Rio Hondo Community College District
Contract Management and Vending Services
3600 Workman Mill Road, A-103
Whittier, CA 90601-1699

January 25, 2023
Addendum No. 3
Bid No. 2090: Re-Roofing of Science Building Project

To: All Prospective Bidders

THE FOLLOWING REVISIONS AND/OR CLARIFICATIONS SHALL BE MADE TO THE BIDDING REQUIREMENTS AND CONTRACT DOCUMENTS. REVISE AND AMEND THE DOCUMENTS FOR THE ABOVE NAMED PROJECT IN ACCORDANCE WITH THIS ADDENDUM. THE BID SHALL REFLECT THESE ADDENDUM CHANGES AND EACH BIDDER SHALL MAKE REFERENCE IN THEIR BID TO THIS ADDENDUM. ALL BIDDING REQUIREMENTS AND CONTRACT DOCUMENTS SHALL APPLY TO THIS ADDENDUM AS ORIGINALLY INDICATED IN THE APPLICABLE PORTIONS OF THE CONTRACT DOCUMENTS, UNLESS OTHERWISE MODIFIED BY THIS ADDENDUM.

Acknowledge receipt of this Addendum No. 3 in the space provided on the Bid Proposal Form. Failure to do so may result in the bid being deemed non-responsive.

The Addendum consists of the following changes:

1. ADMINISTRATIVE ITEMS; Bidding Documents:

1.1 Submission of RFI's:

FROM: January 3, 2023 (Tue) @ 2:30 pm
TO: ***February 16, 2023 (Thu) @ 2:30 pm (PST)***

1.2 Bid Deadline:

FROM: February 9, 2023 (Thu) @ 11:00 am
TO: ***March 3, 2023 (Fri) @ 11:00 am (PST)***

1.3 RFI's will be sent to:

Contract Management and Vending Services : purchasing@riohondo.edu with a cc to Stephen Kibui, VP Finance and Business : skibui@riohondo.edu

2. **PLANS AND SPECIFICATIONS**

2.1. DELETE: Delete the Specification Section 07 56 00 and all corresponding fluid applied roof details in its entirety.

2.2. ADD: Add the attached Specification Section 07 5216

2.3. ADD: Add the attached corresponding details for the new specified 2 ply KEE roofing system

2.4. CHANGE: Change "**Exhibit A Bid No. 2082 Statement of Work**" by removing Section B "Scope" and replace with the following.

2.4.1. Demolish and removal of all roofing and insulation down to the existing deck to allow for new roofing sections. The work includes all new coping, sheet metal and flashings, roof scuppers, **and the installation of owner furnished material (OFCI)** for hybrid KEE Cap sheet and modified base ply (2 ply) roofing system over properly prepared and approved substrate.

2.5. DELETE: Delete **Appendix B**: Inspection Photos and **Exhibit C**: Roofing System Overview.

2.6. Bidders shall verify and confirm the actual square footage of the roof.

2.7. DELETE: Delete Bulletin No. 1.

END OF ADDENDUM NO. 3

SECTION 07 5216

MODIFIED BITUMINOUS MEMBRANE ROOFING

RIO HONDO COLLEGE SCIENCE BUILDING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Provide labor, equipment, and materials to remove (demo and abate as directed) existing roofing and insulation plies to deck, for indicated roofing sections, install perimeter coping, sheet metal and flashings, install specified rigid and tapered insulation, flashings and owner furnished materials (OFCI) for a hybrid KEE Cap sheet and modified base ply (2 ply) roofing system over properly prepared and approved substrate.

1.02 REFERENCES

A. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI):
   1. ASCE/SEI 7-16 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

B. ASTM International (ASTM):
   1. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
   2. ASTM C 1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
   3. ASTM D 451 – Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
   4. ASTM D 1079 – Standard Terminology Relating, to Roofing, Waterproofing and Bituminous Materials.
   5. ASTM D 1227 – Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
   6. ASTM D 1863 – Standard Specification tor Mineral Aggregate Used as a Protective Coating for Roofing.
   7. ASTM D 4S86 – Standard Specification for Asphalt Roof Cement.
   8. ASTM D 2824 – Standard Specification for Aluminum-Pigmented Asphalt Roof Coating.
   9. ASTM D 5147 – Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
   10. ASTM D 6162 – Standard Specification tor Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
   11. ASTM D 6163 – Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
   12. ASTM E 108 - Standard Test Methods for Fire Test of Roof Coverings.

C. Factory Mutual Global (FMG):
   1. FM Approval 4435 – Approval Standard for Edge Systems Used with Low Slope Roofing Systems.
   2. FM Approval 4470 – Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.

D. National Roofing Contractors Association (NRCA):
   1. NRCA Roofing Manual.

E. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI):
   1. ANSI/SPRI ES-1 – Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
      a. Testing and Certification Listing of Shop Fabricated Edge Metal and Coping.
      b. Only required for fabricated item procedures.

F. South Coast Air Quality Management District (SCAQMD):
   1. Rule 1168 – Adhesive and Sealant Applications

1.03 QUALITY ASSURANCE

A. Roofing Installer Qualifications:
   1. Roofing installer specializing in modified bituminous roof application with minimum 10 years' experience.
   2. Provide proof of certification to install manufacturer's roofing system within past three years.

   Installer shall provide a current, signed and dated letter signed by a Garland Representative with Bid, stating such roofing installer is a certified installer in good standing and approved to install roofing system on this specific project at RHCC Science Building

B. Roofing Installer's Field Supervision:
   1. Require roofing installer to maintain full-time Supervisor/Foreman on Project Site during installation of bituminous membrane roofing work.
   2. Maintain proper supervision of workmen while roofing work is in progress.
   3. Supervisor/Foremen shall be in possession of copy of roofing specification and be made available on roof.

