TECHNICAL SPECIFICATIONS

Re-Roofing at Abbott Elementary School at Buildings B, D, E, F, G, H, I & K

BID NO. 11MOT26

MARCH 2026

Abbott ES - Building B, D, E, F, G, H, I Re-Roofs

SECTION 070150.19 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof replacement preparation consisting of full roof tear-off of entire building roof system.
2. Removal of flashings and counterflashings.
3. Temporary roofing.
4. Temporary roof drainage.
5. Removal and reinstallation of indicated components, accessories, and equipment.

1.2 DESCRIPTION OF WORK

A. Re-roofing preparation Work consists of the following:

1. Preparation for Roof replacement:
    a. Roof Area(s): B, D, E, F, G, H, I.
    b. Existing Roof Type: Granular surfaced modified bituminous.
    c. Existing Deck Type: Wood deck.
    d. Roof tear-off.
    e. Removal and reinstallation of indicated components, accessories, and equipment.
    f. Uplift securement.
    g. Removal of base flashings.
    h. Temporary roof membrane.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

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1.4 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.

B. Existing Roofing System: Roofing system identified above, including roof covering/membrane, roof insulation, surfacing, and components and accessories between deck and roof covering/membrane.

C. Full Roof Tear-Off: Removal of existing membrane roofing system from deck.

D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

E. Existing to Remain: Existing items of construction that are not indicated to be removed.

F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.5 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.

1. Coordinate with roofing preinstallation meetings specified in Division 07 roofing section(s).

2. Review methods and procedures related to roofing tear-off, including, but not limited to, the following:

a. Reroofing preparation, including roofing system manufacturer's written instructions.

b. Temporary protection requirements for existing roofing system components that are to remain.

c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.

d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.

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e. Existing roof deck conditions requiring Owner notification.

f. Existing roof deck removal procedures and Owner notifications.

g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.

h. Structural loading limitations of roof deck during reroofing.

i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.

j. HVAC shutdown and sealing of air intakes.

k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.

l. Governing regulations and requirements for insurance and certificates if applicable.

1.6 ACTION SUBMITTALS

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

B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer including certificate that Installer is licensed to perform asbestos abatement.

B. Field Test Reports:

1. Fastener pull-out test report.

C. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

D. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

E. Schedule of Re-Roofing Preparation Activities: Indicate the following:

1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.

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2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of elevator and stairs.

5. Coordination of Owner's continuing occupancy of portions of existing building.

F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

G. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

1.8 CLOSEOUT SUBMITTALS

A. Certified statement from manufacturer of existing warranted roof system stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Installer of new membrane roofing system.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements:

1. Comply with governing EPA notification regulations before beginning membrane roofing removal.

2. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.10 PROJECT / FIELD CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area.

1. Conduct reroofing so Owner's operations will not be disrupted.

2. Provide Owner with not less than 48 hours' written notice of activities that may affect Owner's operations.

3. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.

4. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area.

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a. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.

B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.

E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

1. Remove only as much roofing in one day as can be made watertight in the same day.

F. 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.

G. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

A. EPS Insulation: Molded (expanded) polystyrene, ASTM C578.

B. Plywood: NIST DOC PS 1, Grade CD, Exposure 1.

C. Oriented Strand Board (OSB): NIST DOC PS 2, Exposure 1.

2.2 DECK REPAIR/REPLACEMENT MATERIALS

A. Wood Roof Deck Components:

1. Wood Deck Material:

a. Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

b. Moisture Content: Provide wood decking with 19 percent maximum moisture content at time of dressing.

c. Match existing size, face surface and edge profile.

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d. Decking Species: Balsam fir, Douglas fir-larch, Douglas fir-larch (North), hem-fir, hem-fir (North), southern pine, spruce pine-fir (North), western hemlock, or western hemlock (North).

e. Decking Grade: Commercial decking.

1) Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that will not be exposed to view.

f. Preservative Treatment: Pressure treat solid-sawn wood decking according to AWPA C31 with inorganic boron (SBX) and redry wood to 19 percent maximum moisture content.

g. Fasteners for Solid-Sawn Decking: Provide fastener size and type complying with decking standard for thickness of deck used.

1) Fastener Material: Hot-dip galvanized or stainless steel.

2. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

a. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A 153M or Type 304 stainless steel.

1) Nails, Brads, and Staples: ASTM F1667.

2) Power-Driven Fasteners: NES NER-272.

3) Wood Screws: ASME B18.6.1.

b. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

1) For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.

2.3 ROOFING INFILL, PATCHING AND REPLACEMENT MATERIALS

A. Use roofing infill materials matching existing membrane roofing system materials unless otherwise indicated.

B. Wood Blocking, Curbs, Cants and Nailers: Specified in Division 06 Section "Miscellaneous Rough Carpentry."

1. Reuse existing wood components that exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

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C. Fasteners: Factory-coated steel fasteners with metal or plastic plates listed in FM Approvals' RoofNav, and acceptable to new roofing system manufacturer.

2.4 TEMPORARY ROOFING MATERIALS

A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

2.5 TEMPORARY ROOF DRAINAGE

A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

2.6 AUXILIARY RE-ROOFING MATERIALS

A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.

B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

A. Protection of In-Place Conditions: Protect existing roofing system that is indicated not to be reroofed.

1. Loosely lay 1-inch- (25-mm-) minimum thick, molded expanded polystyrene (EPS) insulation over the roofing membrane in areas indicated.

a. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).

2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.

3. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.

4. Comply with requirements of existing roof system manufacturer's warranty requirements.

B. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.

C. Shut off rooftop utilities and service piping before beginning the Work.

D. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.

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1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

E. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.

1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.

F. Refrigerant: Before starting re-roofing preparation, remove refrigerant from mechanical equipment to be removed and reinstalled, according to 40 CFR 82 and regulations of authorities having jurisdiction.

G. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

3.2 ROOF TEAR-OFF

A. Notify Owner each day of extent of roof tear-off proposed for that day.

B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.

C. Roof Drainage: Remove roof drainage items indicated for removal.

D. Full Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.

1. Remove base sheets.

E. Roof Edge Specialties: Replace existing perimeter metal systems with new perimeter metal systems.

1. New perimeter metal systems (fascia and coping) are specified in Division 07 Section "Sheet Metal Flashing and Trim."

F. Inspect wood blocking, curbs, and nailers for deterioration and damage.

1. Replace existing wood components that exhibit signs of deterioration or other conditions detrimental to securement of roofing system components, including roof edge flashings.

2. Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

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3.3 DECK PREPARATION

A. Inspect deck after tear-off of membrane roofing system.

B. Verify that deck is sound and dry.

C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.

D. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner. Do not proceed with installation until directed by Owner.

3.4 DECK REPAIR/REPLACEMENT

A. Repair existing deck to provide smooth working surface for installation of roof system.

1. Replace deck that cannot be repaired to sound condition.

B. Wood Roof Deck Replacement:

1. Install solid-sawn wood decking to match existing deck construction and to comply with applicable code.

2. Wood Sheathing Panels: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

3.5 ROOFING INFILL AND PATCHING MATERIALS INSTALLATION

A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.

3.6 EQUIPMENT REMOVAL AND REINSTALLATION

A. General: Remove, store, protect and reinstall rooftop equipment as required to accommodate roof tear-off and subsequent roofing work.

1. Raise roof curbs, equipment mountings and other roof penetration flashings as required to accommodate additional insulation thickness and maintain base flashing height of not less than 8 inches (200 mm), unless otherwise indicated.

a. Provide wood assemblies and additional support with miscellaneous galvanized steel angles, as required to rebuild or raise existing roof curbs.

b. Extend vent and soil stacks and other roof penetrations, using matching materials, as required to accommodate additional insulation thickness.

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2. Extend existing ductwork inside existing roof curbs to accommodate extension of curb.

    a. Use materials matching existing ductwork; minimum of 20 ga. (0.9 mm) galvanized duct with Pittsburgh folded seam slip joints-typical.

B. Rooftop Equipment, Electrical: Engage a qualified electrician to perform electrical disconnection and reconnection.

1. Disconnect, reroute, extend and reconnect existing power feeders and control circuits (conduit and wiring) feeding the existing roof mounted equipment which is indicated to be raised and/or relocated to a new elevation/location and as required by the Contract.

2. Provide weatherproof exterior junction boxes, when required.

3. Make connections to mechanical equipment by using a maximum 18-inch (450-mm) length of liquid-tight flexible steel conduit.

    a. Rigid connections to mechanical equipment are not permitted.

4. Relocate and reconnect existing disconnect switches presently installed on existing roof mounted equipment indicated to be raised and/or relocated.

C. Prevent discharge of refrigerant. Verify that refrigerant has been properly recovered from equipment to be removed.

D. Reinstall designated equipment.

1. Make electrical reconnections in accordance with applicable code and authorities having jurisdiction.

2. Recharge HVAC equipment with refrigerant required by equipment manufacturer.

3. Coordinate with Owner to test equipment and verify proper operation.

E. Remove and dispose of designated abandoned equipment. Infill openings in deck with matching materials. Infill roofing system with materials of same type as existing, adjacent roofing system.

3.7 TEMPORARY ROOFING MEMBRANE

A. Install approved temporary roofing membrane over area to be reroofed.

B. Remove temporary roofing membrane before installing new roofing membrane.

3.8 BASE FLASHING REMOVAL

A. Remove existing base flashings around parapets, curbs, walls, and penetrations.

1. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.

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B. Do not damage metal counterflashings that are to remain.

1. Replace metal counterflashings damaged during removal with counterflashings specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.9 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Storage or sale of demolished items or materials on-site is not permitted.

B. Transport and legally dispose of demolished materials off Owner's property.

3.10 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION 070150.19

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SECTION 075216.11 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, HOT-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

A. All products in bold italics, listed in Part 2 – Products, and on “Attachment A’s”, will be furnished by **Lynwood Unified School District** using its authority under the CMAS Contract. All remaining products listed within the Part 2 section, and any additional needed quantities of the products listed on “Attachment A”, shall be furnished by the Roofing Contractor.

B. CMAS Contract #: 4-25-02-1015

C. Quote #: 5070833

D. Section Includes:

1. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood deck, including but not limited to:

   a. Roof insulation cover board for crickets and saddles.

   b. Roof insulation cover board.

   c. Roof membrane and membrane base flashings.

   d. Granule-surfaced SBS-modified bituminous cap sheet.

1.2 DEFINITIONS

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

B. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mop-applied roofing asphalt and 75 centipoise for mechanical spreader-applied roofing asphalt, within a range of plus or minus 25 deg. F (14 deg. C), measured at the mop cart or mechanical spreader immediately before application.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and

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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 written 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 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. Field Quality Control Reports: Reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and Contractor's corrective actions taken to correct defective work.

1. Submit reports within 48 hours after installation.

C. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

B. Warranties: Executed copies of warranties.

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1.6 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, and employees, and qualified by the roofing system manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Manufacturer Qualifications: Approved manufacturer with 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.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and 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 one of the following:

1. An authorized full-time technical employee of the manufacturer.

2. An independent party certified as a Registered Roof Observer by the International Institute of Building Enclosure Consultants (formerly the Roof Consultants Institute) retained by the Contractor or the Manufacturer and approved by the Manufacturer.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site access to manufacturer's written recommendations and instructions for installation of products.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. 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.

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1.8 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. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.

3. Remove and discard temporary seals before beginning work on adjoining roofing.

1.9 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 Period: 20 years from date of completion.

B. 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.

C. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.

1. Inspections to occur in following years: 2, 5, 10 and 15 following completion.

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PART 2 - PRODUCTS

2.1 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 that are named in other Part 2 articles. Provide specified products.

B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

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.

2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

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. SPRI Wind Design Standard: Manufacture and install copings and roof edge flashings tested according to ANSI/SPRI ES-1.

D. 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. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.

2. FM Global 1-29: Loss Prevention Data Sheet for Above Deck Roof Components.

3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.

4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.

5. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".

E. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, 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.

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F. Granule Loss: Not less than 0.4 g when calculated according to ASTM D5147, based on testing identical products by a qualified testing agency.

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 ROOF MEMBRANE MATERIALS

A. SBS Modified Bituminous Membrane Smooth-Surfaced Ply Sheets:

1. SBS/RET/Urethane-modified asphalt coated composite fiberglass mat and fiberglass scrim reinforced high strength sheet, smooth surfaced, ASTM D6163 Type III Grade S.

a. Basis of design product: Tremco, POWERply Endure 100 Smooth.

b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 190 lbf/in (33 kN/m); cross machine direction 190 lbf/in (33 kN/m).

c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 320 lbf (1420 N); cross machine direction 320 lbf (1420 N).

d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 7 percent; cross machine direction, 4 percent.

e. Low Temperature Flex, maximum, ASTM D5147: -40 deg. F (-40 deg. C).

f. Thickness, minimum, ASTM D5147: 0.090 inch (2.3 mm).

B. SBS Modified Bituminous Membrane Granule-Surfaced Cap Sheet:

1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, 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).

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f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).

