

# STOCKTON UNIFIED SCHOOL DISTRICT



## **ADDENDUM #1 – August 9, 2024**

**Bid No. 24-01**

**Roof Replacement at King Elementary School**

### **BID DUE DATE AND TIME**

**August 13, 2024 Delivered before 2:00pm**

**to (NEW LOCATION!):**

**SUSD Facilities Department**

**1932 El Pinal Drive, Stockton CA 95205**

**Bid Opening – August 13, 2024 Immediately after 2:00pm**

The following changes, additions, deletions or corrections shall become a part of the Contract Documents, and all other conditions shall remain the same. The bidders shall be responsible for transmitting this information to all affected subcontractors and suppliers prior to the closing of bids. Bidders shall acknowledge receipt of this Addendum on Bid Form.

The following are included as part of this addendum:

### PROJECT MANUAL REVISIONS

Document 00 11 16 Notice to Bidders, item #7.

There is a change in location where sealed bids will be received. Sealed bids will be received until 2:00pm August 13, 2024 at the SUSD Facilities Department, located at 1932 El Pinal Drive, Stockton CA 95205.

Document 01 32 13 Schedule of Work

Work cannot be performed during school instructional hours. Instructional hours are typically scheduled between 8:00 am and 2:05pm. There is no instruction scheduled during the week of October 7, 2024 and the week of November 25, 2024.

### DRAWING REVISIONS

See Attached

### SCOPE REVISIONS

See Attached

### BIDDER QUESTIONS

1. **Question:** *“Can you please confirm that the list of items provided in section 10, A-G are the required documents along with the bid form.”*
  - a. Reconfirming Document 00 21 13, item #10: “Bidders must supply all information required by each Bid Document.”
  
2. **Question:** *“Is the Project Labor Agreement applicable to this project?”*
  - a. Answer: Reconfirming Document 00 11 16, item #18: “The District has entered into Project Labor Agreement that is applicable to this Project. A copy of the Project Labor Agreement is available for review at the District Facilities Office and may be downloaded from the District’s website, Facilities & Planning Department / Projects Out to Bid (stocktonusd.net) using the “Stockton Unified School District Project Labor Agreement” link. The successful bidder and all subcontractors will be required to agree to be bound by the Project Labor Agreement.”
  - b. The cost of the District-procured materials must be calculated into the total project cost (materials + labor) in order to determine that the Project Labor Agreement is applicable. The total cost for materials for this project is

\$141,861.74. (One hundred and forty-one thousand, eight hundred and sixty-one dollars and seventy-four cents.)

3. **Question:** *“There are several HVAC units set on sleepers that appear to not meet with the minimum base flashing height requirement in the specification. Clarify if those subject HVAC units are to be disconnected, raise sleepers, raise line sets, reset units and reconnect line sets?*
  - a. Answer: Sleepers are to be raised per the revised scope of work attached. Line sets and electrical conduits do not require extension. Disconnect and reconnect only if necessary after prior notice to the District. Provide District no less than 3 days notice of potential power interruptions or disconnections of any/all HVAC equipment.
  
4. **Question:** *“There are transformers and electrical boxes set on curbs that appear to not meet with the minimum base flashing height requirement in the specifications. Clarify if those subject transformers and electrical boxes are to be disconnected, raise curbs, raise conduits and reconnect conduits? – If so, clarify that subject transformers and electrical boxes can be off line for up to 10 working days while the disconnection / raising and reconnection takes place?*
  - a. Answer: The transformers are to remain in place. See the revised scope of work attached for proper flashing procedures.

**PRE-BID CONFERENCE - SIGN-IN SHEET**  
King Elementary School, Stockton USD, Roofing Project  
SUSD Bid No. 24-01

Name		Company Name and Address	Contact Info	
1	Signature	D7 Roofing Tailings Ct 2851 Gold Rancho Cordova CA 95720	Phone #	916-825-4553
	Signature		Email	Mwilson@D7roofing.com
2	Signature	Waterproofing Associates, Inc 1211 E. Vine St Lodi, CA 95240	Phone #	209-256-6777
	Signature		Email	rob@roofwa.com
3	Signature	Fresno Roofing Co 5950 E Olive Fresno CA 93727	Phone #	559 255 3377
	Signature		Email	ed@fresnorofingco.net
4	Signature	KBC ROOFING AND WATERPROOFING 1777 NEPTUNE DRIVE SAN LEANDRO CA 94577	Phone #	510 706 9578
	Signature		Email	ESTIMATING@KBCCOMERCIALSERVICES.COM
5	Signature	NATIONS ROOF WEST 1255 E Helges Fresno CA 93727	Phone #	559 978-1705
	Signature		Email	mariano@NationsRoof.com
6	Signature	BEST CONTRACTING SERVICES, INC. 4301 BETHENCOURT WAY, VICTOR CITY, CA 95387	Phone #	510-953-8798
	Signature		Email	estimating@bestcontracting.com
7	Signature	Alliance Contracting 1201 El Camino Ave Sacramento 95815	Phone #	916 514 7725
	Signature		Email	Heri@Alliance-Contracting.com
8	Signature	Alliance Contracting 1201 El Camino Ave, Sacramento 95815	Phone #	510-467-8354
	Signature		Email	gabriel@alliance-contracting.com
9	Signature	PARA ENVIRONMENTAL 1400 Vinel Ave. Sacramento 95815	Phone #	916 906-1678
	Signature		Email	ASEGURA@PARAENVIRONMENTAL.COM

Guillermo Barragan

RIA & Son Mechanical

4265 Duluth Ave  
Redlin Ca, 95765

Marty@rriine.com

Hector Cortez

Bay Area Roofers  
Complican

Sacramento, ca h-cortez@athltek.com

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**PRE-BID CONFERENCE - SIGN-IN SHEET**  
King Elementary School, Stockton USD, Roofing Project  
SUSD Bid No. 24-01

Name		Company Name and Address	Contact Info	
1	Anthony Lozano Signature: 	PAC Shield 5151 Rentercost Dr Ste A-1 Modesto	Phone # 209 688 3951 Email: ALOZANO@PACSHIELD.COM	
2	Mike Martinez Signature: 	Diablo Roofing 10227 Interlational Blvd Oakland CA 94609	Phone # 510 758 7170 Email: mikerom@diabloroof.com	
3	BREK WILSON Signature: 	KINGS ROOFING 6963 Power Inn Rd. Sacramento, California	Phone # 209-495-3569 Email: gregg@KINGSROOFING.NET	
4	Reza Taheri Signature: 	Pacific Piers Construction 534 Lebach Street San Francisco CA	Phone # 916-203-5122 Email: Reza@PPconstruction.org	
5	DAVID WILCER Signature: 	Solano County Roofing 4349 Cordelia Rd Fairfield CA 94534	Phone # 510-432-1481 Email: dwilcer.scv@gmail.com	
6	JOSE LOZANO Signature: 	WESTERN ROOFING SERVICE 15002 Wicks Blvd San Leandro CA 94597	Phone # 415-858-5268 Email: jlozano@westroof.com	
7	Thommas Gonzalez Signature: 	B&M Tear Off	Phone # (925) 503-7049 Email: Gbhmtearoff@ATcloud.co	
8	RYAN CORNELL Signature: 	Kings Roofing	Phone # 209-595-9574 Email: ryan@Kingsroofing.net	
9	DAVID Signature: 	AMERICAN ZOOM REPORTS	Phone # Email: DAVID@AMERICANZOOMREPORTS.COM	

10 H.J. Conyers

BARTH Roofing

209-833-9917

Jose Vega

Stronger Building Services

925-329-5256  
jose@strongerbldg.com

Harold Atias

ELM Roofing contractors

415 463 9319  
Refael@elmroofingcontractors.com

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Stockton Unified School District  
King Elementary School  
Roof Replacement Site Plan





2640 E Lafayette, Stockton, CA 95205

Stockton Unified School District  
King Elementary School  
Scope of Work & Specifications

# Stockton USD King Elementary Roof Replacement Scope of Work

## Roof Preparation:

1. Tear off existing roof membranes and subsequent materials down to the metal **or wood** deck on all highlighted buildings excluding the “recent” designated area.
  - a. Do not tear off the yellow highlighted area designated as “recent”.
  - b. ~~Set coping metal aside for reinstallation.~~
- ~~2.—Remove accessory metals and set aside for reinstallation.~~
2. **Remove accessory metals, excluding those on the designated “Recent” roof section and discard.**
3. **Remove coping metal on all roof sections including the designated “Recent” roof section and discard.**
  - a. ~~Replace any metal accessories that are damaged during removal with new.~~
4. Clean all existing roof material from the deck by scraping, pressure washing, or other means to provide a clean, suitable substrate for the new roof system.
5. Review any/all existing deck damage with the Roof System Manufacturer and Owner to determine necessary repair scope for deck repairs.
  - a. The contractor shall obtain approval from the Owner prior to making any repairs. Deck repair performed without prior approval and acceptance of scope from the Owner will be performed at the contractor’s expense.

## Base Sheet, Insulation, and Coverboard Installation:

6. After necessary deck repairs have been completed (if required), loose-lay the base sheet specified in PART 2 of the attached specification.
  - a. Ensure that the entire deck, cants, and openings are covered with the base sheet.
7. **Install new insulation to match existing/previous insulation depth.** Set polyisocyanurate rigid insulation boards with long joints in continuous straight lines over base sheet.
8. Stagger end joints staggered between rows at 6 inches (150 mm) and loosely butt insulation boards together.
9. Mechanically attach insulation boards with fasteners specified in the attached specification using the required fastening pattern as directed by the Roof System Manufacturer.
10. Set cover boards with long joints in continuous straight lines over mechanically attached insulation boards **and/or existing deck if no insulation was present prior to tear off.**
11. Stagger end joints staggered between rows at 6 inches (150 mm) and loosely butt cover boards together.
12. Set cover boards in specified low rise foam adhesive using a 12” OC bead spacing for the field, 6” OC spacing for the edges, and 3” OC spacing for the corners.

## Roof Membrane Installation:

13. Notify the Roof System Manufacture’s field representative no less than 48 hours prior to starting roof membrane installation.
  - a. Start installation of roofing membrane in presence of Tremco’s technical personnel.
14. Roll out ply sheets and allow to relax prior to installation.

15. Set 1 ply of PowerPly Heavy Duty Base Sheet in PowerPly Endure Bio Adhesive.
  - a. Use a coverage rate of no less than 2 gallons per square.
    - i. The minimum amount of adhesive will prevent the ply sheet from being visible through the adhesive.
16. Start at the low slope side of the roof and work toward the highest elevation of the roof. Install ply sheets in shingle fashion to properly shed water.
17. Broom felts firmly into place while the adhesive is still wet.
18. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
19. Repair tears and voids in laps and lapped seams not completely sealed.
20. Use the same application method and coverage rate to install the PowerPly Endure 100 FR cap sheet over the PowerPly Heavy Duty base sheet.
  - a. Use a weighted roller to firmly press the cap sheet into the adhesive.
21. Ensure that no selvage edges are exposed.
  - a. Exposed selvage edges will need to be coated with AlphaGuard PUMA FC LO Mastic and granules prior to installation of surfacing material.

#### Flashing and Accessory Installation:

- ~~22. Flashings heights shall reach a minimum of 6" where possible.~~
23. Apply specified TPA bonding adhesive to both the backside of the flashing sheet and the substrate.
    - a. Use no less than 1.5 gallons per square coverage rate for flashing adhesive.
  24. Wrap curbs, sleepers, and parapets up and over the top where possible. Fasten flashing on the inside or top side of the curbs **where possible without lifting mechanical equipment.**
  25. **4 condenser unit sleeper pairs (8 total sleepers)** shall be **raised with 4" x 4" wood blocking**, wrapped completely with TPA flashing membrane **and receive new metal caps.** ~~Re-use existing metal caps where possible.~~
  26. Extend flashings a minimum of 6" onto the field.
    - a. Use specified TPA Sheeting Bond to adhere the TPA flashing membrane to the cap sheet.
    - b. 3-course the cap sheet / flashing sheet seam with specified Rock-It adhesive and use Burmesh reinforcing fabric. Apply Granules over the 3-coursed area.
    - c. Pressure roll all single ply flashings to ensure complete, positive contact.
  27. All flashings shall receive termination bar and shall be covered with **new** counter flashings.
    - a. Fluid applied coatings may be considered over exposed termination in lieu of **new** counter flashings if approved by the manufacturer prior to installation.
  28. **Flash 4 transformers using AlphaGuard Puma FC LO Flashing**
    - a. **Terminate the field sheet into the deck (not into the metal transformer) using a typical termination bar detail.**
    - b. **Tape off around transformer 8" up from the horizontal plane.**
    - c. **Apply AlphaGuard M-Prime to termination bar and transformer and apply liquid flashing 6" onto the field membrane and 8" the transformer. Remove tape while wet.**
  29. Replace all wood block supports for conduit, condensate lines, etc. with new rubber blocks.

- a. Space blocks no less than 8' apart.
  - b. Install a slip sheet under each block.
30. All pitch pockets shall be filled with Roof Manufacturer's recommended sealant and be coated once cured with AlphaGuard PUMA FC LO Flashing.
31. ~~Re-install existing counter flashings.~~
- ~~a. Replace counter flashings that were damaged during removal.~~
30. **Install new counter flashings.**
31. All metal roof flashings shall be primed with AlphaGuard M-Prime and set in AlphaGuard FC LO Mastic.
32. ~~Reinstall existing coping metal onto parapets where removed during demolition.~~
- ~~a. Reseal all coping joints, fasteners, and any visible penetrations in the coping metal.~~
  - ~~b. Clean and apply rust inhibitor to areas where surface rust is visible.~~
  - ~~c. Coping fastener spacing shall be no less than 12" OC.~~
  - ~~d. Replace fasteners as needed.~~
32. **Install new Tremlock Infinity Coping to replace coping on all parapet walls (including "Recent")**
- a. Proceed with installation only if wood nailer is free of rot or other visible damage.
  - b. Install cleats/clips as specified.
  - c. Ensure proper sealing of coping joints on the interior surface. Sealant shall not be visible once coping is clipped in.

#### **Drain Flashings:**

33. All drains shall be tapered/sumped and installed per the specification requirements.
- a. Prime both side of lead drain flashings with AlphaGuard M-Prime
  - b. Set lead drain flashings in AlphaGuard FC LO Mastic.
  - c. Re-install drain rings after flashings are roofed in.
  - d. Coat all installed drain rings (including those on newly installed roof area, "Recent") with AlphaGuard FC LO Flashing.
34. Ensure all drains have strainers.
- a. Remove existing strainers, paint all strainers Tremco green, and reinstall.