C. Contractor and roofing installer's responsibility to protect exposed buildings affected by roofing activities from possible weather damages, until completion of roofing work.

D. Roofing Pre-installation Meeting:
   1. Before scheduled commencement of roof system installation and associated work, convene meeting at Project Site with installer of each component of associated Work:
      a. Installer of deck or substrate construction to receive roofing work
      b. Installer of rooftop units and other work where roofing must precede or follow roofing work, including mechanical work.
      c. Owner and Architect.
      d. Roofing system manufacturer's representative.

e. Other representatives directly concerned with performance of Work, including, where applicable, testing agencies and authorities having jurisdiction.

2. Objectives to be reviewed include:
   a. Foreseeable methods and procedures related to roofing work.
   b. Tour representative areas of roofing substrates/decks.
      1) Inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by other trades.
   c. Structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
   d. Roofing system requirements as indicated in Drawings, Specifications, and other contract documents.
   e. Required submittals both completed and yet to be completed.
   f. Finalize construction schedule related to roofing work and verify availability of material.
      1) Ensure installer's personnel, equipment and facilities are sufficient to make progress and avoid delays.
   g. Required inspection, testing, certifying, and material usage accounting procedures.
   h. Weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
      1) Notification procedures for weather or non-working days.
   i. Record discussion of meeting including decisions and agreements or disagreements reached and furnish copy of record to each party attending.
      1) Should substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

1.04 SUBMITTALS

A. Prepare and provide complete submittal package consisting of:
   1. Required documents such as, but not limited to installer’s qualifications, Shop Drawings, (Roofing and rigid/tapered insulation) and warranties.
      a. Requests for substitutions are subject to review according to General Conditions.
      b. Should substitution be approved, substitution material must conform to performance of specified products and services.

B. Product Data:
   1. Roofing system manufacturer’s product data for products necessary for completion of roofing system.
      a. Include roofing system manufacturer's technical product data, installation instructions, and recommendations for each type of roofing product required.
      b. Include data substantiating that materials comply with minimum specified requirements.

C. Test Data and Certifications:
   1. Independent test data that indicates cap sheet complies with Cool Roof Rating Council (CRRC) and Title 24 Energy Standards requirements.
   2. Manufacturer's Certificate: Certified copy of roofing system manufacturer's ISO 9001 compliance certificate.

D. Installer Qualifications:
Installers of specified roofing system must submit a letter from manufacturer in submittal package that they are approved to install the specified roofing system for specific Project at Rio Hondo College Science Building.
1. Letter must be dated and signed by a Garland representative.

E. Samples:
1. Samples of materials necessary for completion of roofing system.

F. Warranty:
1. Unexecuted Manufacturer's Thirty Year High-Performance No Dollar Limit (NDL) warranty covering labor and materials.
2. Roofing contractor/installer to provide roofing manufacturer's version of five years labor warranty template to roofing system manufacturer and Owner.

1.05 SYSTEM DESCRIPTION

A. Roof Deck and Abatement

1. Roof Demolition and Abatement
   a. Contractor responsible to abate roofing as indicated and demo existing metal roofing, walls, membrane roofing and perimeter coping cap.
   b. Contractor responsible for removing all components of roofing system to the decking, remove all debris exposing a clean and sound deck. Advise owner of any deck repair possibilities prior to installation of insulation plies.
   c. Insulation plies may be adhered to the structural decking with hot asphalt or mechanically fastened in the case of lightweight concrete. Contractor shall identify his scope of demolition prior to bid.
   d. All rigid and tapered insulation plies shall follow contractor's tapered design as submitted and approved. Contractor is responsible to ensure a tapered insulation system shall properly drain water with no standing water.

1. Tapered and Rigid insulation Scope:
   a. Adhere engineered Rigid and tapered polyisocyanurate insulation to deck with roofing manufacturer approved insulation adhesive, bitumen and/or mechanical fasteners. Insulation thickness in the field of the roof section is approximately 3", perimeter sections may be overlaid with dens-deck, contractor responsible to ensure elevations ensure positive drainage to internal field drains and scuppers. Insulation plan should show both rigid and tapered insulation on all applicable roof sections.

   b. Install specified Rigid and tapered polyisocyanurate insulation to ensure positive drain flow. Contractor responsible to submit engineered tapered insulation design as part of their submittal package. Perimeter roofing may be overlaid, contractor is responsible to maintain proper flow to perimeter scuppers.
   c. Adhere 1/2 dens-deck prime to insulation complying with FM 1-90 to all roof sections.

B. Roofing Membrane Installation:
   1. Apply 100 Mil – HPR Modified bitumen membrane in hot asphalt.
   2. Apply 60 Mil – KEE Stone Fleeced back membrane on field set in KEE foam adhesive or bitumen and KEE Non-FB flashing as directed by manufacturers details.
   3. Apply KEE Stone Unreinforced utility roll and flashing membrane for details and vertical application per manufacturer requirements.
   4. Sheet metal/cooping cap to be ANSI SPRI ES-1 compliant where show on drawings related to roofing contractor scope of work.
      a. Form sheet metal from 22-gauge, coil coated G-90 galvanized steel.
         1) R-MER Flat Stock
         2) Color to match the finish of building as approved by architect.
   5. Use of pitch pockets is not permitted.
   6. Membrane manufacturer supplied KEE pipe flashings, storm collars.
   7. All metal equipment flashings to receive ½" primed dens deck insulation board prior to any roofing installation or as approved by membrane manufacturer.
   8. All conduits be placed on rubber blocking.
   9. Perimeter roofing system may remain in place and be overlaid with coverboard, fully adhered. Contractor is responsible to ensure proper elevations are maintained to ensure positive drainage to all scuppers and internal drains.
   10. Contractor responsible for any ponding water. Contractor to ensure positive drainage at all locations or bring to the attention of owner prior to installation of roofing membranes.
   11. Perimeter damaged sheet metal and flashing on walls and coping cap shall be removed. Walls shall be flashed with 1 ply of kee membrane, wrapped to the top of the parapet wall, nailed off onto the wood nailer.
   12. New coping shall be installed, broken from contractor supplied kynar sheet metal, 24 ga, 2-piece coping as shown on manufacturer details.