C. Flashing Backer Sheet:

1. SBS/RET/Urethane-modified asphalt coated composite fiberglass mat and fiberglass scrim reinforced high strength sheet, smooth surfaced, ASTM D6163 Type III Grade S.

a. Basis of design product: Tremco, POWERply Endure 100 Smooth.

b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 190 lbf/in (33 kN/m); cross machine direction 190 lbf/in (33 kN/m).

c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 320 lbf (1420 N); cross machine direction 320 lbf (1420 N).

d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 7 percent; cross machine direction, 4 percent.

e. Low Temperature Flex, maximum, ASTM D5147: -40 deg. F (-40 deg. C).

f. Thickness, minimum, ASTM D5147: 0.090 inch (2.3 mm).

D. Flashing Sheet:

1. SBS/RET/Urethane-modified asphalt-coated glass-fibre-reinforced high-tensile strength sheet, white granular surfaced, ASTM D6163 Type III Grade G .

a. Basis of design product: Tremco, POWERply Endure 100 FR.

b. Tensile Strength at 25 deg. C (77 deg. F) minimum, ASTM D5147: Machine direction 32 kN/m (185 lbf/in); Cross machine direction 35 kN/m (210 lbf/in) .

c. Tear Strength at 25 deg. C (77 deg. F), minimum, ASTM D5147: Machine direction, 1445 N (325 lbf); Cross machine direction 1445 N (325 lbf).

d. Elongation at 25 deg. C (77 deg. F), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.

e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. C (-40 deg. F); Cross machine direction -37 deg.C (-35 deg. F).

f. Thickness, minimum, ASTM D5147: 3.3 mm (0.130 inch).

E. Fluid-Applied Flashing Material for Penetrations:

1. Polyurethane Roof Coating System Base Coat: Bio-based, low-odor low-VOC two-part, for use with a compatible top coat.

a. Basis of design product: Tremco, AlphaGuard BIO Base Coat.

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b. Combustion Characteristics, UL 790: Maintains combustion characteristics of existing roof system.

c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 1 g/L.

d. Accelerated Weathering, 5000 hours, ASTM G154: Pass.

e. Hardness, Shore A, minimum, ASTM D2240: 80.

f. Solids, by volume, ASTM D2697: 100 percent.

g. Bio-Based Content, Minimum: 70 percent.

h. Minimum Thickness, Base Coat reinforced over Granular Surfaced MB: 64 mils (1.62 mm) wet.

2. Polyurethane roof coating system top coat, bio-based low-odor low-VOC two-part, for application over compatible base coat.

a. Basis of design product: Tremco, AlphaGuard BIO Top Coat.

b. Combustion Characteristics, UL790: Maintains combustion characteristics of existing roof system.

c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 6 g/L.

d. Solar Reflectance Index (SRI), ASTM E1980: For white, not less than 103.

e. Accelerated Weathering, 5000 hours, ASTM G 154: Pass.

f. Hardness, Shore A, minimum, ASTM D2240: 81.

g. Solids, by volume, ASTM D2697: 100 percent.

h. Bio-Based Content, Minimum: 60 percent.

i. Minimum Thickness, reinforced system: 32 mils (0.81 mm) wet.

j. Color: White.

3. Polyester Reinforcing Fabric: 100 percent stitch-bonded mildew-resistant polyester fabric intended for reinforcement of compatible fluid-applied membranes and flashings.

a. Basis of design product: Tremco, Permafab.

b. Tensile Strength, Minimum, ASTM D5034 (2-inch): MD - 110 lbs (49.8 kg); XMD - 60 lbs (27.2 kg) avg.

c. Elongation, Minimum, ASTM D5034 (1-inch): MD - 25 percent; XMD - 100 percent.

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d. Tear Strength, Minimum, ASTM D5587: MD - 20 lbs (9.0 kg) avg; XMD - 20 lbs (9.0 kg) avg.

e. Weight: 3 oz./sq. yd (102 g/sq. m).

2.5 ASPHALT MATERIALS

A. Hot-melt asphalt adhesive, ASTM D312 Type IV.

1. Basis of design product: Tremco, Premium IV Adhesive.

2. Softening Point, min/max, ASTM D36: 215–225 deg. F (100–105 deg. C).

3. Ductility at 77 deg. F, (25 deg C) minimum, ASTM D113: 1.5 cm.

4. Penetration at 77 deg. F (25 deg. C), min/max, ASTM D5: 15–25 dmm.

2.6 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary 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. Asphalt Roofing Cement / Mastic:

1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.

a. Basis of design product: Tremco, ELS.

b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.

c. Non-Volatile Matter, ASTM D4586: 85 percent.

d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

C. Stripping Reinforcing Fabric:

1. 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).

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c. Color: Aqua green.

D. 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: Closest match to substrate.

E. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FM Global 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.

F. Gutter Metal: Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50 (Class AZM150 coating designation, Grade 340) prepainted by the coil-coating process to comply with ASTM A 755/A 755M; structural quality.

a. Thickness: 0.0236-inch/24 ga.(0.60-mm) minimum thickness.

b. Color to be selected by Owner.

c. 10 gauge powder coated brackets and 16 gauge galvanized straps.

2. Downspouts: 16-gauge powder coated steel. Color and shape to be selected by Owner.

G. Provide new 24 gauge bonderized finished edge metal flashings.

1. 1/8" rise.

2. 22 gauge cleat with a maximum 1" flange onto the deck.

3. Fascia to extend 1" longer than the existing edge metal.

4. Prime and paint new edge metal with customer approved paint color.

5. Install 3 Pan head screws at seams.

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H. Metal Primer: Water based acrylic metal primer that provides a tough, flexible film for the protection of steel against corrosion. Must be VOC compliant.

I. Metal Coating: ASTM D 6083, solar-reflective acrylic elastomer emulsion coating.

J. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

2.7 INSULATION ACCESSORIES

A. Roof Insulation Cover Board:

1. Gypsum panel, cellulosic fiber reinforced, water-resistant, ASTM C1278/C1278M.

a. Basis of design product: Tremco/USG Securock, Gypsum-Fiber Roof Board.

b. Thickness: 1/4 inch (6mm).

B. Roof Insulation Adhesive:

1. Urethane adhesive, bead-applied, low-rise two-component solvent-free low odor, formulated to adhere roof insulation to substrate.

a. Basis of design product: Tremco, Low Rise Foam Insulation Adhesive.

b. Flame Spread Index, ASTM E84: 10.

c. Smoke Developed Index, ASTM E84: 30.

d. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.

e. Tensile Strength, minimum, ASTM D412: 250 psi (1720 kPa).

f. Peel Adhesion, minimum, ASTM D903: 17 lbf/in (2.50 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.