#### **Tie-In Flashing to "Recent" Roof Area (as shown on site plan):**

35. Butt up new cap sheet to recently installed cap sheet. Heat weld cover strips over the seams using the specified cap sheet material, providing no less than 3" overlap on either side of the seam.

#### **Walkway Installation:**

36. Install walkways that extend from each roof access hatch to each mechanical unit's service side.
- a. Ensure a continuous path of travel and match existing layout.

#### **Surfacing Installation:**

37. Perform a visual pre-final inspection with the Roof System Manufacturer. Do not apply coating without performing the pre-final inspection with the Roof System Manufacturer.
38. Apply the specified coating material in 2 separate coats using the specified coverage rate.

39. Ensure that any adhesive that cannot be cleaned of auxiliary components such as mechanical or electrical pipes receive enough coating to cover the entire exposed component.
40. Coat metal platforms with rust primer and surfacing coating.
41. Extend coating over the 3 coursed strip in for base flashings and stop at the single ply flashing membrane.

**Roof Hatch Safety Guard Installation:**

42. Install new roof hatch safety guard railings per the attached specification to all roof access hatches providing access to roofs included in this project.
  - a. ***Use generic surface mounted roof hatch guard on the Library Building. Rotate opening 90 degrees clockwise.***
43. ***Install new access ladder safety post.***
44. ***Install (1) roof hatch on Admin Building.***

**Gutter Restoration:**

45. Clean existing gutters and downspouts using a pressure washer. Ensure that all downspouts are free from debris and drain properly.
46. Once the gutters are dry and free of debris, apply the specified rust primer to any visible surface rust.
47. Apply the AlphaGuard M-Prime specified to all the interior faces of the gutters.
48. Apply AlphaGuard PUMA FC LO Flashing at a coverage rate of no less than 3 gallons per square.
49. Set 12" Permafab fabric in wet base coat to cover the entire gutter. Gently roll into place. Apply additional coating material as necessary to ensure that the fabric is fully saturated.

SECTION 075216.13 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

- A. A portion of the products in ***bold italics***, listed in Part 2 – Products, and on “Exhibit A Materials List”, will be furnished by Yosemite Community College District using its authority under the California Multiple Award Schedule (CMAS) contract. All remaining products listed within the Part 2 section, and any additional quantities of the products listed on “Exhibit A Materials List”, will be furnished by the Roofing Contractor.

1. CMAS Contract Number 4-21-03-1001.

- B. Section Includes:

1. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood and metal deck, including but not limited to:
  - a. Roof insulation.
  - b. Roof insulation cover board.
  - c. SBS-modified bituminous membrane roofing.
  - d. Granule-surfaced SBS-modified bituminous membrane cap sheet.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site
1. Meet with Owner, roof consultant, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  2. Review drawings and specifications.
  3. Review methods and procedures related to roofing installation, including manufacturer's instructions.
  4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

5. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.
6. Review structural loading limitations of roof deck during and after roofing.
7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
8. Review governing regulations and requirements for insurance and certificates if applicable.
9. Review temporary protection requirements for roofing system during and after installation.
10. Review roof observation and repair procedures after roofing installation.

#### 1.4 ACTION SUBMITTALS

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

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
  1. Include letter from Manufacturer written for this Project indicating approval of Installer.
- B. Warranties: Unexecuted sample copies of special warranties.
- C. Field Quality Control Reports: Reports of Roofing Manufacturer's employed technical Inspector. Include weather conditions, description and progress photos of work performed, tests performed, defective work observed, and corrective actions required and carried out.
  1. Submit reports within 48 hours after inspection.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: To include in maintenance manuals.
- B. Warranties: Executed copies of warranties.

#### 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.



- B. **Manufacturer Qualifications:** Approved manufacturer with UL listed roofing systems comparable to those specified for this Project, with minimum five years' experience in manufacture of comparable products in successful use in similar applications, and able to furnish warranty with provisions matching specified requirements.
  - 1. Substitutions following award of contract are not allowed.
  - 2. Approved manufacturers must meet or exceed all performance characteristics.
  - 3. Substitution requests must be made no less than 10 days prior to bid date.
- C. **Roofing Inspector Qualifications:** A technical representative of manufacturer experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be the following:
  - 1. An authorized full-time technical employee of the manufacturer.
- D. **Manufacturer's Installation Instructions:** Obtain and maintain on-site manufacturer's recommendations and instructions for installation of products.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

#### 1.9 PROJECT / FIELD CONDITIONS

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

- B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
  - 1. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
  - 2. Remove temporary plugs from roof drains at end of each day.
  - 3. Remove and discard temporary seals before beginning work on adjoining roofing.

#### 1.10 WARRANTY

- A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.
  - 1. Form of Warranty: Manufacturer's standard warranty form.
  - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
  - 3. Warranty Compatibility: The same manufacturer shall provide the roof hatch guard, gutter coating materials, and roof system for warranty purposes.
  - 4. New Roof Component Coverage: A single manufacturer shall provide specified warranty that includes the Build Up Roofing specified in this section. The manufacturer's warranty must include labor and material coverage against leakage on all components including those manufactured by others. Included in the warranty coverage are the following: Insulation materials, fasteners and adhesives, all new and temporary roof membrane components and adhesives, all metal edge components including cleat strips, all tapered edge and cant strips, all surface mastics, coatings, stripping, plies, etc., all drain and scupper flashings. Any roof leak or other problems caused by substrate movement of any component other than the deck shall not be excluded. Any movement associated with metal edge joints of flanges causing leaks. Damages caused by wind speed up to 74 miles per hour shall not be excluded. Permanent tie-ins and/or control joints separating new and old roofing shall not be excluded.
  - 5. Warranty Period: 30 years from date of completion.
- B. Manufacturer Inspection and Preventive Maintenance Service: To report maintenance responsibilities necessary for preservation of Owner's warranty rights and to perform periodic routine maintenance required, as described in Manufacturer's standard form. The inspections reports, general housekeeping services, and preventative maintenance services shall all be stored, organized, and made available to the Owner on Roof System Manufacturer's online database. The cost of manufacturer's inspections and preventive maintenance is included in the Contract Sum.

1. Scope of Inspection Service: Manufacturer's standard form. Roof Inspection Services shall consist of the following: Visual inspection of the roof membrane and roof surface conditions, visual inspection of the flashing systems including the metal edge system, base flashings on equipment and adjoining walls, counterflashing and termination details, soil stacks and vents, and rooftop projections such as pitch pans, HVAC equipment, skylights, and access hatches.
  2. Inspections to occur in following years: 1, 2, 5, 10, 15, 20, 25 following completion.
  3. Scope of General Rooftop Housekeeping Services: General Rooftop Housekeeping Services shall be provided by the Roof System Manufacturer's employed technical personnel and shall consist of the following: Removal of incidental debris (such as leaves, branches, paper and similar items) from the roof membrane and drainage areas. All debris will be disposed of at the Owner's approved on-site location and disposal is the sole responsibility of the Owner.
  4. General Rooftop Housekeeping Services to occur in following years: 1, 5, 10, 15, 20, 25
  5. Preventative Maintenance Services consist of the following minor repairs and maintenance to:
    - a. Flashing components and details (such as patching of minor flashing details and penetrations; reinforcement of open flashing laps; and sealing of open metal edge laps, coping joints, expansion joint laps, fasteners, pitch pans, storm collars and similar areas).
    - b. Roof membrane (such as repair of incidental splits, tears, open laps, breaks or blisters in the membrane).
    - c. Drain, Gutters & Scuppers (such as tightening of accessible drain bolts and clamping rings; advising Owner of missing drain strainers; and drain details, unsecured gutters, and open gutter joints).
- C. Roof System Manufacturer shall warranty all roofs sections including the roof area designated as "Recent" on the site plan attached.
- D. Installer Warranty: Installer's warranty signed by Installer, as follows.
1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
  2. Scope of Warranty: Work of this Section.
  3. Warranty Period: 2 years from date of completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco, Inc., Beachwood, OH, (800) 562-2728, [www.tremcoroofing.com](http://www.tremcoroofing.com) that are named in other Part 2 articles. Provide specified products.
  - 1. Tremco or equal.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer. The following roofing components must be from the same roof system manufacturer: base ply sheet, ply sheets, cap sheet, flashing sheets, ply sheet and cap sheet adhesive, flashing sheet adhesive, white surface coating, stripping mastic, mastic reinforcement material, walk-pads, roof hatch guards, insulation, insulation cover boards, insulation and coverboard adhesives, primer for ply sheet adhesives, gutter restoration coating, primer for gutter restoration coating, gutter coating reinforcing fabric, and caulking.

### 2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
  - 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
- B. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.
- C. Flashings and Fastening: Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
  - 1. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
- D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- E. Solar Reflectance Index: Not less than 111 initial, 102 3 years aged when calculated according to ASTM E 1980.

- F. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.88 initial .82 3 years aged, have a thermal emittance of not less than 0.89 initial when tested according to CRRC-1 and shall be Energy Star Certified Roof Product.

## 2.3 MATERIALS, GENERAL

- A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

## 2.4 ROOFING MEMBRANE MATERIALS

### A. SBS Modified Bituminous Membrane Base Sheet:

- 1. SBS-modified asphalt coated composite polyester / fiberglass/fiberglass mat reinforced high tensile strength base sheet, ASTM D4601 Type II.
  - a. Basis of design product: Tremco, BURmastic Composite Ply HT.
  - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 165 lbf/in (725 N); Cross machine direction, 150 lbf/in (660 N).
  - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 260 lbf (1150 N); Cross machine direction, 230 lbf ( 1120 N).
  - d. Thickness, minimum, ASTM D5147: 0.060 inch (1.5 mm).

### B. SBS Modified Bituminous Membrane Base-Ply Sheet:

- 1. ASTM D6163 Type III Grade S SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, dusted with fine mineral surfacing on both sides.
  - a. Basis of design product: ***Tremco, POWERply Heavy Duty Base Sheet.***
  - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
  - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: 3.0 percent.
  - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (977N); Cross machine direction, 240 lbf (1065N).
  - e. Low Temperature Flexibility, minimum, ASTM D5147: -5 deg. F (-20 deg. C).
  - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

### C. SBS Modified Bituminous Membrane Granular-Surfaced Cap Sheet:

1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, RFID chip embedded, white granular surfaced, ASTM D6163 Type III Grade G .
  - a. Basis of design product: ***Tremco, POWERply Endure 100 FR.***
  - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 185 lbf/in (32 kN/m); Cross machine direction 210 lbf/in (35 kN/m).
  - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 325 lbf (1445 N); Cross machine direction 325 lbf (1445 N).
  - d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.
  - e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. F (-40 deg. C); Cross machine direction -35 deg. F (-37 deg.C).
  - f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).
  - g. Granule Loss, ASTM D5147: .38g

D. Flashing Sheet:

1. Thermoplastic PVC/TPA sheet, internally fabric reinforced, Energy Star qualified, CRRC listed, and California Title 24 Energy Code compliant, ASTM D4434 Type IV.
  - a. Basis of design product: Tremco, TPA Single Ply Roof Membrane.
  - b. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D751: 300 lbf/in (1330 N).
  - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D751: 100 lbf (440 N).
  - d. Elongation at 0 deg. F (-18 deg. C), minimum at fabric break, ASTM D751: 25 percent machine direction, 25 percent cross-machine direction.
  - e. Minimum Thickness, nominal, ASTM D751: 0.045 in (1.5 mm).
  - f. Color: White.
  - g. Solar Reflectance Index (SRI), ASTM E1980: 108 (White, initial) 84 (White, 3-year aged).
  - h. Recycled Content, minimum: 25 percent pre-consumer.

## 2.5 COLD-APPLIED ADHESIVE MATERIALS

- A. General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
  - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Modified Bituminous Base-Ply and Cap Sheet Adhesive:
  - 1. Cold-applied bio-based low odor urethane roofing adhesive, two-part, USDA BioPreferred, formulated for compatibility and use with specified roofing membranes and flashings.
  - 2. Basis of design product: ***Tremco, POWERply Endure BIO Adhesive TF.***
    - a. Volatile Organic Compounds (VOC), maximum, ASTM D3690: 0 g/L.
    - b. Low Temperature Flexibility, ASTM D2240: Pass at -30 deg F (-34 deg C).
    - c. Solids, by Volume, ASTM D2697: 100 percent.
    - d. Biobase Content, Minimum, ASTM D6866: 70 percent.
- C. Flashing Sheet Adhesives:
  - 1. Bonding and Flashing Adhesive, SEBS/SIS modified asphalt, for elastomeric flashing membranes.
    - a. Basis of design product: Tremco, Sheeting Bond.
    - b. VOC, maximum, ASTM D3960: 250 g/L.
    - c. Adhesion in peel, minimum, ASTM D1876: 3 lbf/in (0.5 N/mm).
    - d. Lap shear adhesion, minimum, ASTM D816: 18 psi (124 kPa).
    - e. Color: White
  - 2. Bonding Adhesive, contact-type, solvent based low VOC, for bonding TPA non-fleece back membranes and flashings to substrates.
    - a. Basis of design product: Tremco, TPA LV Single Ply Bonding Adhesive.
    - b. VOC, maximum ASTM D3960: 200 g/L
  - 3. Primer for Non-Porous Surfaces: Single-part, water-based primer to promote adhesion of urethanes to metals, PVC and other non-porous surfaces.

- a. Basis of design product: Tremco, AlphaGuard M-Prime.
- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 22 g/L.
- c. Nonvolatile Content, minimum, ASTM D2369: 5 percent.
- d. Density at 77 deg F (25 deg C): 8.3 lb/gal (1kg/L).

## 2.6 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
- B. Roofing Mastic:
  1. Two-component, low odor, modified polyurethane methacrylate waterproofing mastic.
    - a. Basis of design product: Tremco, AlphaGuard FC LO Mastic.
    - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
    - c. 100% Solids.
- C. Stripping Adhesive / Sealer:
  1. Cold-applied roofing surfacing adhesive, one-part white solar reflective low-volatile polymeric, formulated for compatibility and use with specified roofing membranes and flashings.
    - a. Basis of design product: Tremco, Rock-It Adhesive
    - b. Volatile Organic Compounds (VOC), maximum, ASTM D6511: 46 g/L.
    - c. Nonvolatile content, minimum ASTM D6511: 40 percent.
- D. Stripping Reinforcing Fabric:
  1. For Mastic: Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
    - a. Basis of design product: Tremco, BURmesh.
    - b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).
    - c. Color: Aqua green.