C. Roofing Membrane and insulation Installation:
   1. Roofing contractor shall inspect and approve decking prior to application of insulation and roofing plies.
   2. Contractor shall install rigid and tapered insulation as indicated on his approved engineered tapered and rigid insulation shop drawings and ensure positive drainage.
   3. All insulation plies and SBS-modified base sheet to dens-deck prime to be installed in hot mopped specified bitumen.
   4. Install KEE Stone fleece-back cap sheet in specified KEE foam adhesive or bitumen as approved.
   5. Install KEE Stone flashing and utility roll as specified and required by manufacturer.
   6. Flashing Detail: Base flashing ply to extend 6" onto the roof field. Cap sheet flashing ply to extend 9" onto the roof field. All flashing plies to be terminated with termination bar set in butyl tape and sealed with caulking. Termination bar to be fastened every 6" o.c.
   7. All sheet metal flashings, perimeter metal to be ANSI SPRI ES-1 compliant. Sheet metal to be formed from RMER SS Flat Stock. District to determine color.
   8. Install new 24 gauge, Kynar edge metal where existing – RMER SS Flat Stock.

9. Install new 22-gauge, galvanized counterflashing. install new, 22-gauge, galvanized skirt metal to the metal flashing. Caulk above counterflashing.
10. No pitch pockets on roof. Fluid applied flashing all penetrations with storm collar covers.
11. All conduit, pipe support or roof top conditions to be placed on rubber blocking as specified, such as dura block or equal, installed per Garlands instructions.
12. Contractor to be responsible for any ponding water. Contractor to ensure positive drainage.

1.06 PROJECT CONDITIONS

A. Weather Condition Limitations: Do not apply roofing membrane during inclement weather or when 40 percent change of precipitation is expected.

B. Do not apply roofing insulation or membrane to damp deck surface.

C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

D. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements. Contractor shall submit and demo and installation plan which allow roofing to be installed in reasonable phases without undue risk of building asset damage due to prolonged exposure to the elements.

E. Application Conditions:
1. Take precautions when applying materials with spray equipment, to prevent overspray and solvents from damaging or defacing surrounding walls, building surfaces, vehicles or other property.
   a. Exercise care to do following:
      1) Close air intakes into building.
   b. Post and enforce "No Smoking" signs.
2. Avoid inhaling spray mist.
   a. Take precautions to ensure adequate ventilation.
3. Protect completed roof sections from foot traffic for a period of at least 24 to 48 hours at 75 degrees F and 50 percent relative humidity, or until fully cured.
4. Minimum temperature for application is 40 degrees F and rising.

F. Maintain ABC-rated dry chemical fire extinguishers in locations per Cal/OSHA requirements.
1. Make workers aware of locations and how to properly operate extinguishers.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Roofing installer is responsible for OFCI materials upon delivery.
1. Lost or stolen material must be replaced by roofing installer.
2. Owner is absolved of liability in regard to material delivery or material storage.
3. Owner may elect to not store material on their property and have roofing installer store material at third party insured storage area in accordance with requirements of Division 00 General Conditions.

B. Store materials at room temperature until immediately prior to application.
   1. Discontinue application when material cannot be stored at temperature, which permits even distribution during application

C. Store and handle roofing sheets in dry, well-ventilated, weather-tight place to ensure no possibility of significant moisture exposure.
   1. Store rolls of felt and other sheet materials on pallets or other raised surfaces.
   2. Stand roll materials on end.
   3. Cover roll goods with canvas tarpaulin or other breathable material
      a. Do not use polyethylene.

D. Do not leave unused materials on roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.

E. Responsibility of roofing installer to secure material and equipment on Project Site.
   1. Should material or equipment be stored on roof, roofing installer must make sure that integrity of roof deck is not compromised.
   2. Damage to roof deck caused by roofing installer will be sole responsibility of roofing installer and will be repaired or replaced at his expense.
   3. If the District elects, all material must be stored by the roofing contractor off school property at no expense to the District.

1.08 INSPECTION AND COORDINATION

A. Comply with roofing inspector's requirements as provided by roofing system manufacturer.
   1. It is the roofing installer's responsibility to keep roofing inspector, Project Inspector, Architect, and Owner informed regarding issues and concerns.

1.09 SEQUENCING AND SCHEDULING

A. Roofing installer is responsible for coordinating material ordering and delivery with roofing system manufacturer.

B. Sequence installation of modified bituminous sheet roofing with related units of work specified in other sections to ensure that roof assemblies, including roof accessories, flashing, trim, and joint sealants are protected against damage from effects of weather, corrosion, and adjacent construction activity.

C. Work must be fully completed each day.
   1. Phased construction is not acceptable.
   2. Phased construction is defined as cap sheet not being applied over installed base sheet within same 12-hour workday.

1.10 WARRANTY

A. Upon completion of Project, provide following:
   1. Roofing installer shall submit a Five-year labor warranty, non-prorated, to Owner and roofing system manufacturer at no charge per manufacturer's installer warranty requirements. (request form from Garland)
   2. Executed roofing system manufacturer Thirty Year (30) High-Performance No Dollar Limit (NDL) warranty covering labor and materials.