D. Tapered Edge Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.

E. Substrate Joint Tape: Minimum 6 inch (150 mm) wide, coated, glass-fiber joint tape.

2.8 SURFACING MATERIALS SURFACING MATERIALS

A. Acrylic Emulsion for Field and Flashing Coating Material:

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1. Acrylic Roof Coating, Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.

    a. Basis of design product: Tremco, Solargard 6083 Top Coat.

    b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.

    c. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).

    d. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.

    e. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.

    f. Solids by weight, minimum ASTM D1644: 60 percent.

    g. Solids by volume, minimum ASTM D2697: 50 percent.

    h. Color, Top Coat: White.

    i. Application rate: 3 Gal/100 Sq. Ft.

    j. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 3-Year aged.

2.9 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).

B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

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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.

2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation. wood cants

3. Verify that substrate is sound and dry.

4. Wood Roof Deck: Verify that deck shows no signs of damage, rot or deterioration, and is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6mm) out of plane relative to adjoining deck.

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

3.2 PREPARATION

A. Water test all roof drains prior to roof removal. Notify the owner in writing of any clogged or slow draining drains.

B. Remove any obsolete items as identified by customer, if applicable.

C. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

D. Prevent materials from entering and clogging gutters and downspouts and from spilling or migrating onto surfaces of other construction.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer’s written instructions, approved shop drawings, and Contract Documents.

B. 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.

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3.5 INSULATION INSTALLATION

A. Comply with built-up roofing manufacturer's written instructions for installing roof insulation.

B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

C. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.

D. Tapered Crickets: Install crickets on the high side of all curbs.

E. 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.

F. Cover Board Installation: 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. Tape joints if required by roofing manufacturer.

1. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 HOT-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. Number of Smooth-Surfaced SBS-Modified Asphalt Ply Sheets: Two.

a. Adhering Method: Mopped.

2. Granular-Surfaced SBS-Modified Asphalt Cap Sheet:

a. Adhering Method: Mopped.

B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.

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.

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1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in compatible roofing cement/mastic or hot roofing asphalt, with joints and edges sealed.

    a. Comply with roofing membrane manufacturer’s instructions and details for waterstop/daily tie-in; utilize staggered layout and unadhered, removable “deadman” insulation boards.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.

3. Remove and discard temporary seals before beginning work on adjoining roofing.

E. Hot Roofing Asphalt Heating: Heat asphalt to its equiviscous temperature, measured at the mop cart or mechanical spreader immediately before application. Circulate asphalt during heating. Do not raise asphalt temperature above equiviscous temperature range more than one hour before time of application. Do not exceed asphalt manufacturer's recommended temperature limits during asphalt heating. Do not heat asphalt within 25 deg. F (14 deg. C) of flash point. Discard asphalt maintained at a temperature exceeding finished blowing temperature for more than four hours.

1. Apply hot roofing asphalt within plus or minus 25 deg. F (14 deg. C) of equiviscous temperature and adhere components to asphalt heated to not less than 425 deg. F (218 deg. C).

F. 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 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

A. Install modified bituminous roofing membrane base-ply sheet, ply sheet(s) and cap sheet according to roofing manufacturer's written 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. Adhere to substrate in a solid mopping of hot roofing asphalt applied at not less than 425 deg. F (218 deg. C).

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. Apply roofing granules to cover exuded bead at laps while bead is hot.

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3.8 HEAT-WELDING CAP SHEET SEAMS

A. Cap Sheet Seam Heat-Welding: Prepare and weld seams according to roofing manufacturer's written instructions.

1. Clean minimum 4 inch (100 mm) wide seam area on both surfaces to be joined. Remove debris and contaminants. Allow seam to thoroughly dry prior to performing welding.

2. Continuously weld 4 inch (100 mm) wide seam using roofing manufacturer's recommended automatic heat welding machine or hand-held heat gun. Roll seam with minimum 75 lb. (34 kg) steel roller.

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 12 inches (300 mm) above modified bituminous roofing and 6 inches (150 mm) onto field of roof membrane.

2. Prime substrates with asphalt primer if required by roofing system manufacturer.

3. Backer Sheet Installation:

a. Backer Sheet Application: Mechanically fasten backer sheet to walls or parapets. Adhere backer sheet over roofing membrane at cants in a solid mopping of hot roofing asphalt.

b. Backer Sheet Application: Install backer sheet and adhere to substrate in a solid mopping of hot roofing asphalt.

4. Flashing Sheet Installation:

a. Adhere flashing sheet to substrate in a solid mopping of hot roofing asphalt. Apply hot roofing asphalt to back of flashing sheet if recommended by roofing system manufacturer. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

5. 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.

6. Flashing Sheet Bottom Termination: Adhere flashing sheet to roof membrane sheet continuously along bottom of flashing sheet.

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a. Bituminous Flashing: Seal bottom termination of base flashing by adhering to roofing membrane and stripping flashing to membrane joint with reinforcing fabric and cold applied adhesive.

B. Fluid-Applied Flashing Application at Penetrations: Apply base coat with embedded fabric reinforcement and top coat at penetrations in accordance with manufacturer's written instructions.

1. Apply base coat to achieve minimum wet mil coating thickness indicated in Part 2 product listing, unless greater thickness is recommended by manufacturer.

2. Apply top coat over flashing base coat and spread coating evenly to achieve minimum wet mil coating thickness indicated in Part 2 product listing, unless greater thickness is recommended by manufacturer.

3. Seal top termination of base flashing with a continuous bead of joint sealant.

C. Raise low curbs and penetrations that are 4” or lower off the finished roof surface to a minimum of 10” off the finished roof surface. Contractor is responsible for properly disconnecting and re-connecting all utility lines associated with the equipment to be raised.

D. Replace base flashings with new sheet metal to match existing size and like material.

E. Install skirt metal counterflashing at units and where counterflashing does not extend at least two inches over the top of the base flashing.

F. Three course all curb corners and base flashing seams with acrylic sealer and polyester.

G. Seal all duct, pan, HVAC to pan, and other sheet metal seams with acrylic sealer and polyester reinforcement. Surface all galvanized metal and roof rings and screens with metal coating system. Properly prepare and prime surfaces prior to coating which includes rust inhibitor and other primers as recommended by manufacturer.

H. Gutters:

1. Remove existing gutter system.

2. Install 16” girth gutter supported by brackets and straps at locations identified on drawings.

3. Install new outlet tubes.

4. Install new heavy gauge downspouts matching existing location. Mouse hole end of downspout to direct water away from the building.

5. Support downspouts with hangers from the gutter to the wall and support brackets every 60” going down the support. A minimum of two brackets per downspout.