- E. Joint Sealant: Elastomeric joint sealant compatible with roofing materials, with movement capability appropriate for application.
  - 1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.
    - a. Basis of design product: Tremco, TremSEAL Pro.
    - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.
    - c. Hardness, Shore A, ASTM C661: 40.
    - d. Adhesion to Concrete, ASTM C794: 35 pli.
    - e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).
    - f. Color: White.
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- G. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

## 2.7 ROOF INSULATION MATERIALS

- A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from insulation manufacturer's standard sizes, suitable for application, and of thicknesses indicated.
  - 1. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope per the Architect's drawings.
  - 2. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Roof Insulation: Provide roof insulation product in thicknesses indicated in Part 3 as follows:
  - 1. Board Insulation, Polyisocyanurate: CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces, ASTM C1289 Type II Class 1.
    - a. Basis of design product: ***Tremco, Trisotech Insulation.***
    - b. Compressive Strength, ASTM D1621: Grade 2: 20 psi (138 kPa).
    - c. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

- d. Thickness: 2”.

## 2.8 SURFACING MATERIAL

### A. Acrylic Emulsion Surfacing Material:

1. Acrylic Roof Coating, Highly-Reflective Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.
  - a. Basis of design product: Tremco, Solargard 6083 Base and Top Coat.
  - b. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 aged.
  - c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.
  - d. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).
  - e. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.
  - f. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.
  - g. Solids by weight, minimum ASTM D1644: 60 percent.
  - h. Solids by volume, minimum ASTM D2697: 50 percent.
  - i. Color, Top Coat: White.
  - j. Minimum Thickness over BUR and MB: 24 mils (0.60 mm) wet each coat for base and finish coats.

## 2.9 ROOF INSULATION ACCESSORIES

### A. Cover Board:

1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
  - a. Basis of design product: ***Tremco Gypsum DensDeck Prime.***
  - b. Thickness: 1/2 inch (12 mm).

### B. Roof Insulation Adhesive:

1. Urethane adhesive, bead-applied, low-rise bio-based two-component solvent-free low odor, formulated to adhere roof insulation to substrate, USDA BioPreferred listed.
  - a. Basis of design product: Tremco, Low Rise Foam Insulation Adhesive.

- b. Flame Spread Index, ASTM E84: 15.
- c. Smoke Developed Index, ASTM E84: 50.
- d. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
- e. Tensile Strength, minimum, ASTM D412: 200 psi (1380 kPa).
- f. Peel Adhesion, minimum, ASTM D903: 17 lbf/in (2.98 kN/m).
- g. Flexibility, 70 deg. F (39 deg. C), ASTM D816: Pass.

C. Insulation Cant Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.

#### 2.10 GUTTER RESTORATION MATERIAL:

A. Polyurethane Elastomeric Fluid-Applied System: Two-coat fluid-applied roofing membrane formulated for application over prepared existing roofing substrate.

- 1. Polyurethane Roof Coating System Base Coat: Single-part moisture-curing, for use with a compatible top coat.
  - a. Basis of design product: Tremco, AlphaGuard FC LO Flashing.
  - b. Combustion Characteristics, UL790: Maintains combustion characteristics of existing roof system.
  - c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
  - d. Solids, by volume, ASTM D2697, minimum: 100 percent.
  - e. Minimum Thickness, Base Coat on Smooth Surface: 48 mils (1.22 mm) wet.

B. Primer for Non-Porous Surfaces:

- 1. Single-part, water based primer to promote adhesion of urethanes to metals, PVC and other non-porous surfaces.
  - a. Basis of design product: Tremco, AlphaGuard M-Prime.
  - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 22 g/L.
  - c. Nonvolatile Content, minimum, ASTM D2369: 5 percent.
  - d. Density at 77 deg F (25 deg C): 8.3 lb/gal (1kg/L).
- 2. Primer to promote adhesion of urethanes and acrylics to metals, PVC and other non-porous surfaces containing surface rust:

- a. Basis of design product: SolarGuard Rust Primer.

C. Fluid-Applied Membrane Reinforcing Fabric:

- 1. Polyester Reinforcing and Protection Fabric: 100 percent stitch-bonded mildew-resistant polyester fabric intended for reinforcement of compatible fluid-applied membranes and flashings and as a protection layer under pavers or stone aggregates.
  - a. Basis of design product: Tremco, Permafab.
  - b. Tensile Strength, Minimum, ASTM D1682: 50 lbf (23 kg) avg.
  - c. Elongation, Minimum, ASTM D1682: 60 percent.
  - d. Tear Strength, Minimum, ASTM D1117: 16 lbf (7.3 kg) avg..
  - e. Weight: 3 oz./sq. yd (102 g/sq. m).

2.11 ROOF HATCH GUARD:

- A. Basis of design product: Tremco, Tremsafe Hatch Guard.

2.12 WALKWAYS

A. Walkway Material:

- 1. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
  - a. Basis of design product: Tremco, Trem-Tred.
  - b. Flexural Strength at max. load, minimum, ASTM C203: 218 psi (1.5 kPa).
  - c. Granule adhesion (weight loss), maximum, ASTM D4977: 1.1 gram.
  - d. Impact Resistance at 77 deg. F (25 deg. C), ASTM D3746: No Damage to Roof.
  - e. Pad Size: 36 by 48 inch (914 by 1220 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. For Steel and Wood Roof Deck:
  - a. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.
  - B. Verify that substrate is sound and dry.
  - C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

### 3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's instructions and Contract Documents.
- B. Install cants, blocking, curbs, and nailers in accordance with requirements of Division 06 Section "Miscellaneous Rough Carpentry."
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing

### 3.4 ROOFING INSTALLATION DETAILS

- A. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

### 3.5 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

- C. Loose lay base sheet over metal deck prior to installation of rigid insulation boards.
- D. Tapered Insulation and Crickets: Install tapered insulation under area of roofing where existing crickets are present. Provide crickets to properly divert water to drains.
  - 1. Where existing crickets are present, indicated or required to provide positive slope to drain.
  - 2. Install crickets at all high sides of mechanical units to provide proper drainage.
- E. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (70 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
  - 1. Flat Insulation System on Sloped Roof Deck: Install insulation at minimum thickness as follows:
    - a. Match existing insulation depth.
  - 2. Insulation Drain Sumps: Tapered insulation sumps, not less than 2 by 2 ft. (600 by 600 mm), sloped to roof drain; sump to maximum depth of not more than 1 inch (25 mm) less than the Project-stipulated continuous insulation thickness based upon code requirements.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
  - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- H. Mechanically Attached Insulation: Install each layer of insulation using mechanical fasteners.
  - 1. Fasten rigid insulation boards using no less than 16 fasteners per board
  - 2. Fasten using pattern shown in the attached detail drawings.
- I. Cover Boards: Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together.
  - 1. Secure cover boards to resist uplift pressure at corners, perimeter, and field of roof.
  - 2. Adhere cover boards by setting in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining cover board in place.
  - 3. Apply low rise insulation adhesive at coverage rate specified in the attached scope of work.

### 3.6 COLD-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing" and as follows:
  - 1. Base-Ply Sheet: One.
    - a. Adhering Method: Cold-adhesive applied.
  - 2. Granular-Surfaced SBS-Modified Asphalt Cap Sheet:
    - a. Adhering Method: Cold-adhesive applied.
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
  - 1. The contractor shall notify the Roof Manufacturer of the start date no less than 48 hours prior to commencement of work.
- C. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- D. Coordinate installation of roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
  - 1. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
  - 2. Remove temporary plugs from roof drains at end of each day.
  - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

### 3.7 BASE-PLY SHEET INSTALLATION

- A. Install lapped modified bituminous roofing membrane base-ply sheet according to roofing manufacturer's instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
  - 1. Adhere to substrate in cold-applied adhesive.

### 3.8 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane base-ply sheet and cap sheet according to roofing manufacturer's instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
  - 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
  - 2. Embed each sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
  - 1. Repair tears and voids in laps and lapped seams not completely sealed.
  - 2. Granular Cap Sheet Laps: Apply roofing granules to cover exuded bead at laps.

### 3.9 FLASHING AND STRIPPING INSTALLATION

- A. Base Flashing Installation, General: Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
  - 1. Extend base flashing up walls or parapets a minimum of 8 inches (300 mm) above modified bituminous roofing and 6 inches (150 mm) onto field of built-up roofing.
  - 2. Curbs that do not allow for at least 6 inches of base flashing above modified bituminous roofing will need to be raised.
  - 3. Prime substrates with primer if required by roofing system manufacturer.
- B. Flashing Sheet Installation: Adhere flashing sheet to substrate in adhesive. Apply flashing sheet adhesive to back of flashing sheet if recommended by roofing manufacturer.
  - 1. Flashing Sheet Top Termination: Install flashing against substrate and over the top of the parapet. Mechanically attach coping metal over the flashing sheet such that the flashing sheet covers the top of the parapet wall but does not extend beyond the outer face of the coping metal.
  - 2. Flashing Sheet Top Termination: Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
    - a. Seal top termination of base flashing with a metal termination bar and a continuous bead of joint sealant.





2. Paint all strainers Rust-Oleum OSHA Safety Green or color approved by Roof System Manufacturer.

### 3.11 WALKWAY INSTALLATION

- A. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.
  1. Sweep away loose aggregate surfacing.
  2. Set walkway pads in cold-applied adhesive.

### 3.12 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a roofing inspector employed by the Roof System Manufacturer for a minimum of 13 full-time days on site to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.
  1. Notify Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.
  1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

### 3.13 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075216.13

# Exhibit A Materials List

The following materials and corresponding quantities are to be furnished by the Owner:

<b>PRODUCT</b>	<b>UNIT</b>	<b>QUANTITY</b>
POWERPLY HEAVY DUTY BASE SHEET	1 Roll	100
POWERPLY ENDURE 100FR CAP SHEET	1 Roll	100
POWERPLY ENDURE ENDURE BIO (4.1 GAL KIT)	1 Kit	50
TRISOTECH INSULATION 2"	1 Square	100
TREMCO DENS DECK PRIME ½"	9.6 Squares	10

The roofing contractor is responsible for purchasing the remaining materials needed to complete the project.

SECTION 112429.03 - FACILITY FALL PROTECTION, NON-PENETRATING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Non-penetrating fall protection systems, including:

1. Roof hatch rail systems.

1.2 REFERENCES

A. General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.

B. American National Standards Institute (ANSI):

1. A21.1 - Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
2. A58.1 - Minimum Design Loads in Buildings and Other Structures.
3. A117.1 - Accessible and Usable Buildings and Facilities.

C. Code of Federal Regulations (CFR):

1. 29 CFR 1910.28 - Duty to have fall protection and falling object protection.
2. 29 CFR 1910.29 - Fall protection systems and falling object protection - criteria and practices.

D. California Occupational Safety & Health Administration (CAL OSHA):

1. 1620 - Design and Construction of Railings.
2. 1621 - Railings and Toe Boards.
3. 1633 - Elevator Shafts to be Guarded.
4. 3209 - Standard Guardrails.
5. 3210 - Guardrails at Elevated Locations.
6. 3211 - Wall Openings.
7. 3212 - Floor Openings, Floor Holes and Roofs.
8. 3214 - Stair Rails and Handrails.

E. Association for Materials Protection and Performance (AMPP):

1. SSPC PAINT 20: Organic Zinc Rich Primer, Type II.
2. SSPC PA 1: Shop, Field, and Maintenance Coating of Metals.

### 1.3 COORDINATION

- A. Coordinate selection of fall protection and fall restraint devices and attachment provisions with Owner's safety program and Owner-provided personal protection equipment.
- B. Coordinate layout and location of facility fall protection with Owner and Roof System Manufacturer's representative.

### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of fall protection and accessory, including brackets and fasteners.
  1. Submit manufacturer's published literature including structural properties data, corrosion resistance, certificates of compliance, and test reports as applicable.

### 1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- B. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and, where required by authorities having jurisdiction, that is acceptable to authorities.

### 1.7 PRODUCT DELIVERY AND STORAGE

- A. Deliver manufactured materials in original, unbroken pallets, packages, containers, or bundles bearing the label of the manufacturer.
- B. Store and handle materials carefully to prevent abrasion, cracking, chipping, twisting, other deformations, and other types of damage.

### 1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components that fail in materials within specified warranty period.
  1. Warranty Period: Two (2) years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide facility fall protection components by Tremco CPG Inc, Beachwood, OH, (800) 562-2728. Provide specified products or comparable products by one of the following:
  - 1. Tremco CPG, Inc.
- B. Single Source: Provide fall protection components from a single manufacturer through a single source, unless otherwise indicated.

### 2.2 PERFORMANCE REQUIREMENTS

- A. Occupational Safety and Health Standards: Provide fall protection components complying with requirements of 29 CFR 1910.28 and 1910.29 including structural performance.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
    - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.

### 2.3 RAIL SYSTEMS, NON-PENETRATING

- A. Roof Edge Rail Systems, Architectural: Freestanding counterweighted fall protection safety railing system including pipe or tubing, fittings, and accessories [corresponding to design indicated on Drawings, and] complying with requirements of authorities having jurisdiction.
  - 1. Basis of Design Product: Tremco, TremSafe Guardrail A.S.
  - 2. Application: Flat or low slope roof.
    - a. Maximum Slope without Parapet: 3.6 degrees (0.75:12).
    - b. Maximum Slope with Parapet: 5 degrees (1:12); where parapet has a height of not less than 3 inches (75 mm).
  - 3. Uprights: 42-inch (1067-mm) by 1.66-inch (42-mm) steel pipe factory assembled with manufacturer's standard clamp fittings accepting railings, adjustable up to 11 deg. from vertical.
  - 4. Railings and Stanchions: Galvanized pipe, 1.66-inch (42-mm) OD.

5. Mounting Bases: Class 30 gray cast iron.

6. Finish: Galvanized, exposed.

#### 2.4 MISCELLANEOUS MATERIALS

A. Hardware: Manufacturer's standard hardware as required for a complete installation; corrosion resistant, and identical to hardware utilized in tested assemblies meeting performance requirements.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

#### 2.5 FABRICATION

A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

B. Form work true to line and level with accurate angles and surfaces.

C. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

D. Form changes in direction by inserting prefabricated elbow fittings.

E. Close exposed ends of railing members with prefabricated end fittings.

F. Brackets, Flanges, Fittings, and Anchors: Provide brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

G. Toe Boards: Provide toe boards at railings around openings and at edge of open-sided roofs and platforms.

#### 2.6 STEEL AND IRON FINISHES

A. Powder-Coat Finish: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that roof assembly is sound, dry, smooth, clean, sloped for drainage, securely anchored and ready for placement of fall protection.