PART 2 PRODUCTS

2.01 GENERAL

A. Basis-of-Design: Design of roofing system is based upon roofing systems engineered and manufactured by The Garland Company, Cleveland, OH.
   1. Peter Cochran 949.295.0447; pcochran@garlandind.com
   2. Upon signature of delivery, roofing installer assumes full responsibility for all staged roof materials.
   3. Replacement of materials lost or stolen are the responsibility of roofing installer.
      a. Roofing installer is responsible for freight and tax on replaced materials.
      b. Roofing installer is responsible to purchase any materials that are not listed or provided by owner as indicated on the last page of this specification section.

2.02 MEMBRANE MATERIALS

A. Modified Base Sheet: Owner furnished.
   1. Modified bitumen Base ply complies to ASTM D 6163 Type III Grade G
   2. Performance Characteristics:
      a. Tensile Strength, ASTM D 5147: 2 in/min. at 73.4 ±3.6 degrees FMD 100 lbf/inXD 100lbf/in
      b. Tear Strength, ASTM D 5147: 2 in/min. at 73.4 ±3.6 degrees F MD 110 lbf XD 110 lbf
      c. Elongation at Maximum Tensile, ASTM D 5147: 2 in/min. @ 73.4 ±3.6°F MD 2.5 percentage XD 2.5 percentage
      d. Low Temperature Flexibility, ASTM D 5147: Passes -30 degrees F

B. Modified KEE Stone 60 mil Cap Sheet: Owner furnished.
   1. Performance characteristics:

      a. **Thickness, min.** (ASTM D 751) 0.060 in. (1.5 mm)
      b. **Thickness over fiber, min.** 0.030 in. (0.762 mm),
      c. **Breaking Strength** (ASTM D 751, proc. B - strip) 375 lbf (1668N)
      d. ***Breaking Strength, strip** >90% of original **Elongation at Break** (ASTM D 751, proc. B - strip) 40%
      e. ***Elongation at Break, strip** >90% of original **Low Temperature Bend after heat aging** (ASTM D 2136) -40˚F (-40˚C)
      f. **Tearing Strength** (ASTM D 751) 120 lbf. min. (534N)
      g. **Low Temperature Bend** (ASTM D 2136) -40˚F (-40 ˚C)
      h. **Static Puncture Resistance** (ASTM D 5602) pass
      i. **Puncture Resistance** (ASTM D 751) 161 lbs
      j. **Factory Seam Strength** (ASTM D 751, Grab Method) 620 lbf.

2.04 ROOF INSULATION

A. General:
   1. Provide preformed roof insulation boards for rigid and taper design system as specified and shown on approved contractor's tapered insulation shop drawings and/or construction documents.
   2. Contractor responsible for verifying dimensions of deck, equipment perimeter section, elevations and drains locations and submit an engineered taper design shop drawing with their submittal package.
   3. Contractor shall install insulation in accordance with the minimum R-Values and thicknesses as required in the contract documents.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces. Average 6" or R-30.

C. Tapered Insulation: Provide factory-tapered polyisocyanurate insulation boards fabricated to slope of 1/4 inch per 12 inches, unless otherwise indicated.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes as indicated for sloping roof to drain.

E. Provide glass mat faced gypsum roof board on top of taper system to accept hot applied roofing system as approved by membrane manufacturer.

2.05 INSULATION ACCESSORIES

A. General:
   1. Furnish roofing insulation accessories recommended by insulation manufacturer for intended use and compatible with sheet roofing material.

   2. Insulock insulation adhesive or hot bitumen as recommended by membrane materials manufacturer per installation requirements and contractor shop drawings and submittals.

2.06 GLASS MAT ROOF BOARD

A. Glass mat faced gypsum panel, Dens-deck prime or equal, with water-resistant core.

   1. Roof board with nonasphaltic, highly filled proprietary heat-cured integrated coating on one side, for application of concrete roofing tile over specified insulation complying with applicable properties of ASTM C 1177 and following physical properties:
      a. Nominal Thickness: 1/2 inch ±1/32 inch
      b. Standard Sizes: 4 ft ±1/8 inch wide by 4 ft or 8 ft ±1/4 inch long
      c. Nominal Weight: 1.0 lbs./sq. ft.
      d. Flute Spanability (ASTM E 661): 5 inches
      e. Permeance (ASTM E 96, dry cup method): greater than 23 Perms
      f. R Value (ASTM C 518, heat flow meter): 0.56 ft^2•°F•hr/BTU
      g. Water Absorption (ASTM C 473): less than 10.0 percent maximum
      h. Compressive Strength: 900 psi nominal

i. Surface Water Absorption: less than 2.0 grams
j . Fire Classifications:
1) FM 4450, Class 1
2) UL 790, Class A
3) UL 1256
k. Surface Burning Characteristics (ASTM E 84):
1) Flame Spread Index: 0
2) Smoke Developed Index: 0

B. Provide glass mat roof board where modified bituminous membrane roof is indicated to be installed over roof insulation.

C. Product and Manufacturer:
1. Dens-Deck Prime Roof Board by G-P Gypsum or approved equal.

2.07 RELATED MATERIALS

A. Adhesives for insulation plies and roofing plies shall be hot bitumen, low odor ASTM D312-15 hot mopped per manufacturer instructions.

B. Or Low rise adhesive foam used to install approved primed insulation boards to KEE Fleeceback membrane as provided by membrane manufacturer.

C. Walkway Pads: Approved and supplied by manufacturer as traffic pad for foot traffic and acceptable to roofing system manufacturer.
1. Pad Size: 30-36 inches wide, length cut as needed.
2. Walkway Pad Adhesive: Adhesive to adhere approved walkway pads.
a. As recommended and furnished by roofing system manufacturer.
b. Complying with SCAQMD Rule 1168.
c. Installation as per Garland's installation guidelines.
d. Pads installed around all sides of serviceable units, roof entrances and traffic areas. Contractor shall submit this layout for approval with submittal shop drawings and/or as indicated on project documents.