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6. Install removable aluminum leaf screens to cover all new gutters.

I. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.

J. Install stripping, according to roofing manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

K. Flashing-Sheet Stripping: Install flashing-sheet stripping in a continuous coating of compatible mastic/adhesive sealer, as recommended by roofing manufacturer, and extend onto roofing membrane. Apply number of courses recommended by manufacturer.

3.10 Walkway's

A. Install walk-pad's at locations indicated by customer. At a minimum, install walk-pad's at all roof landing locations and to and surrounding all serviceable equipment. Confirm "roof landing locations" as suggested by customer to determine walk-path layout.

B. Install new rubber blocks to replace all wood blocks. Add additional blocks to insure at least one every 8 feet and support at conduit changes in direction. Install oversized walkpad sections under all blocks. Use pipe support extenders to support high conduit and provide proper slope for condensate. For conduit runs close to the roof surface where the rubber blocks will not fit use new redwood blocks set on walkpad section.

C. 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 manufacturer's recommended, compatible adhesive.

3.11 FIELD QUALITY CONTROL

A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

1. Engage a qualified roofing inspector for a minimum of 1 full-time days on site, per 40-hour crew week, 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 Qaulaity-assurance Guidelines for the Application of Membrane Roof 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.

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1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

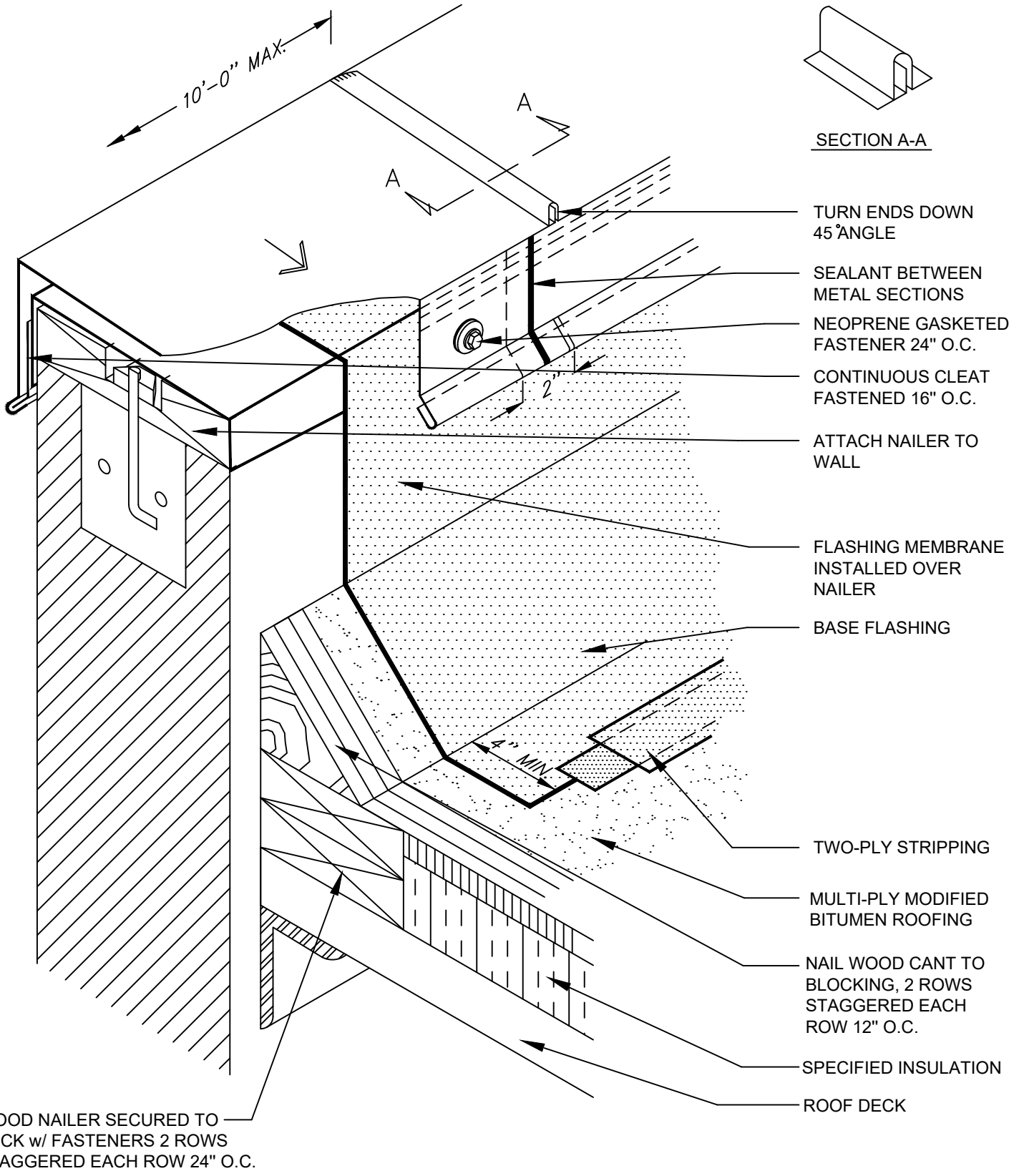
3.12 PROTECTING AND CLEANING

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 075216.11

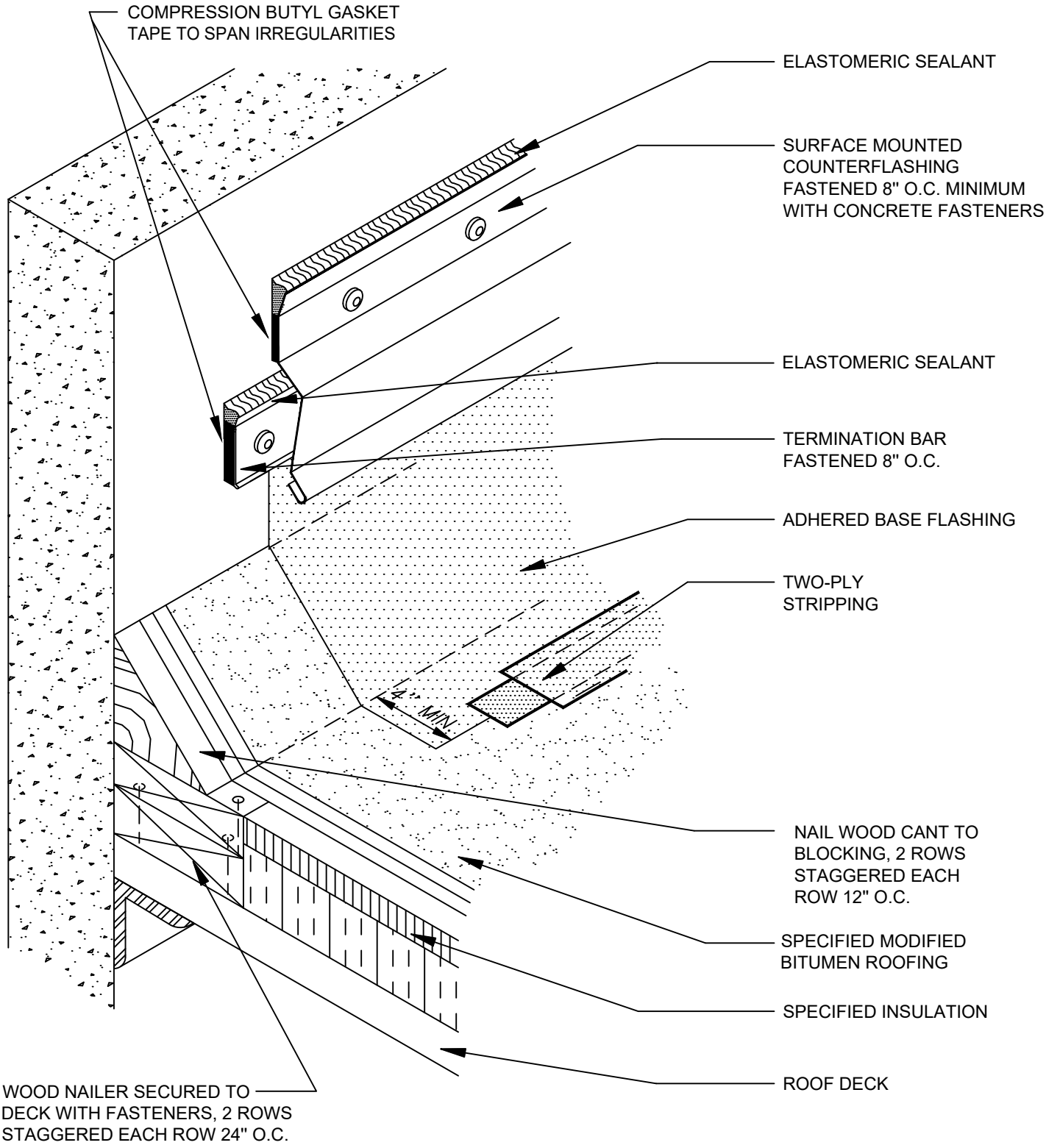


METAL COPING CAP

DWG NO. 03 N.T.S.

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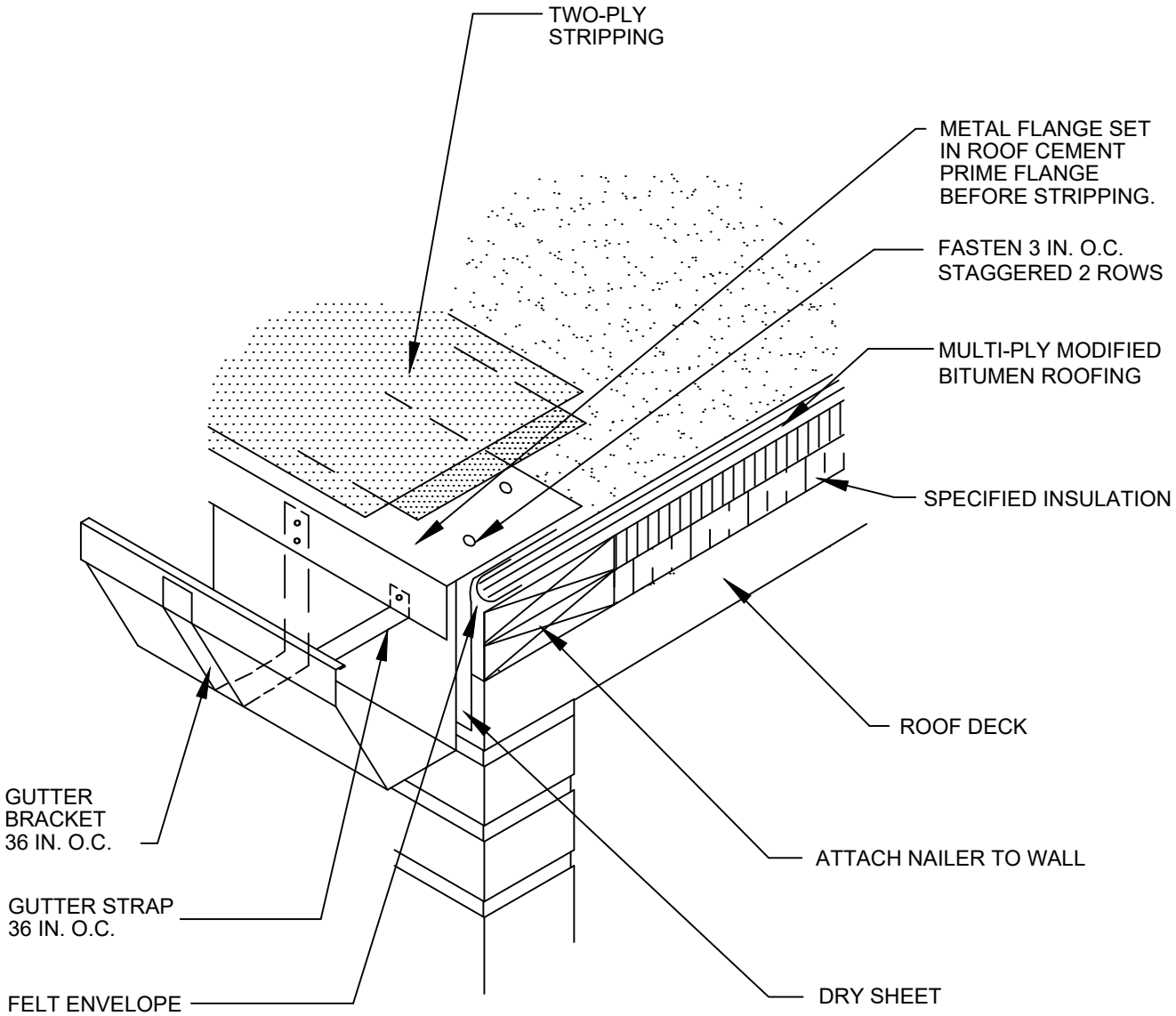


WALL FLASHING FOR CONCRETE WALLS AND PARAPETS

DWG NO. 06 N.T.S.