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

### 3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for the substrate, under the project conditions.

### 3.3 INSTALLATION OF NON-PENETRATING FALL PROTECTION DEVICES

- A. Install fall protection to comply with requirements of 29 CFR 1910.28 and 1910.29, and authorities having jurisdiction.
- B. Install fall protection in accordance with manufacturer's written instructions.
- C. Set fall protection components accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  - 1. Do not weld, cut, or abrade surfaces of components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  - 2. Set components plumb within a tolerance of 1/8 inch in 3 feet (4 mm in 1 m).
  - 3. Align horizontal members so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
- D. Test action of operable components of facility fall protection equipment. Adjust for proper operation.
- E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- F. Coordinate review of installation by Owner's safety director or designated representative prior to turnover to Owner.

### 3.4 FIELD QUALITY CONTROL

- A. Perform additional testing and inspecting, at Contractor's expense, to determine compliance of replaced or additional work with specified requirements.

### 3.5 REPAIR AND CLEANING

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
  - 1. Touchup Painting: Immediately after erection, clean bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.



2. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.
3. Replace components that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 112429.03

## SECTION 077100 - ROOF SPECIALTIES

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Manufactured copings.

#### 1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site, in conjunction with roofing preinstallation conference specified in Division 07 roofing section.

1. Meet with Owner, Owner's Consultant, Installer, and installers whose work interfaces with or affects roof specialties including installers of roofing materials and accessories.
2. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
3. Review special roof details, roof drainage, and condition of other construction that will affect roof specialties.

#### 1.3 ACTION SUBMITTALS

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

#### 1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

#### 1.5 CLOSEOUT SUBMITTALS

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

#### 1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are ANSI/SPRI ES-1 tested to specified design pressure.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.

- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof specialties installation.

#### 1.8 PROJECT / FIELD CONDITIONS

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

#### 1.9 WARRANTY

- A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Division 07 roofing Section.
- B. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. SPRI Wind Design Standard: Manufacture and install copings tested according to ANSI/SPRI ES-1.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

## 2.2 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, [www.tremcoroofing.com](http://www.tremcoroofing.com) that are named in other Part 2 articles. Provide specified products or comparable products of one of the following.

1. Tremco CPG, Inc.

- B. Source Limitations: Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Division 07 roofing Section.

## 2.3 EXPOSED METALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 (Z275) coating designation.

1. Surface: Smooth, flat finish as indicated.

## 2.4 CONCEALED METALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 (Z275) coating designation.

## 2.5 UNDERLAYMENT MATERIALS

- A. TPA Flashing Membrane: Wrap top of parapet with specified TPA flashing membrane to provide a vapor barrier under the coping metal.

## 2.6 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.

- C. Elastomeric Sealant: ASTM C920, elastomeric silicone sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

## 2.7 MANUFACTURED COPINGS

- A. Copings: Manufactured coping system consisting of formed-metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; corner units, end cap units, and concealed splice plates with same finish as coping caps.

1. Coping Profile: Tapered Tremlock Infinity Coping.

- a. Unit Face Height: Accommodate existing height plus additional insulation and blocking indicated.
2. Basis-of-Design Product: Subject to compliance with requirements, provide Tremco, TremLock Infinity Coping.
3. Coping-Cap Material: Zinc-coated steel, nominal 22 ga.; 0.034-inch (0.86-mm) thickness.
  - a. Finish: High-performance organic (PVDF) coating.
  - b. Color: As selected by Owner from manufacturer's full range.
4. Corners: Factory mitered and continuously welded.
5. Coping-Cap Attachment Method: Snap-on, fabricated from coping-cap material.
6. Snap-on-Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
7. Face Leg Cleats: Concealed, continuous galvanized steel.

## 2.8 REGLETS AND COUNTERFLASHINGS

- A. Counterflashings: Units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m).
  1. Fabricate from the following exposed metal:
    - a. Material: Zinc-coated steel, nominal 24 ga.; 0.028-inch (0.71-mm) thickness.

## 2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. High-Performance Organic (PVDF) Coating: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A755/A755M and coating and resin manufacturers' written instructions.
  1. Galvanized Steel Coil Coating Finishes: Two-Coat or Three-Coat Fluoropolymer: AAMA 621 and as additionally required to meet specified finish performance and warranty requirements. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat.

- E. Mill Finish: As manufactured.
- F. Patinated Finish: Factory pre-patinated finish, as indicated.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION OF UNDERLAYMENT

- A. TPA Flashing Membrane: Wrap top of parapet wall with TPA flashing membrane. Secure TPA flashing membrane using fastened anchor clips to secure the flashing membrane to the parapet wall under the coping metal. Flashing membrane shall wrap the exterior face of the parapet wall no less than 2 inches (50 mm).

#### 3.3 INSTALLATION, GENERAL

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.
  - 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
  - 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
  - 3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
  - 4. Torch cutting of roof specialties is not permitted.
  - 5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise shown on Drawings.
2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes:

1. Wood Blocking or Sheathing: Use fasteners of sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
2. Other Substrates: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Seal joints with elastomeric sealant as required by roofing-specialty manufacturer.

F. Seal joints as required for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

### 3.4 INSTALLATION OF COPINGS

- A. Install clips, cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
  1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's required spacing that meets performance requirements.

### 3.5 INSTALLATION OF REGLETS AND COUNTERFLASHINGS

- A. General: Coordinate installation of reglets and counterflashings with installation of base flashings.
- B. Counterflashings: Insert counterflashings; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with elastomeric sealant. Fit counterflashings tightly to base flashings.

### 3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces.
- B. Clean off excess sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces including removing unused fasteners, metal

filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.

- D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077100



Stockton Unified School District  
King Elementary School  
Detail Drawings

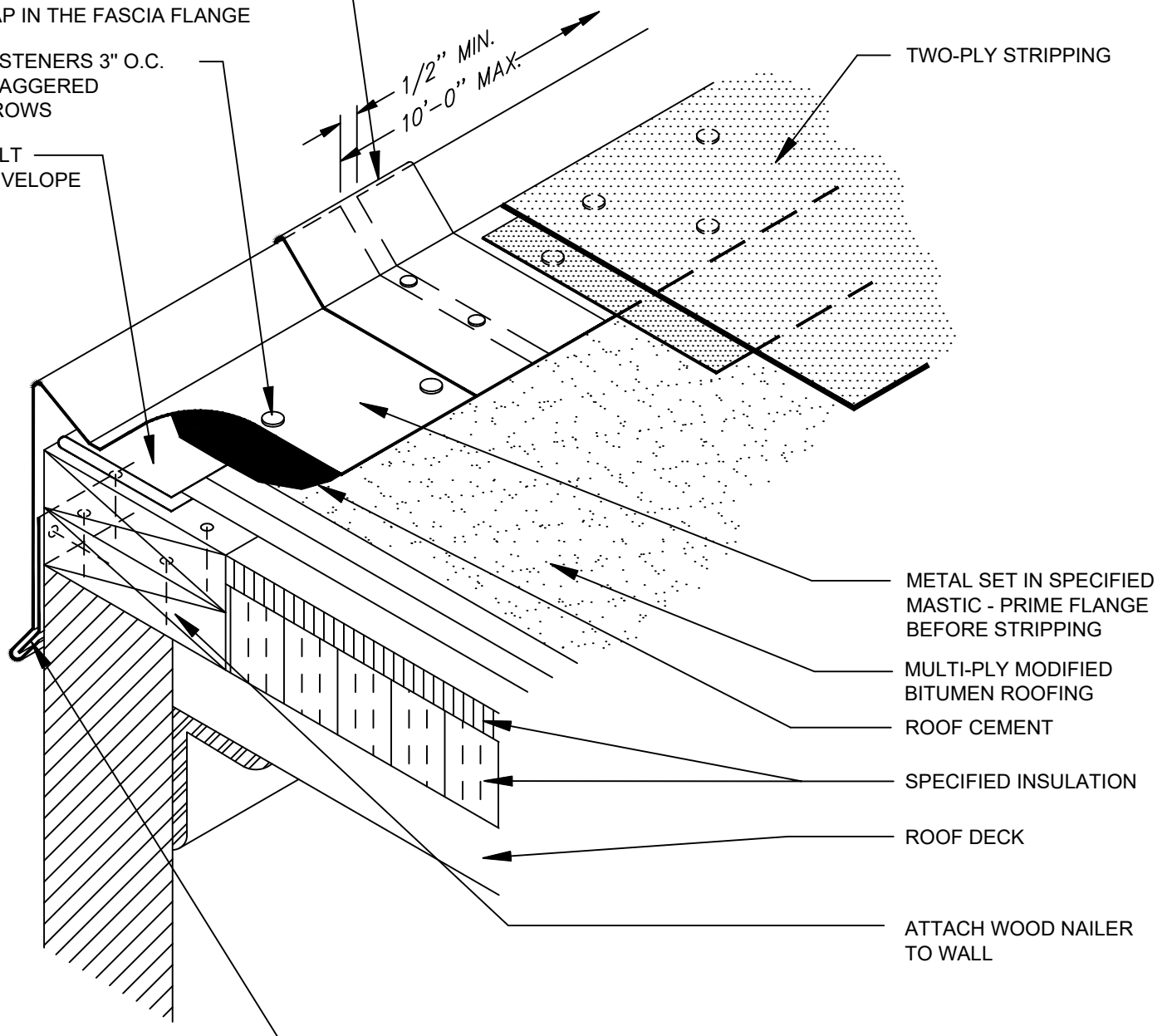
JOINT COVER 4"-6" WIDE  
 SET IN SPECIFIED MASTIC  
 AND SECURED USING TWO  
 FASTENERS THROUGH THE  
 GAP IN THE FASCIA FLANGE

FASTENERS 3" O.C.  
 STAGGERED  
 2 ROWS

FELT  
 ENVELOPE

1/2" MIN.  
 10'-0" MAX.

TWO-PLY STRIPPING



METAL SET IN SPECIFIED  
 MASTIC - PRIME FLANGE  
 BEFORE STRIPPING

MULTI-PLY MODIFIED  
 BITUMEN ROOFING

ROOF CEMENT

SPECIFIED INSULATION

ROOF DECK

ATTACH WOOD NAILER  
 TO WALL

CONTINUOUS CLEAT  
 FASTENED 16" O.C.

**NOTES**

1. ALL METAL SURFACES SHALL BE PRIMED BEFORE CONTACT WITH ANY ADHESIVE OR ROOF CEMENT.

LIGHT-METAL ROOF EDGE

DWG NO. 01

N.T.S.



MULTI-PLY MODIFIED  
BITUMEN ROOFING

SPECIFIED  
INSULATION

DECK CLAMP

STRAINER/DOME

CLAMPING RING

TWO-PLY STRIPPING

LEAD / METAL  
FLASHING

ROOF DECK

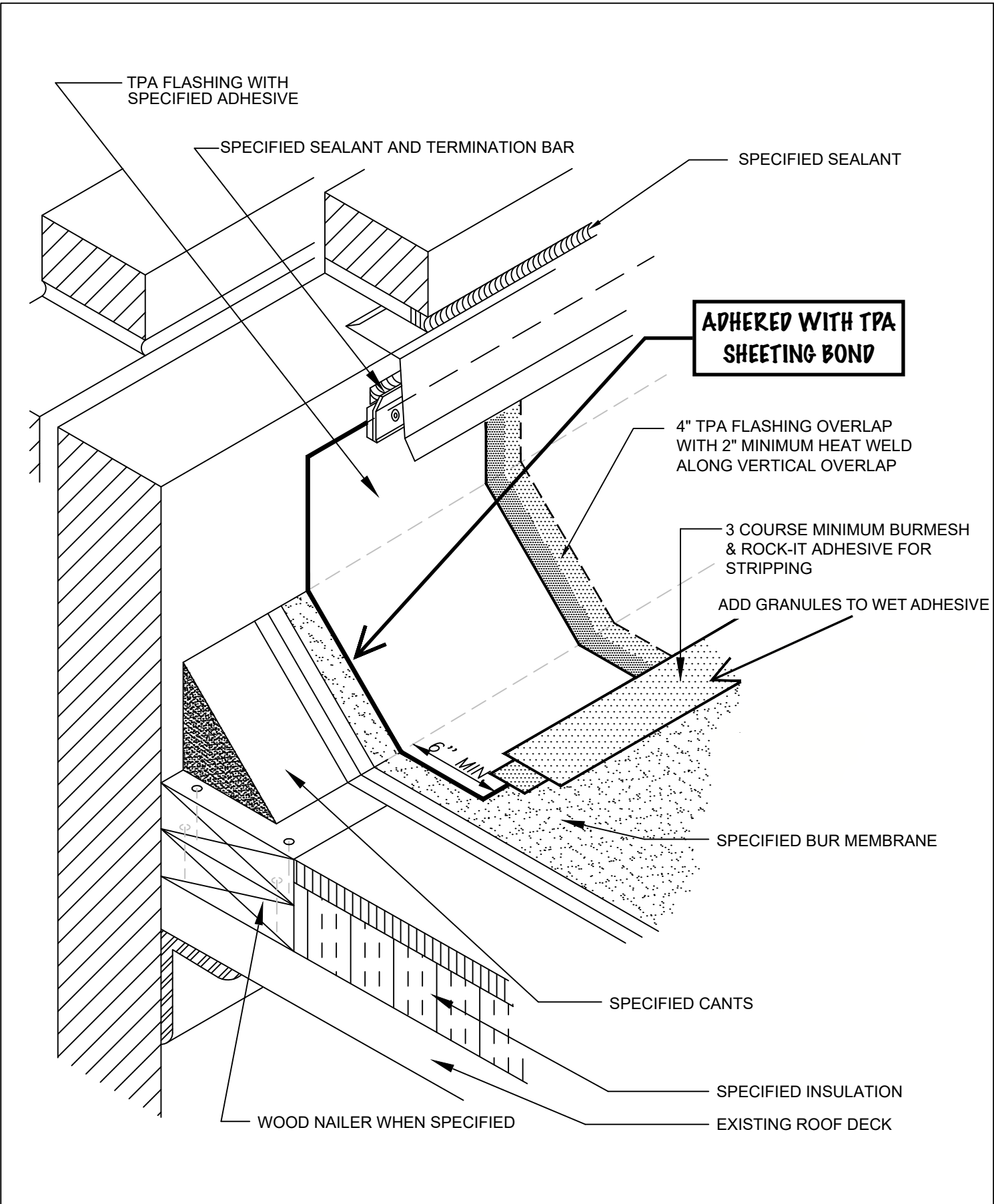
## NOTES

1. PRIME ALL METAL SURFACES THAT WILL COME INTO CONTACT WITH ADHESIVES.

ROOF DRAIN  
DWG NO. 13A

N.T.S.