D. Sheet Metal Flashing:
1. Refer to materials and requirements specified for sheet metal flashing materials and installation per related sections or drawings in the contract documents as per manufacturer details and requirements.

E. Butyl Tape: 100 percent solids, asbestos free, compressive tape designed to seal as recommended and furnished by membrane manufacturer.
1. Butyl tape is required at terminations.

F. Sealant: *Tuff-Stuff MS,* moisture curing, single component polymer sealant, *as needed.*

G. KEE White Urethane Mastic by Membrane Manufacturer.

H. Insul-lock insulation adhesive for installation of tapered insulation system as provided by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine and approve substrate surfaces to receive modified bitumen applied base sheet and KEE Stone Cap sheet, and associated work and conditions under which roofing will be installed prior to installing insulation and roofing plies.

B. Do not proceed with roofing final ply of KEE membrane until all unsatisfactory conditions have been corrected in a manner acceptable to owner and roofing system manufacturer's representative, roofing installer, and Project Inspector.

C. Do not proceed with the installation of final ply of KEE membrane until roof section is completed and other related trade work has been finalized to minimize damage, exposure and traffic on the final KEE membrane.

D. Install walkpads as indicated on roof plans or on all sides of serviceable units, traffic areas, roof entrances and exits. Contractor is responsible to provide a plan for the installation of walkpads with their submittal package. All walkpads shall be purchased from membrane manufacturer and installed per manufacturer recommendation. Walkpads shall be immediately installed after installation of KEE cap sheet at all serviceable units, traffic areas and roof entrances to avoid damage and soiling of new roofing.

3.02 GENERAL INSTALLATION REQUIREMENTS

A. Cooperate with roofing system manufacturer's representative and inspection and testing agencies engaged or required to perform services in connection with installing roof system.

B. Insurance/Code Compliance: Where required, install and test roofing system to comply with governing regulation and specified insurance requirements.

C. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors.
   1. Replace or restore other work damaged by installations of modified bituminous roofing system Work.
   2. Contractor shall take extreme care to prevent spillage or soiling of bitumen on the final kee membrane by use of inverted fleece sheets, shoe covers or any and all means necessary. Any and all soiling of final KEE membrane shall be immediately cleaned per manufacturer's instructions.

D. Coordinate installing roofing system components so that insulation and roofing plies are not exposed to precipitation or left exposed overnight.

E. PREBID - All field conditions to be verified by contractor both on site walks and as drawn on contract documents. All conditions to be roofed as per manufacturer details. It is the contractor's responsibility to coordinate requests from roofing manufacturer for additional details not shown on plans directly to the manufacturer prior to bid.

F. Cut-Offs: Provide cut-offs at end of each day's work to cover exposed ply sheets and insulation.

1. Provide temporary covering of base with joints and edges sealed or other jointly agreed upon tie-in detail.
2. Remove cut-offs immediately before resuming work.

G. Substrate Joint Penetrations: Prevent bitumen and/or specified adhesives from penetrating substrate joints, entering building, exterior drippiage or damaging roofing system components.

H. Apply roofing materials as specified herein unless recommended otherwise by roofing system manufacturer's instructions.
1. Keep roofing materials clean and dry before and during application.
2. Phased construction will be permitted for complete installation of base ply membrane.
3. Complete application of roofing plies modified sheet and flashing in continuous operation.
4. Contractor my install base ply modified bitumen as a working membrane. Installation of final KEE cap sheet shall be install after all other trades have completed their work as much as reasonably practicable.

I. An Available ABC rated tire extinguisher in location per Cal/OSHA requirements.
1. Make workers aware of its location and how to operate it properly.

3.03 APPLICATION PROCEDURE FOR HOT APPLIED BASE SHEET INSTALLATION

A. Roof installation:
1. Base Ply Installation:
a. Install one ply of MODIFIED OFCI base SHEET shingled uniformly over the entire prepared substrate. Hot mop applied per Garland's installation requirements.
1) Shingle in direction of slope of roof to shed water on each area of roof.
b. Lap ply sheet ends eight inches.
1) Stagger end laps twelve inches minimum.
c. Extend ply two inches beyond top edges of cants at wall and roof projections and equipment bases.
d. Install base flashing ply to perimeter and projection details.
2. KEE Stone Installation:
a. Fully Adhere KEE FB membrane in ribbon laid KEE adhesive, or approved hot bitumen, heat weld seams as required by manufacturer. Contractor shall take extreme care not to track bitumen onto finished surfaces through any means necessary. All spillage or soiled roofing sections shall be immediately cleaned.
b. Starting at low point, unroll membrane in desired position.
c. Install subsequent rolls of membrane across roof as above with minimum of four-inch side laps and eight-inch end laps.
1) Stagger end laps.
d. Apply membrane in same direction as previous layer but stagger laps so they do not coincide with laps of base layers.
1) Allow 5-10 minutes to flash, then join two surfaces and using small metal roller or another suitable roller, firmly press into place.
2) Roll edges firmly to ensure positive adhesion. Bitumen should bleed from all joints for visible inspection of full adhesion of rolls. .
3. Flashing Membrane Application:

a. Seal curb, wall and parapet flashings with kee membrane flashing/kee flashing adhesive.
    1) Do not permit conditions to exist that will allow moisture to enter behind, around or under roof or flashing membrane.
b. Use KEE Stone flashing membrane and unreinforced utility roll for flashing details as per manufacturer details.
    1) Nail off at minimum of eight inches on center from finished roof at vertical surfaces.
c. Solidly adhere the entire sheet of flashing membrane to substrate.
    1) Secure tops of flashings that are not run up and over curb through termination bar 6 inches and sealed at top or as per manufacturer details.
d. Seal vertical laps of flashing membrane.
e. Details:
    1) Comply with manufacturer's installation details.
    2) Extend Base flashing ply 6 inches onto roof field.
    3) Extend Cap Sheet Flashing Ply 9 inches onto roof field.