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NOTES

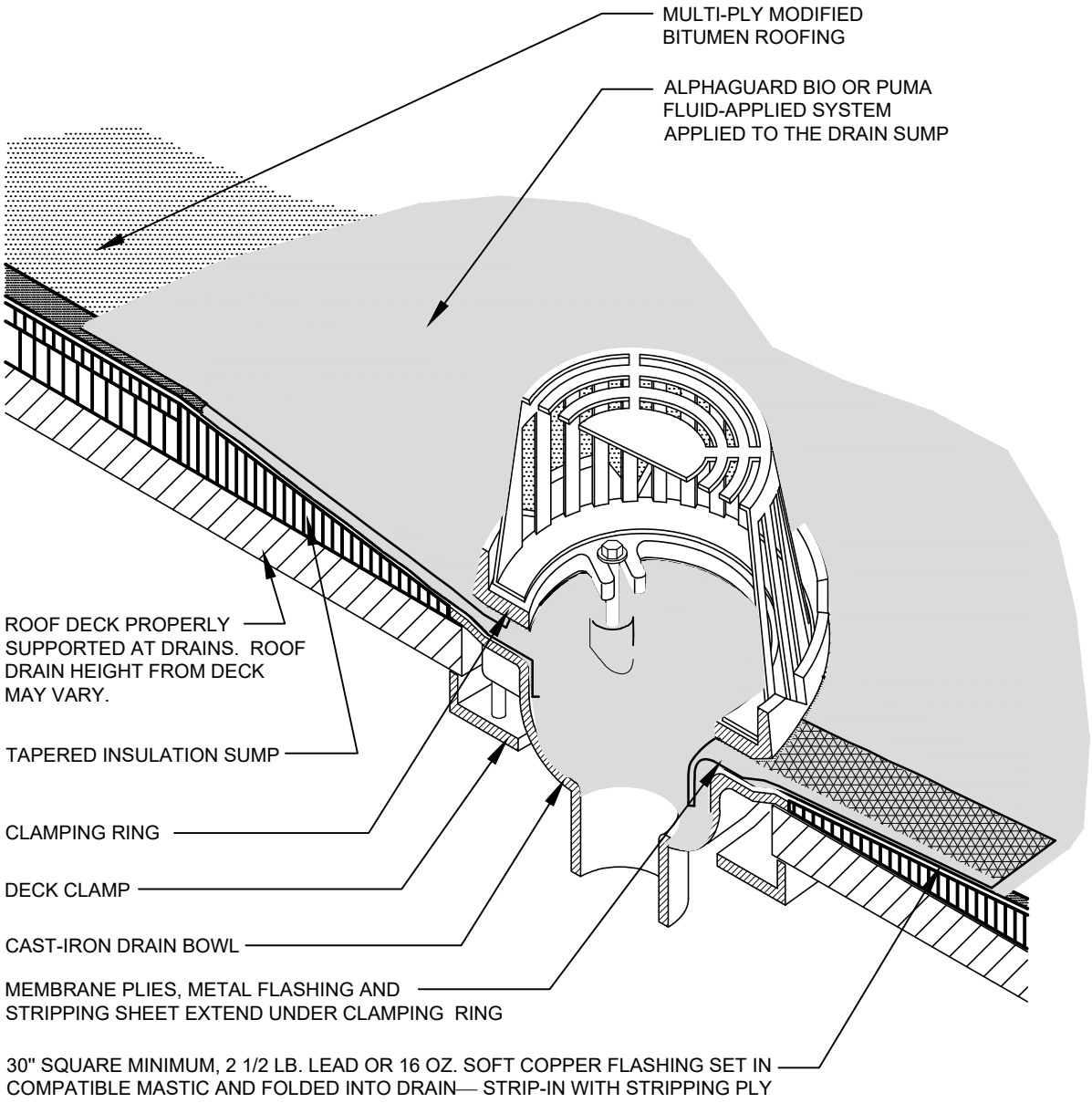
1. SLOPE GUTTER TO DOWNSPOUTS 1/4 IN./FT. MINIMUM

ROOF EDGE WITH GUTTER

DWG NO. 09 N.T.S.

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NOTES

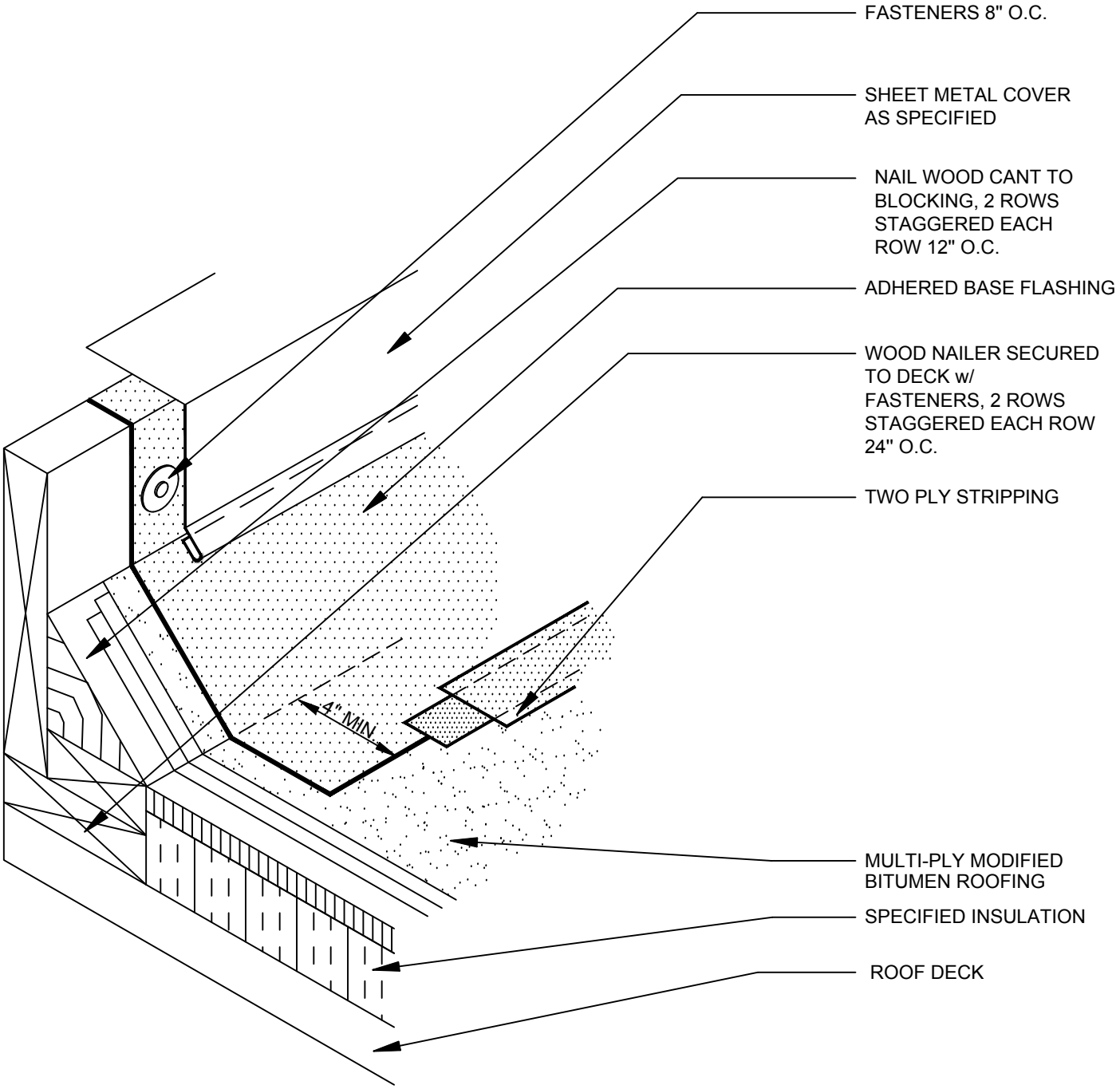
1. ONLY FOR USE WITH MODIFIED BITUMEN SYSTEMS CONSTRUCTED USING TORCH-APPLIED, HOT ASPHALT, THERMASTIC OR POWERPLY ENDURE BIO TF ADHESIVES.
2. PRIME ALL METAL SURFACES WITH APPROVED PRIMER.
3. INSTALL FLASHING SHEET IN APPROVED MASTIC AND STRIP-IN WITH APPROVED ADHESIVE.
4. PRIMING OF THE SUBSTRATE MAY BE REQUIRED, FOLLOW SPECIFICATIONS AND MANUFACTURER RECOMMENDATIONS.
5. REMOVE EXISTING FLASHINGS PRIOR TO INSTALLATION OF NEW FLUID APPLIED SYSTEMS.