**TREMCO**  
ROOFING & BUILDING MAINTENANCE

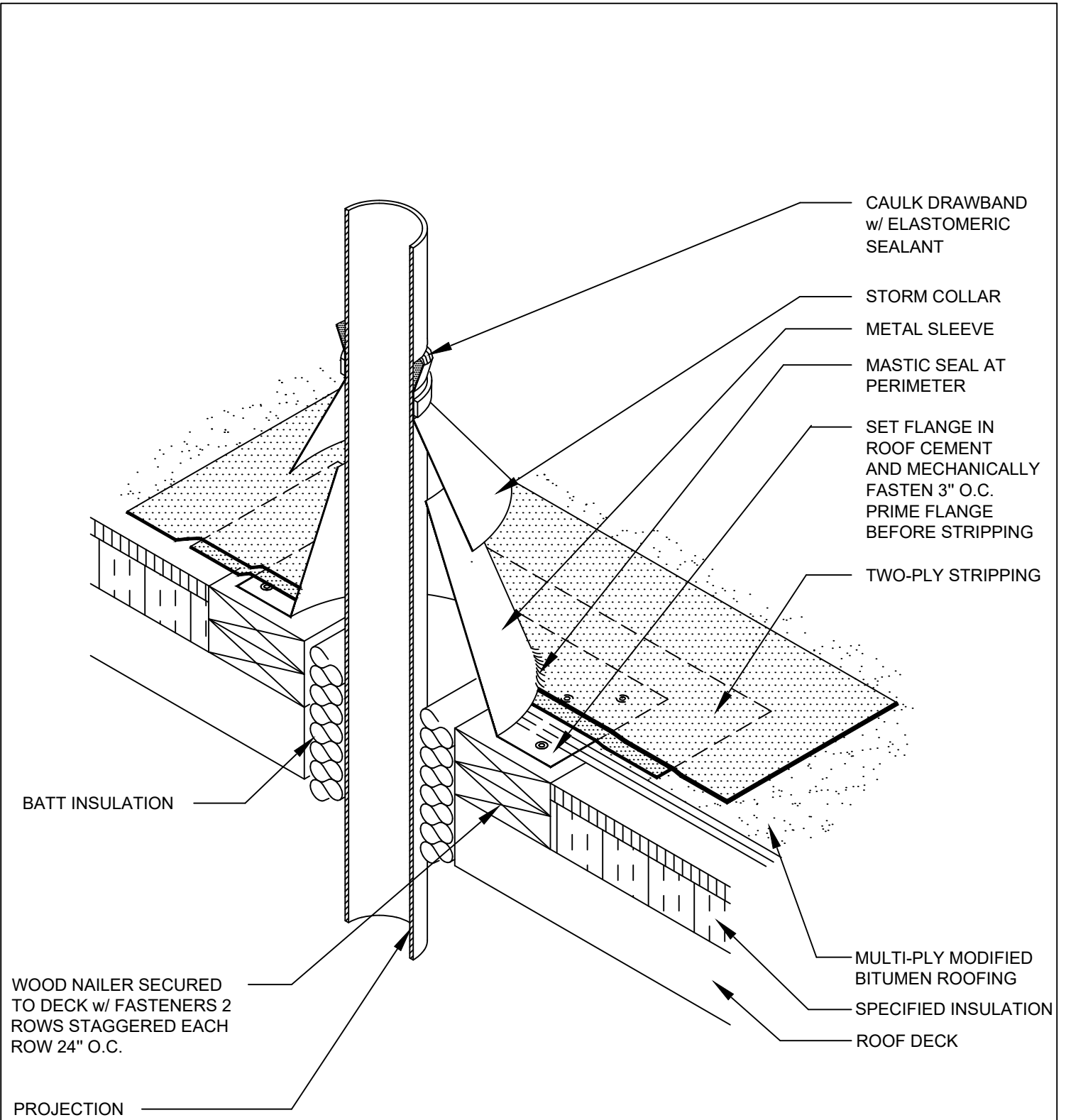


BUILT-UP ROOFING  
 HOT/COLD TPA WALL FLASHING  
 WALL-SUPPORTED DECK

DWG NO. 14

N.T.S.



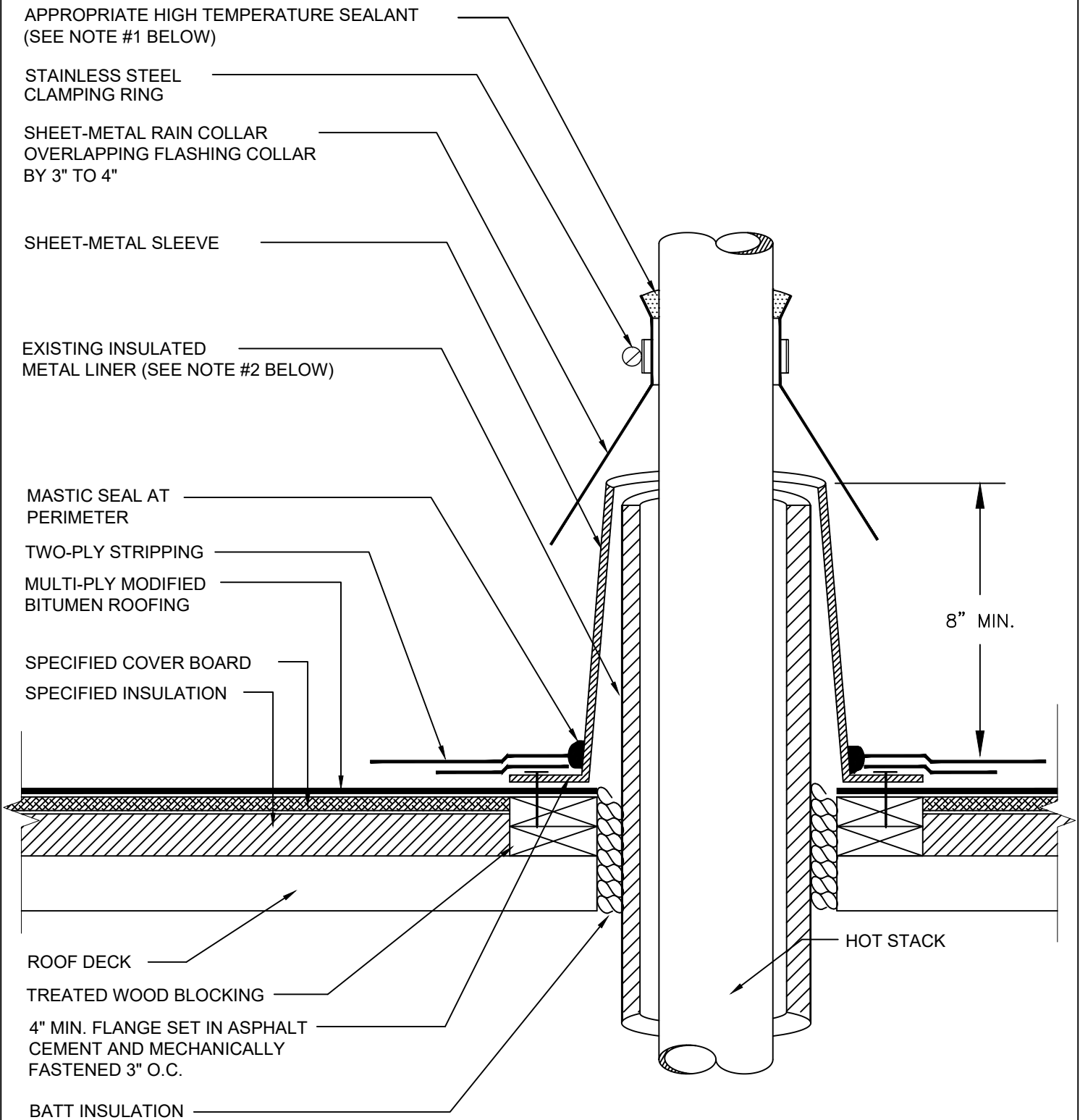


METAL SLEEVE AND STORM COLLAR

DWG NO. 16

N.T.S.





## NOTES

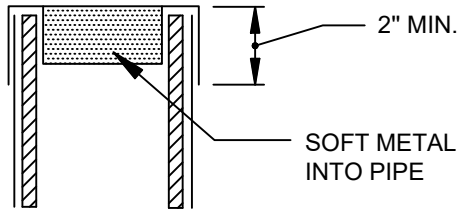
1. WHEN HOT STACK SERVICE TEMPERATURE EXCEEDS 400 DEGREES, WELD OR SOLDER RAIN COLLAR TO PIPE IN LIEU OF INSTALLING SEALANT.
2. THE CLEARANCE REQUIRED BETWEEN THE HOT PIPE AND INSULATED METAL LINER WILL DEPEND ON THE TEMPERATURE OF THE MATERIAL HANDLED BY THE STACK.

HOT STACK PENETRATION

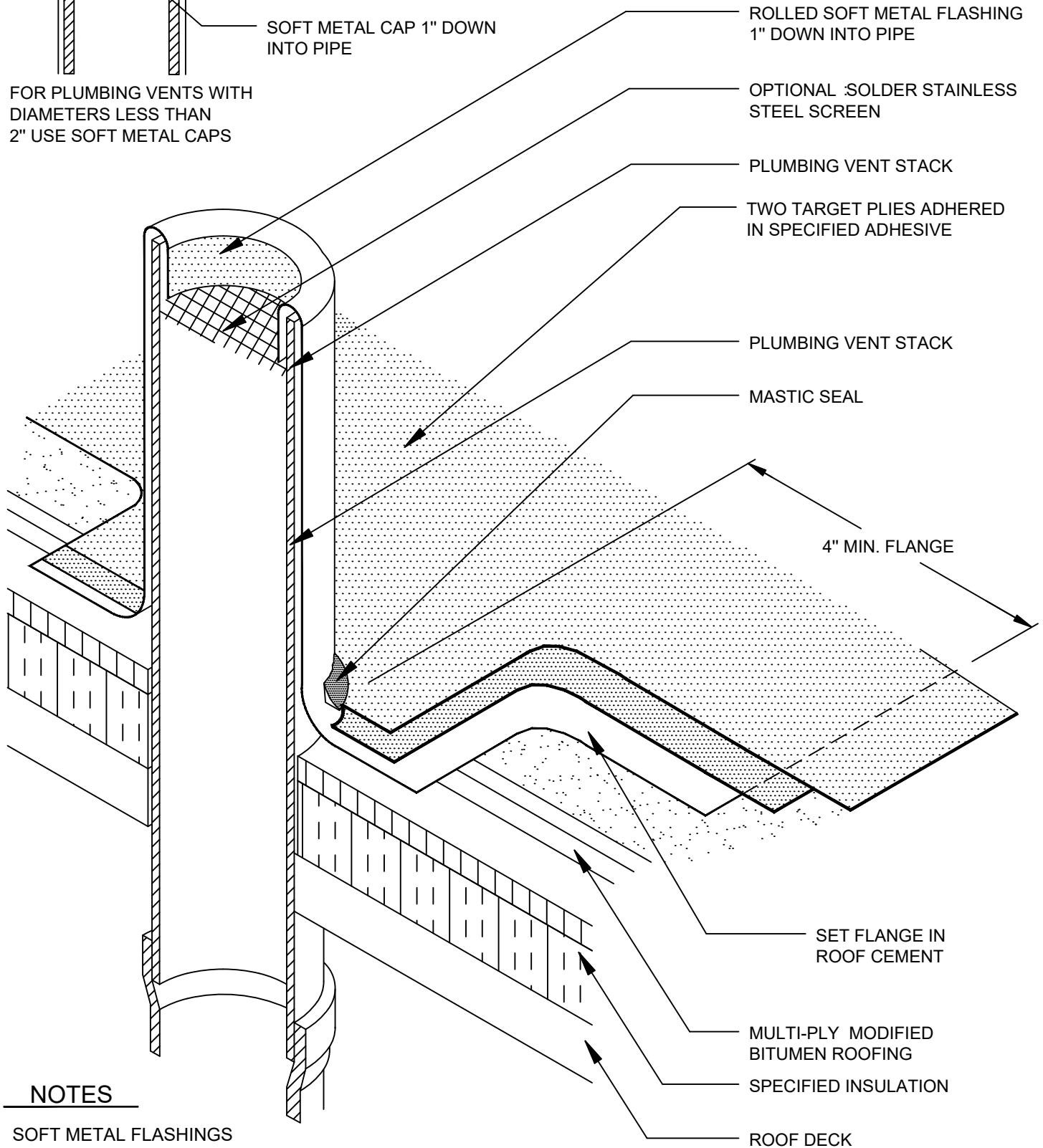
DWG NO. 17

N.T.S.

**TREMCO**  
ROOFING & BUILDING MAINTENANCE



FOR PLUMBING VENTS WITH DIAMETERS LESS THAN 2" USE SOFT METAL CAPS



### NOTES

#### SOFT METAL FLASHINGS

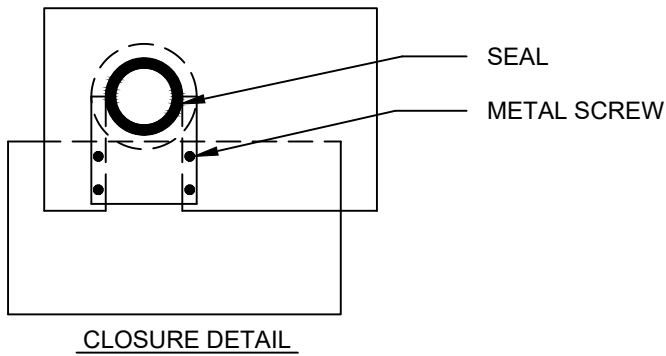
1. SHEET LEAD MINIMUM 4 LB. (20kg/m ) PER SQ.FT.
2. SHEET COPPER MINIMUM 16 OZ. IF COPPER FLASHING IS INSTALLED OVER AN IRON OR STEEL PIPE, WRAP AN ASPHALT COATED ROOFING FELT TO PREVENT DIRECT CONTACT BETWEEN TWO DISSIMILAR METALS.