3.04 SHEET METAL FLASHING AND TRIM INSTALLATION

A. Comply with requirements or related sections for flashing materials and installation requirements and as follows and as per manufacturer details:
    1. Prefabricated, prefinished sheet metal for coping cap, counter flashing, edge metal, and skirt flashing details, except where stainless steel is indicated. 2 piece metal coping per Garland's and contract details.
    2. Fascia Cover: Tie into edge metal and lap over end of fascia board at 2 inches minimum.
    3. Gutters: Where indicated.
    4. Stainless steel flashings at penetration points.
        a. Umbrella cover for stainless steel flashings.

B. Crickets: Install cricket on the high side of mechanical units.
    1. The roofing installer is responsible for positive drainage of water.
    2. Terminate flashing with termination bar set in butyl tape on HVAC units / curbs.
        a. Install 22 gauge, galvanized, coil coated metal counterflashing.

C. Place new and existing conduit on rubber block supports.

D. Seal duct work seams and corners with three course application of Flashing Bond and Mesh as necessary or indicated.

E. Splash Blocks: Install splash blocks in locations shown on Drawings.

3.05 FIELD QUALITY CONTROL

A. Require attendance of roofing system manufacturer's representatives at Project Site during installation of roofing system.
    1. Roofing system manufacturer's roofing inspector is required to sign off on roofing scope of work.

B. Roofing System Manufacture's Responsibilities:
    1. While roofing work is in progress, roofing system manufacturer will provide inspections in accordance with following:

a. Perform Project Site inspections for a minimum of three days per week.
b. Keep the Owner and Architect informed as to progress and quality of work as observed.
c. Report to Owner and Architect, in writing, failure or refusal of roofing installer to correct unacceptable practices called to roofing installer's attention.

C. Roofing Installer's Responsibilities:
1. Comply with requirements of Roofing Inspector provided by roofing system manufacturer.
2. Keep Roofing Inspector, Project Inspector, Architect, and Owner informed regarding issues and concerns.
3. Confirm after completion that manufacturer has observed no application procedures in conflict with specifications other than those that may have been previously reported and corrected.

3.06 FINAL INSPECTION

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

B. Inspect roof surface areas of building, including perimeter building edges, flashing of roof penetrations, walls, curbs and other equipment.
1. List items requiring correction or completion and furnish copy of list to each parting attending.

C. Owner reserves right to request thermographic scan of roof during final inspection to determine if damp or wet materials have been installed.
1. Should defects be discovered, roofing installer shall correct and fix defective areas at no charge to Owner.

D. Should core cuts verify presence of damp or wet materials, roofing installer shall be required to replace damaged areas at his own expense.

E. Repair or replace, as required, deteriorated or defective work found at time above inspection, to condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

F. Roofing installer is to notify Owner upon completion of corrections.

G. Following final inspection, acceptance will be made in writing by roofing system manufacturer.
1. Roofing installer shall provide needed coordination for providing such approval.

H. Comply with specified closeout procedures in Section 01 7700.

3.07 CLEANING

A. Contractor shall immediately remove drippage of bitumen from walls, windows, floors, ladders and finished surfaces completely and to the satisfaction or owner and membrane manufacturer.

B. In areas where finished surfaces are soiled by asphalt or other sources of soiling caused by roofing work, consult manufacturer of surfaces for cleaning advice and conform to their instructions. Stains and soiled areas must be immediately cleaned.

C. At the end of installation, contractor is responsible to wash and clean finished roofing system prior to final punch-walk, resulting in a clean, stain-free white and debris free finished final ply to the satisfaction of owner.

