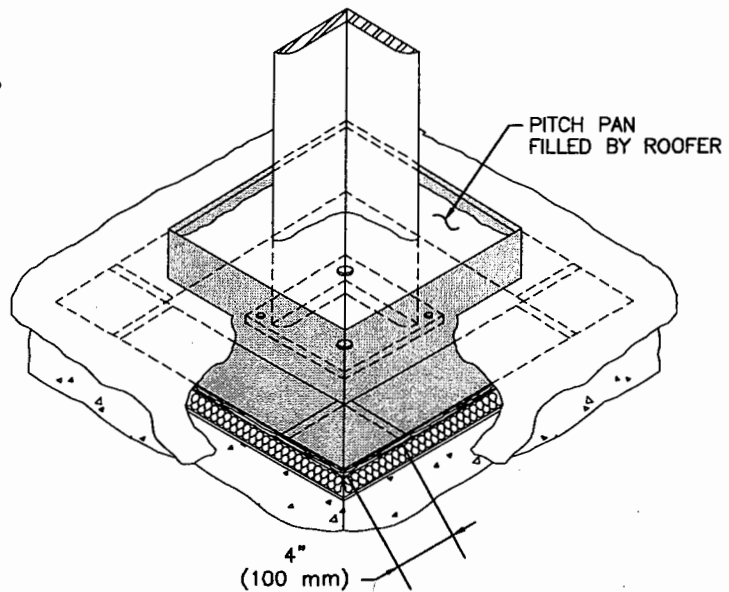


Fig 8-11C

FIGURE 8-11 EQUIPMENT SUPPORT FLASHING