PLUMBING VENT FLASHING

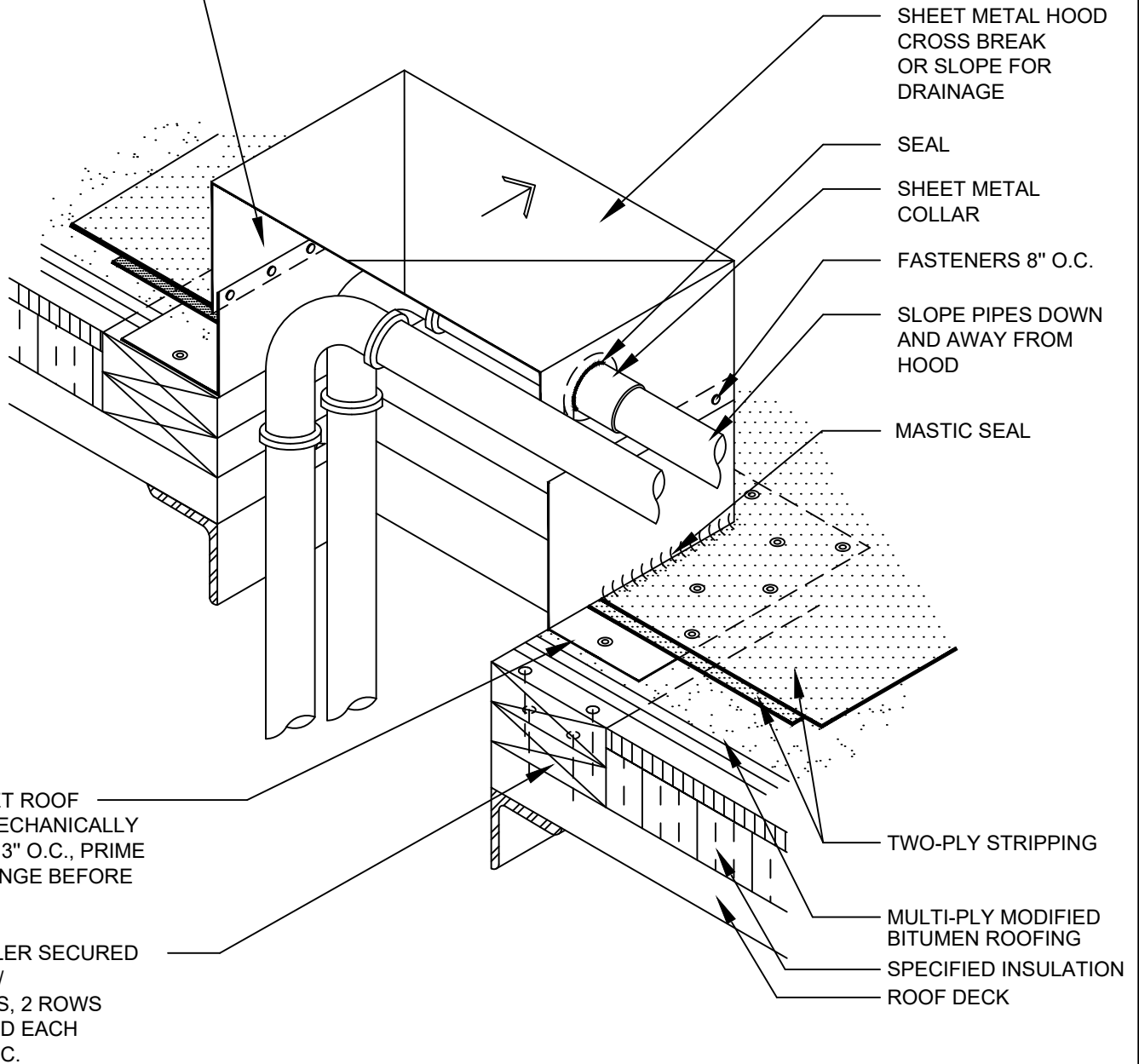
DWG NO. 18

N.T.S.

**TREMCO**  
ROOFING & BUILDING MAINTENANCE



INSULATE INSIDE OF METAL WORK IN COLD CLIMATES



PIPING THROUGH ROOF DECK  
DWG NO. 20

N.T.S.

**TREMCO**  
ROOFING & BUILDING MAINTENANCE



**ADHERED WITH TPA  
SHEETING BOND**

FASTENERS 8" O.C.

SHEET METAL COVER  
AS SPECIFIED

NAIL WOOD CANT TO  
BLOCKING, 2 ROWS  
STAGGERED EACH  
ROW 12" O.C.

ADHERED TPA BASE FLASHING

WOOD NAILER SECURED  
TO DECK w/  
FASTENERS, 2 ROWS  
STAGGERED EACH ROW  
24" O.C.

STRIP IN WITH ROCK IT,  
BURMESH, AND  
GRANULES

MULTI-PLY MODIFIED  
BITUMEN ROOFING

SPECIFIED INSULATION

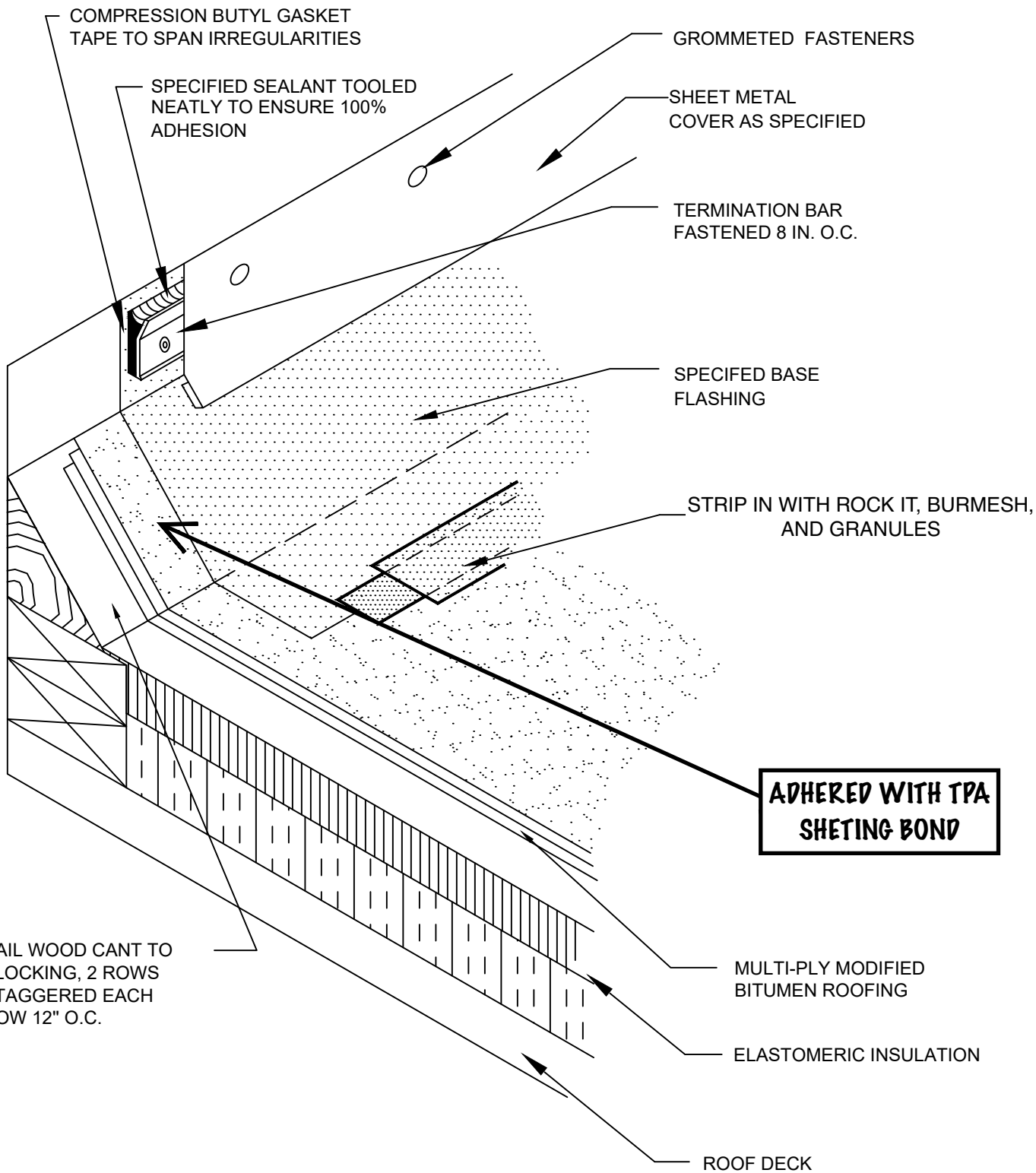
ROOF DECK

4" MIN.

WOOD CURB  
DWG NO. 21

N.T.S.

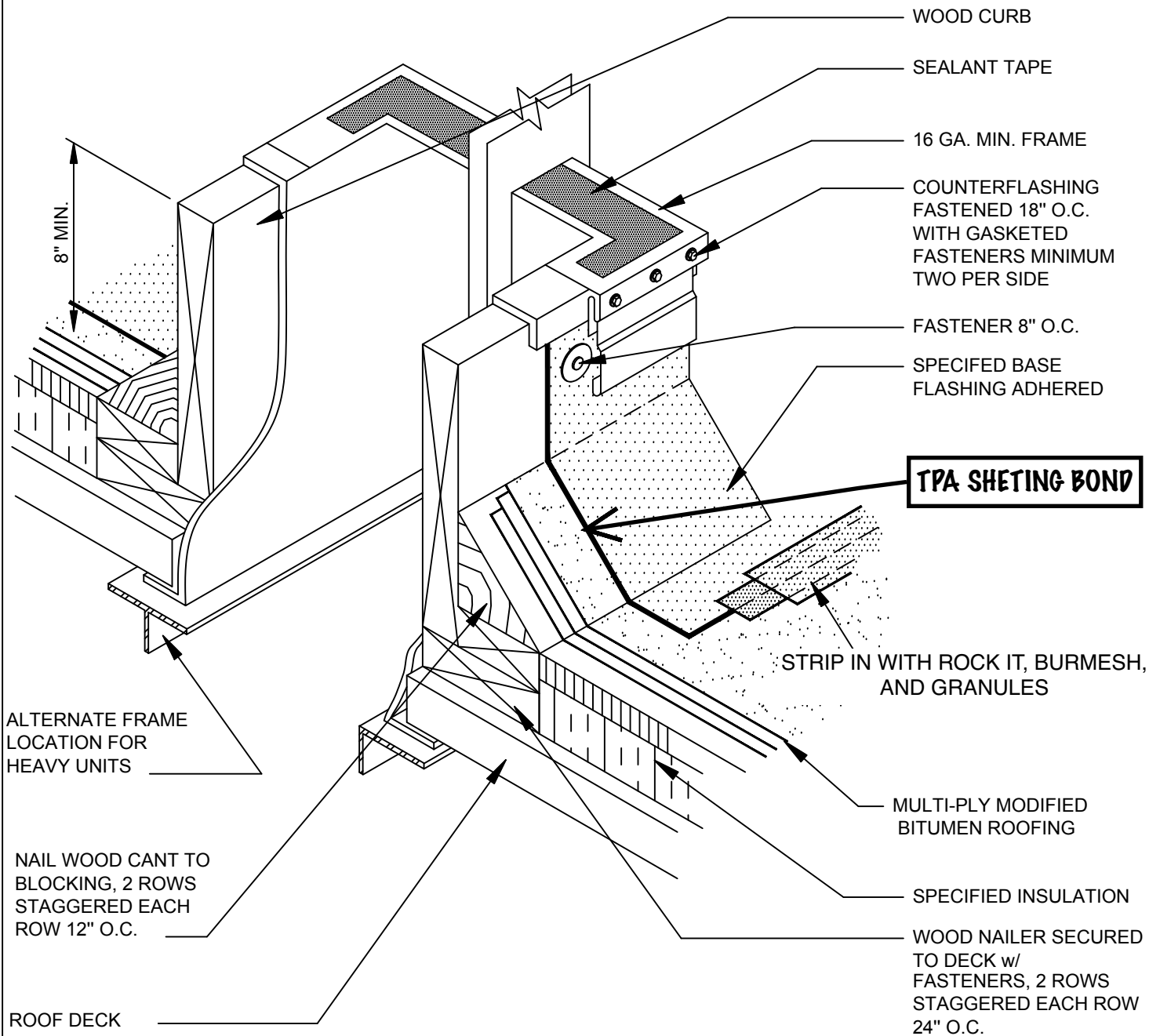




METAL CURB  
 DWG NO. 22

N.T.S.



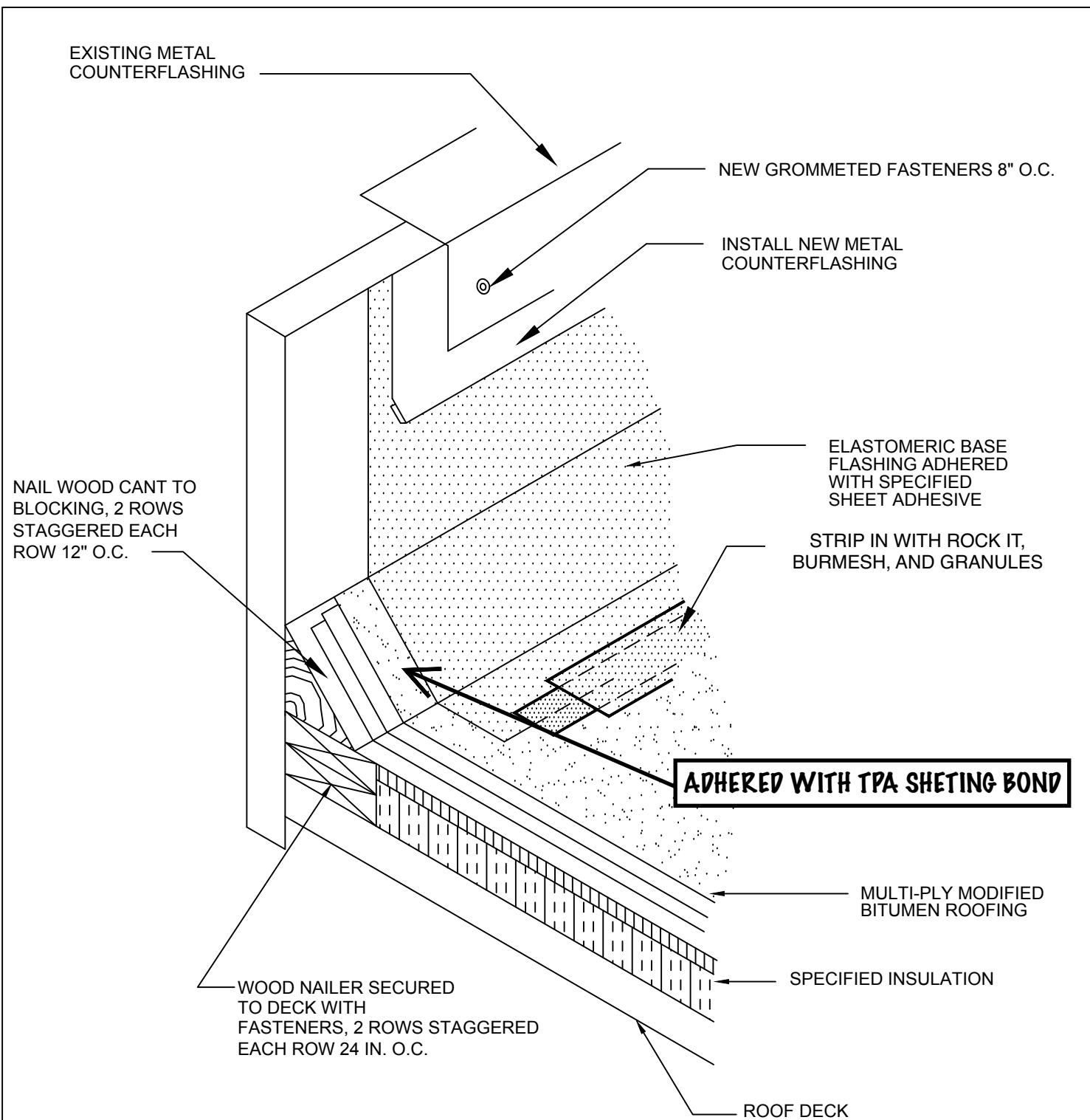


**CURB FOR AIR HANDLING UNIT**

DWG NO. 25

N.T.S.