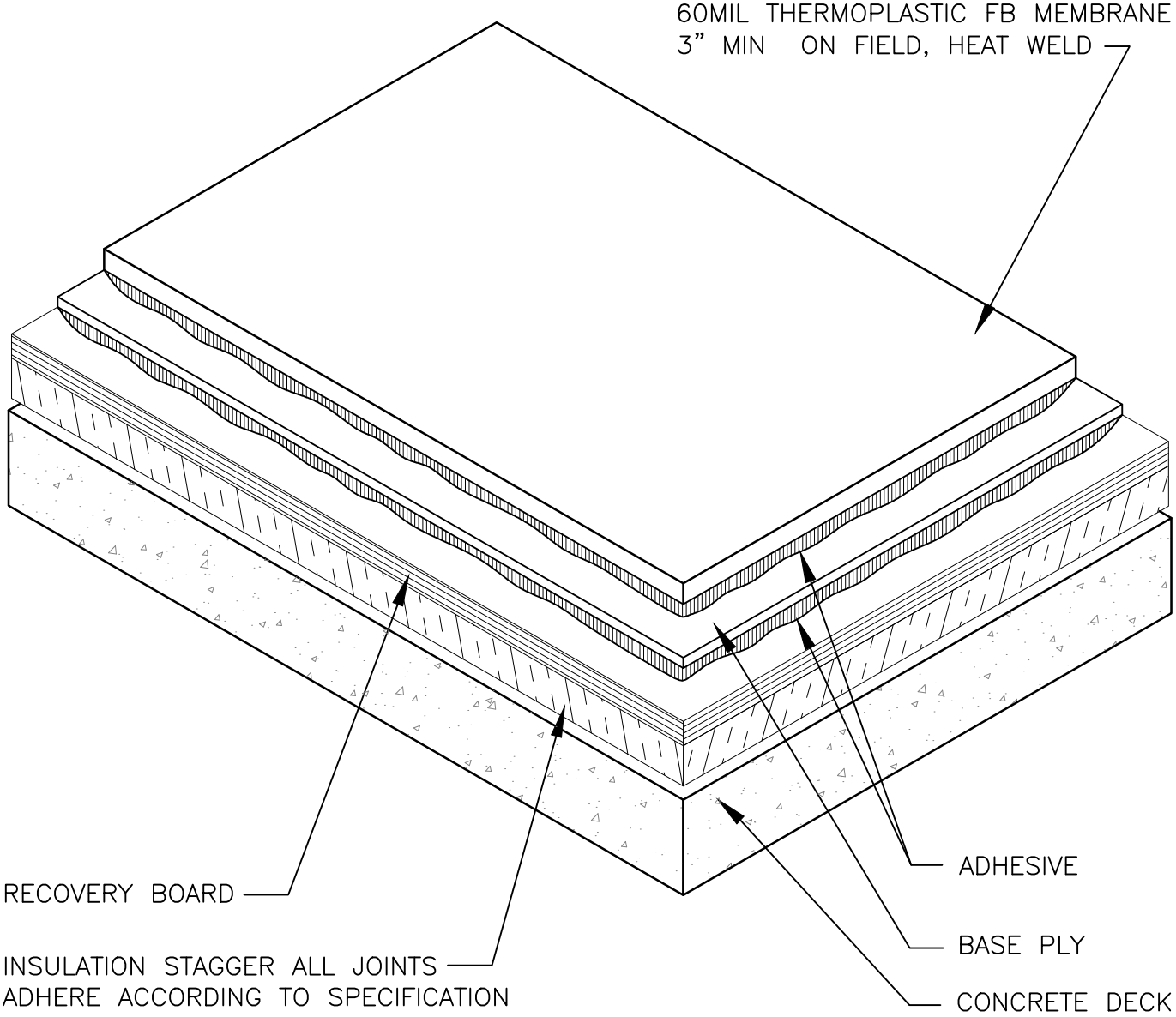
D. Roofing installer is not to use Owner's rubbish bins.
1. Remove used material containers and dispose of off Project Site.

3.08 OFCI CMAS ROOFING MATERIAL

A. The listed roofing materials and quantities below shall be supplied by the owner. These materials are a final list of type and quantity. Any material types or quantities specified herein but not listed below shall be the responsibility of the roofing contractor to purchase from the manufacturer. Contractor shall contact the manufacturer for pricing and all applicable costs to deliver materials including tax and transportation.

RHCC SCIENCE BUILDING			
Product	**Coverage/Unit Size**	**Product Number**	**Quantity**
KEE Stone 60 FB cap sheet	400 sqft 8'x50'	9500-50	125
KEE Stone 60 Non or FB Flashing	200 sqft 4'x50'	9501-or NF	30
KEE Stone foam adhesive	150sqft/cart 4 cart/box	7350-cr	50
KEE Lock mastic	3-gallon pail	7303-3	6
KEE Stone utility roll	6'x50	9504	30
Modified Bitumen Base Ply	100 sq. ft./roll	4113	500

End of Section



SEE SPECIFICATIONS FOR ADHESIVES

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DETAIL:

TYPICAL FINISH

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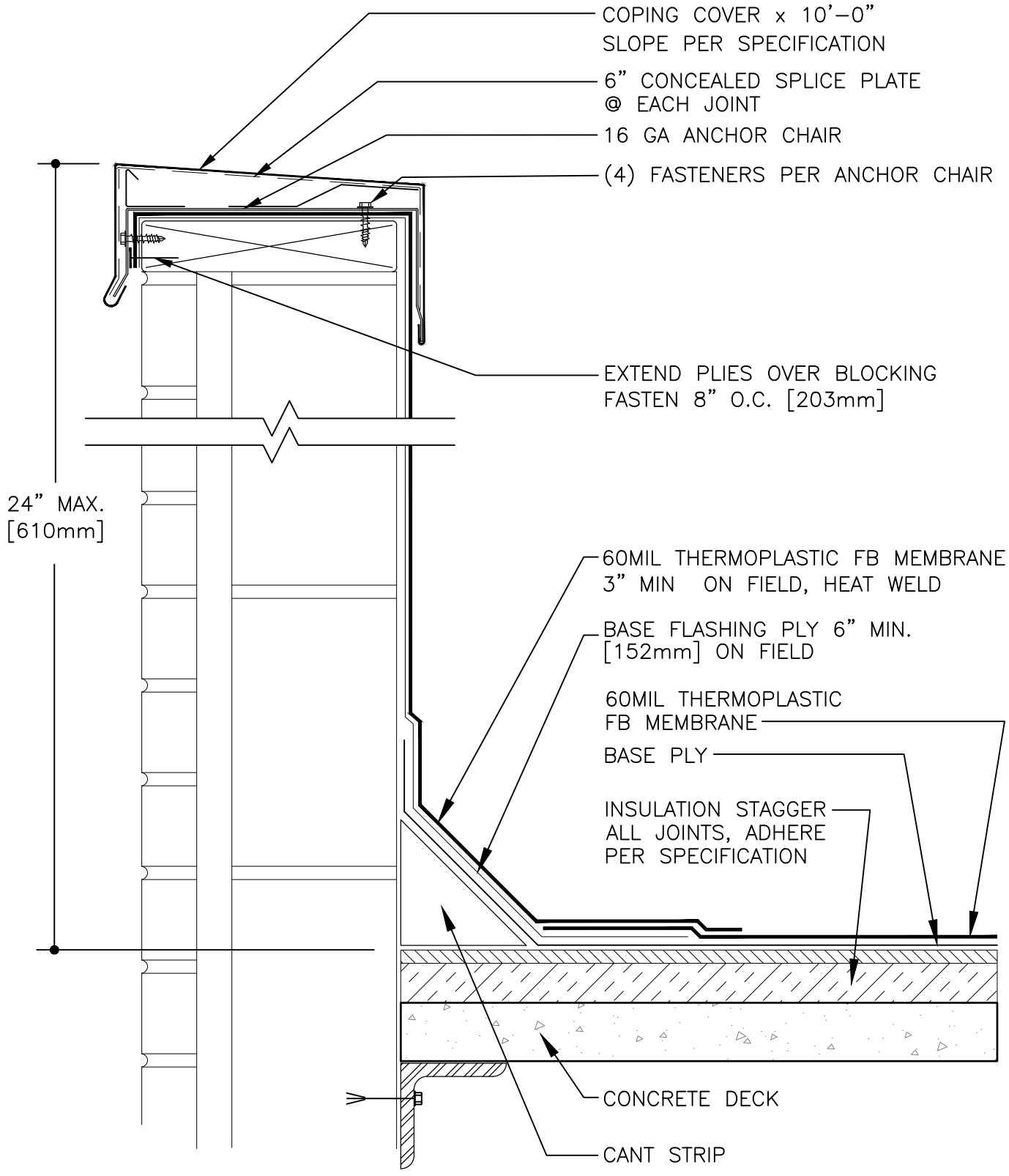
FILENAME: MB2HM-20