ROOF DRAIN
LIQUID-APPLIED FLASHING SYSTEM

DWG NO. 13B N.T.S.

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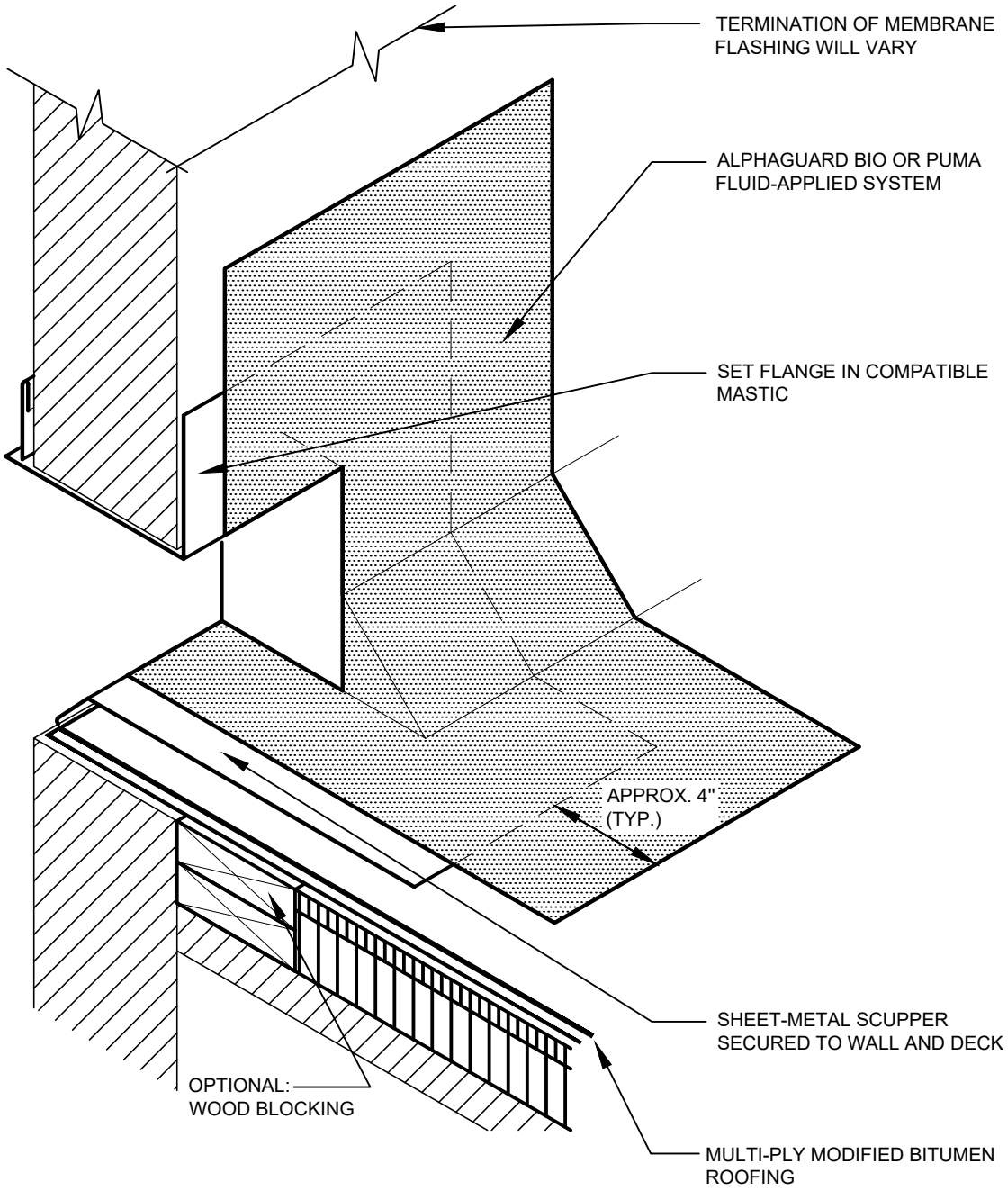


WOOD CURB

DWG NO. 21 N.T.S.

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NOTES

1. ONLY FOR USE WITH MODIFIED BITUMEN SYSTEMS CONSTRUCTED USING TORCH-APPLIED, HOT ASPHALT, THERMASTIC OR POWERPLY ENDURE BIO TF ADHESIVES.
2. PRIME ALL METAL SURFACES WITH APPROVED PRIMER.

THROUGH-WALL SCUPPER
LIQUID-APPLIED FLASHING SYSTEMS

DWG NO. 44 N.T.S.

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