SLIP METAL SKIRT FLASHING

DWG NO. 29

N.T.S.

**TREMCO**  
 ROOFING & BUILDING MAINTENANCE

**NEW RUBBER BLOCKING SPACED EVERY 8'**

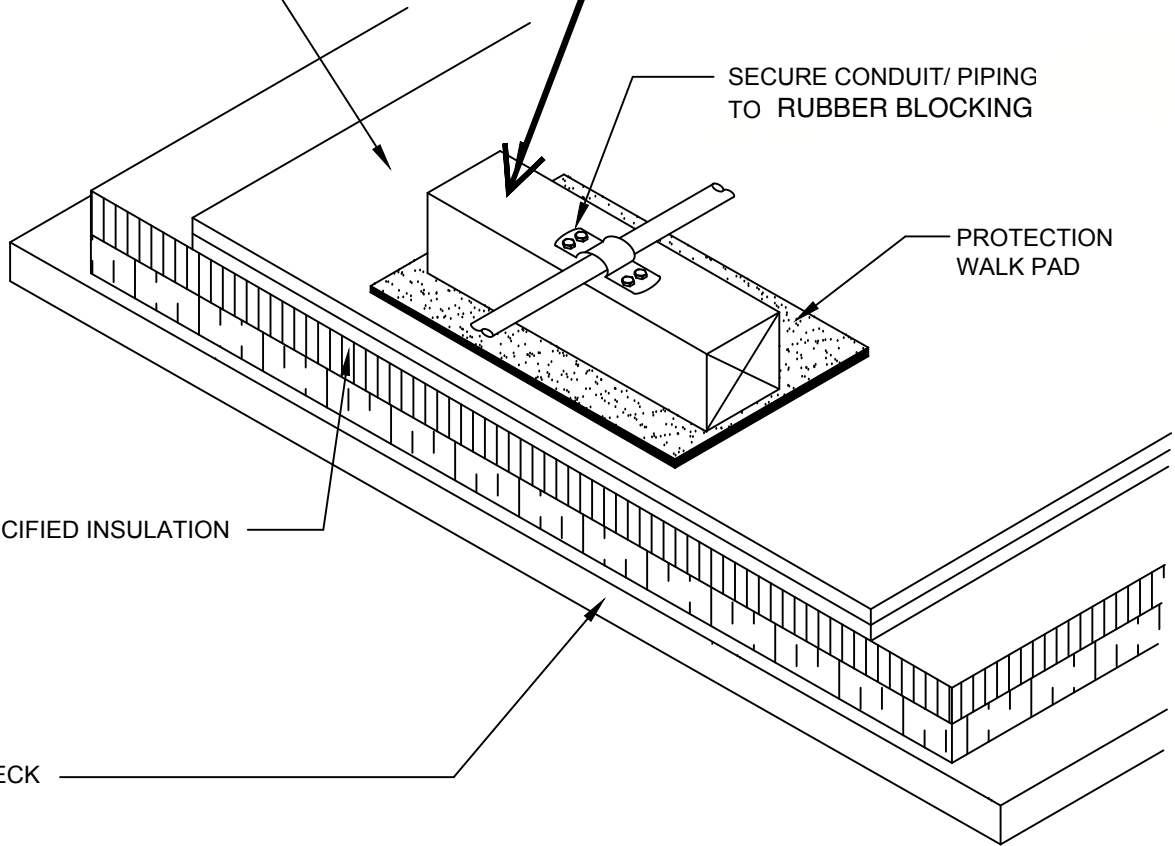
MULTI-PLY MODIFIED BITUMEN ROOFING

SECURE CONDUIT/ PIPING TO RUBBER BLOCKING

PROTECTION WALK PAD

SPECIFIED INSULATION

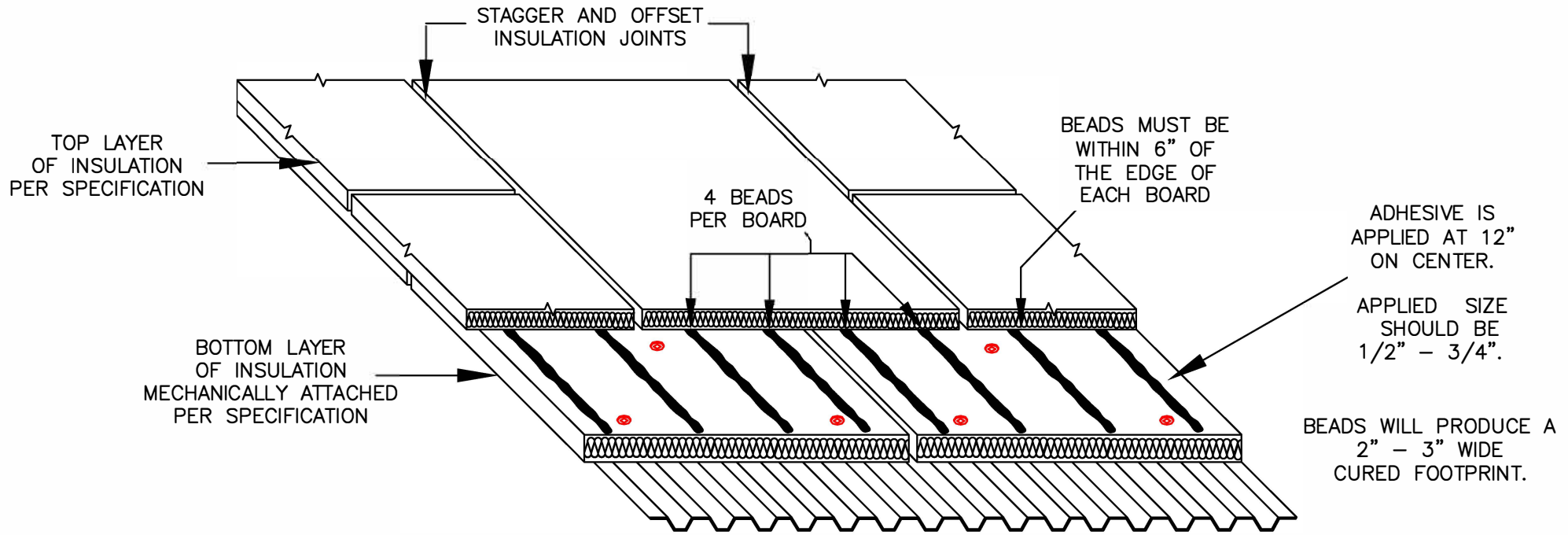
ROOF DECK



CONDUIT / PIPE SUPPORT  
DWG NO. 31

N.T.S.

**TREMCO**  
ROOFING & BUILDING MAINTENANCE



**NOTE:**

1. INSULATION BOARDS MUST BE PLACED INTO THE ADHESIVE AS SOON AS IT STARTS TO FOAM (WITHIN 15 SECONDS). STEP BOARDS INTO PLACE. DO NOT REPOSITION BOARDS ONCE THEY ARE SET. DO NOT PUDDLE OR MOUND THE ADHESIVE AS THIS CAN LEAD TO EXCESSIVE RISE AND BOARD SURFACE UNEVENNESS.
2. IDEAL AMBIENT TEMPERATURE FOR APPLICATION IS 45° AND RISING. MATERIAL TEMPERATURE MUST BE BETWEEN 70°F AND 85°F.
3. APPLY ADHESIVE AT 12" O.C. AT THE FIELD OF THE ROOF (4 BEADS PER BOARD).
4. APPLY ADHESIVE AT 6" O.C. IN PERIMETER AREAS (8 BEADS PER BOARD) AND 3" O.C. IN CORNER AREAS (12 BEADS PER BOARD).

**TREMCO®**

SHEET TITLE:

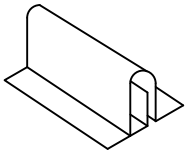
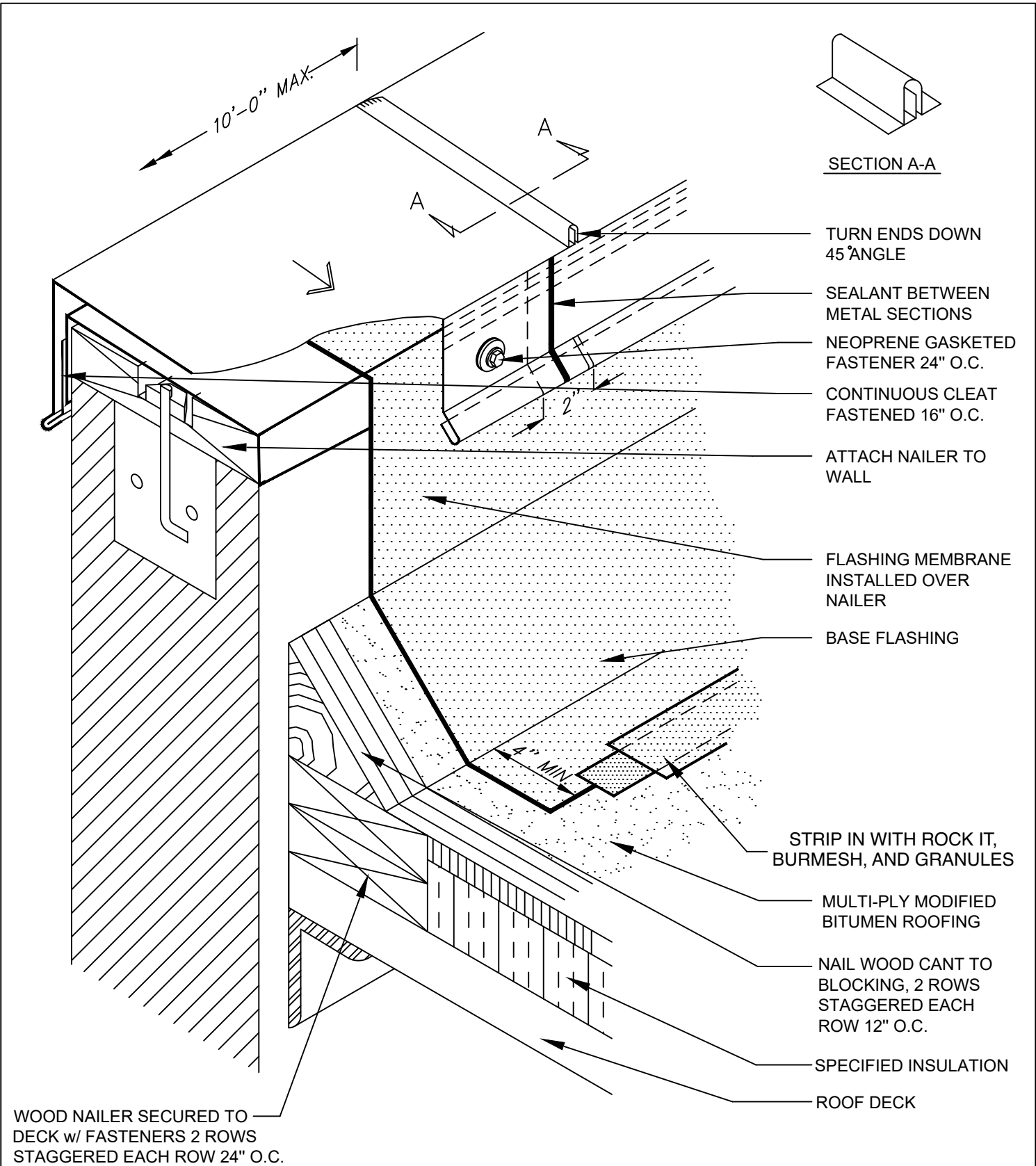
TREMCO LOW RISE FOAM  
INSULATION ADHESIVE

SCALE:

NOT TO SCALE

DRAWING No.:

TLRFIA-001



SECTION A-A

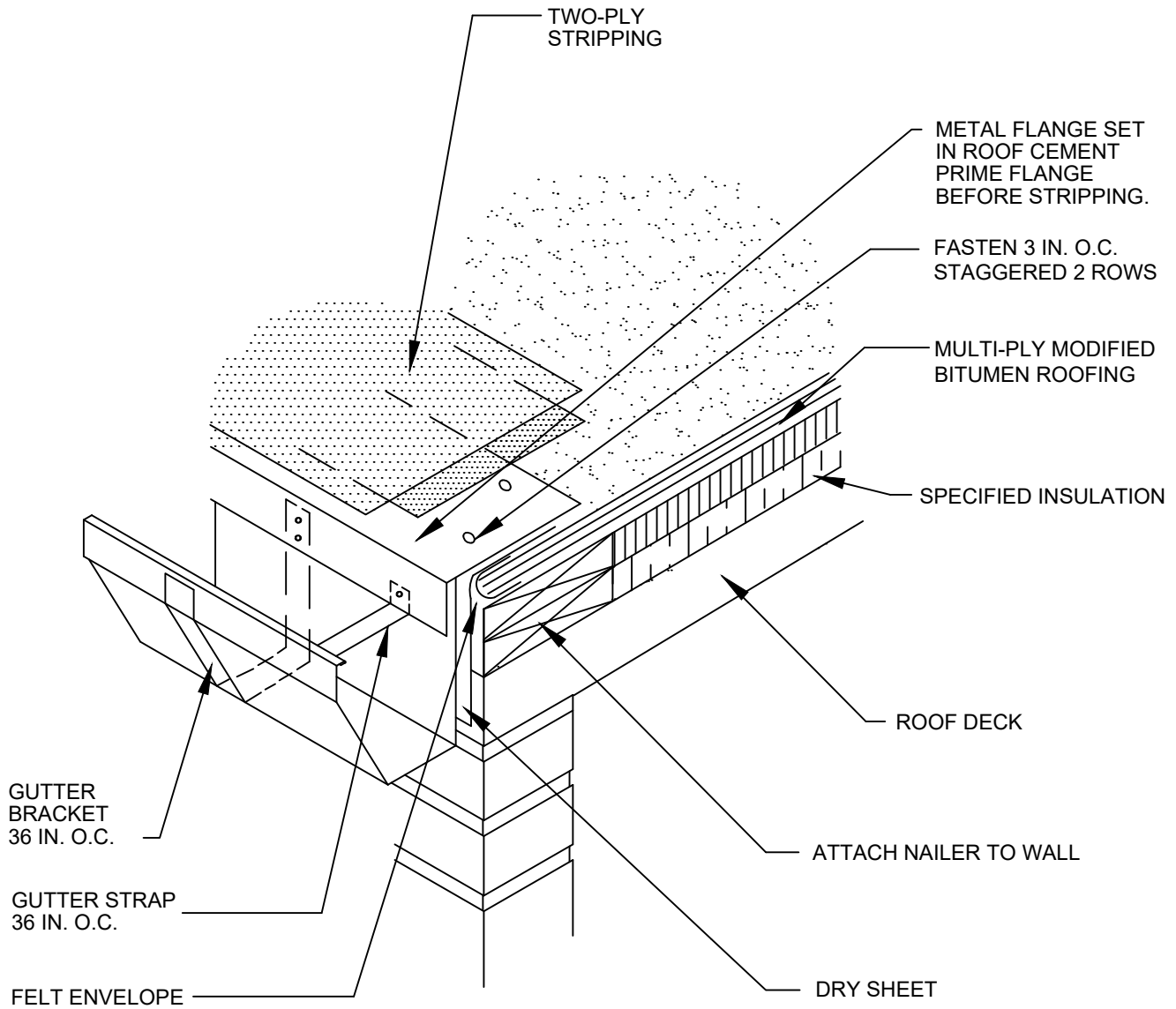
- TURN ENDS DOWN 45° ANGLE
- SEALANT BETWEEN METAL SECTIONS
- NEOPRENE GASKETED FASTENER 24" O.C.
- CONTINUOUS CLEAT FASTENED 16" O.C.
- ATTACH NAILER TO WALL
- FLASHING MEMBRANE INSTALLED OVER NAILER
- BASE FLASHING
- STRIP IN WITH ROCK IT, BURMESH, AND GRANULES
- MULTI-PLY MODIFIED BITUMEN ROOFING
- NAIL WOOD CANT TO BLOCKING, 2 ROWS STAGGERED EACH ROW 12" O.C.
- SPECIFIED INSULATION
- ROOF DECK

WOOD NAILER SECURED TO DECK w/ FASTENERS 2 ROWS STAGGERED EACH ROW 24" O.C.

METAL COPING CAP  
DWG NO. 03

N.T.S.





**NOTES**

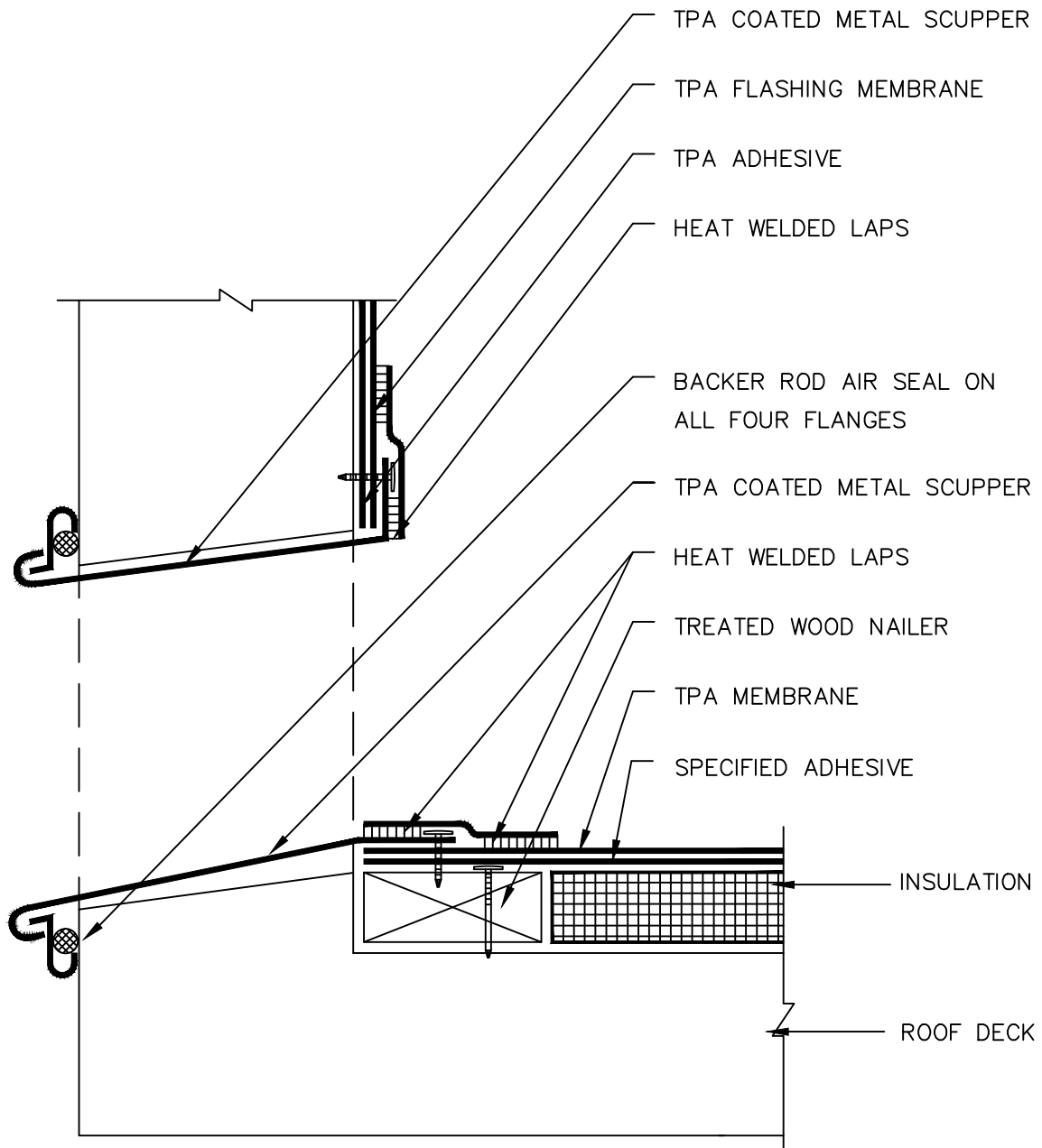
1. SLOPE GUTTER TO DOWNSPOUTS 1/4 IN./FT. MINIMUM

ROOF EDGE WITH GUTTER  
 DWG NO. 09

N.T.S.







**TREMCO**®

SHEET TITLE:

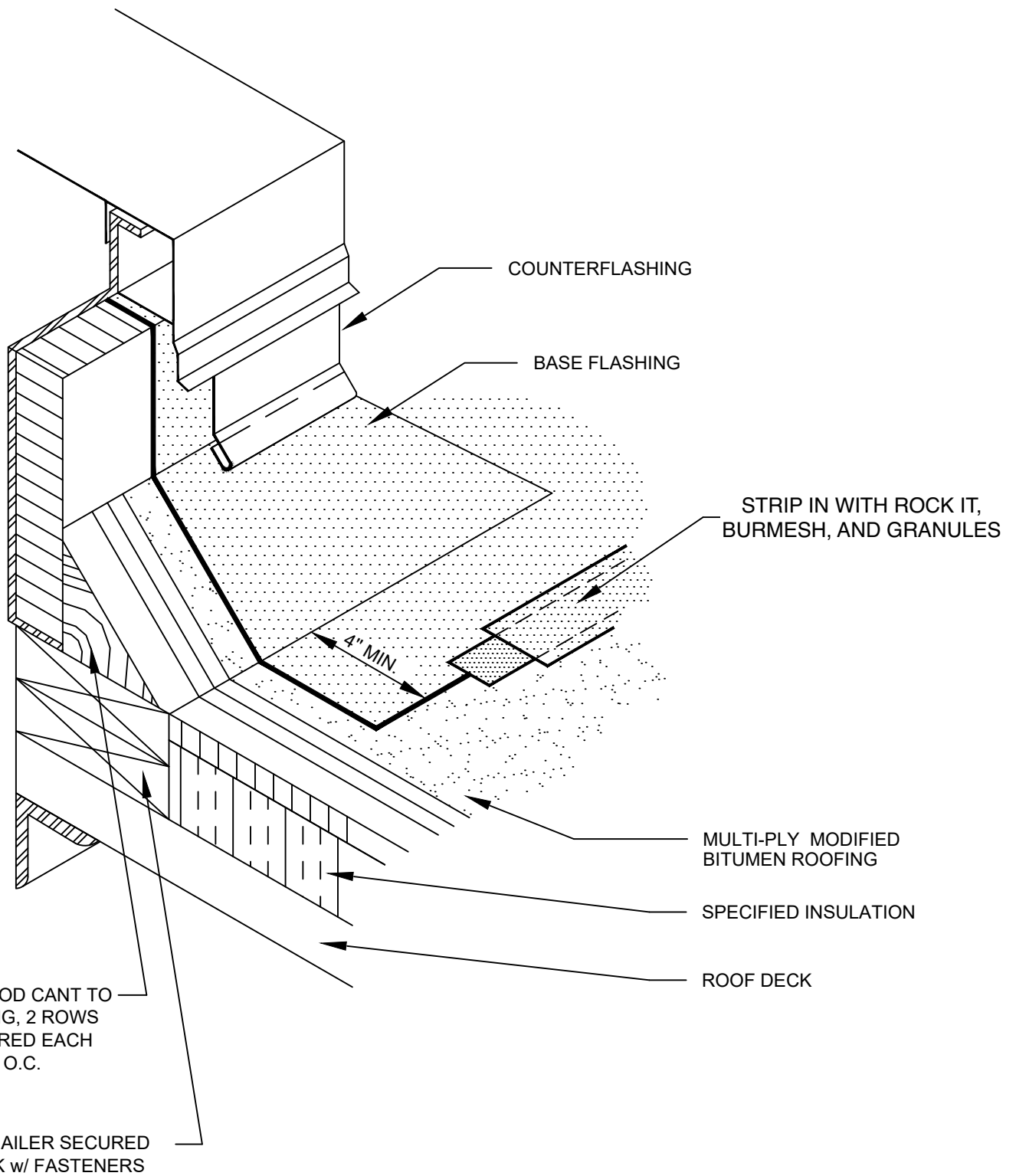
THROUGH WALL  
SCUPPER DETAIL

SCALE:

NTS

DRAWING No.:

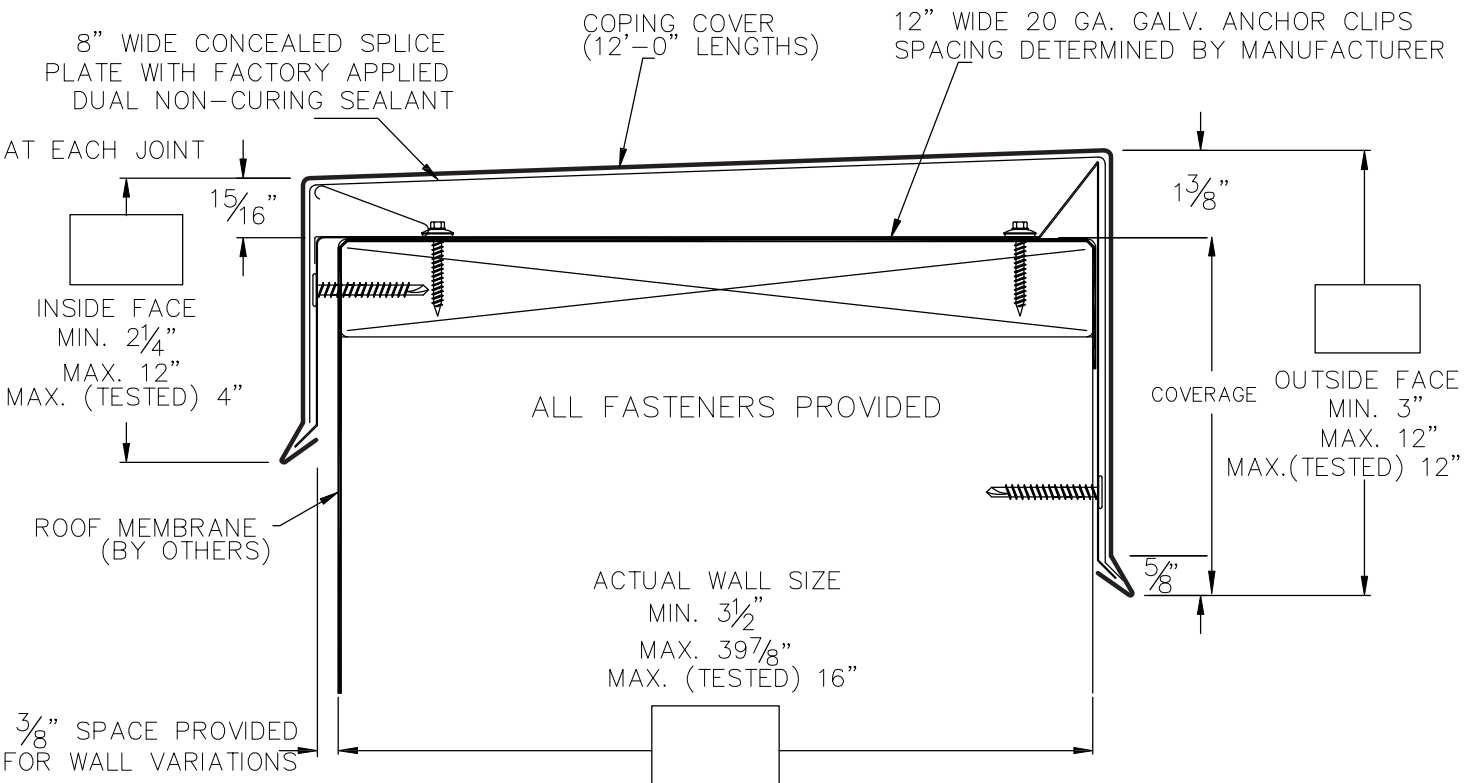
TPA-12



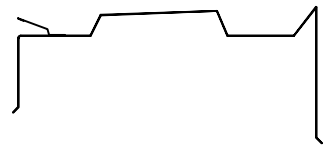
ROOF HATCH  
 DWG NO. 23

N.T.S.





ANCHOR CLIP PROFILE ON WALLS 14" OR GREATER



NOTE: TAPERED



SHEET TITLE:  
TREMLOCK INFINITY COPING

SCALE:  
NTS  
DRAWING No.:  
25.0