COPING CAP



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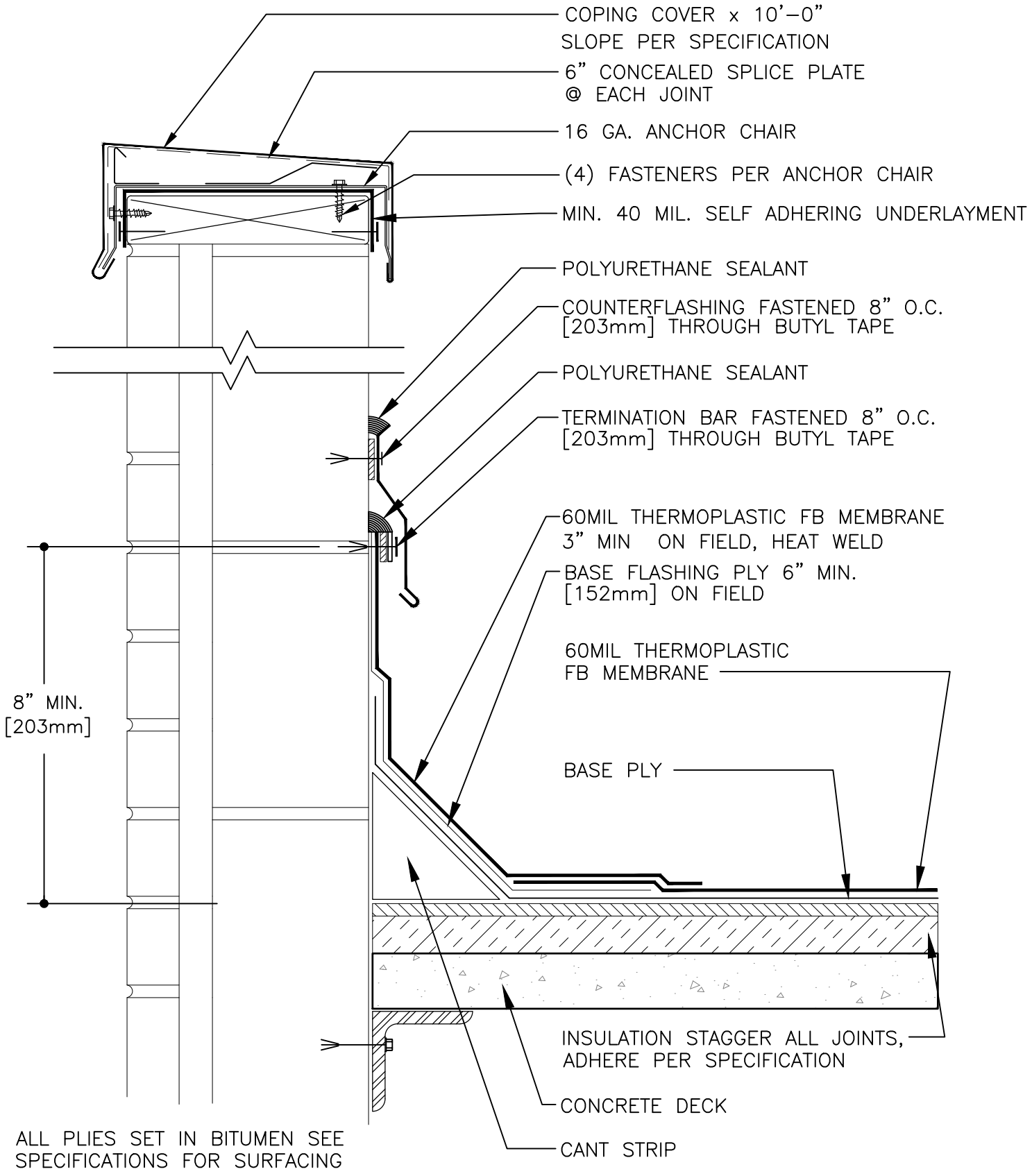

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DETAIL:

SURFACE MOUNTED COUNTER FLASHING/COPING CAP

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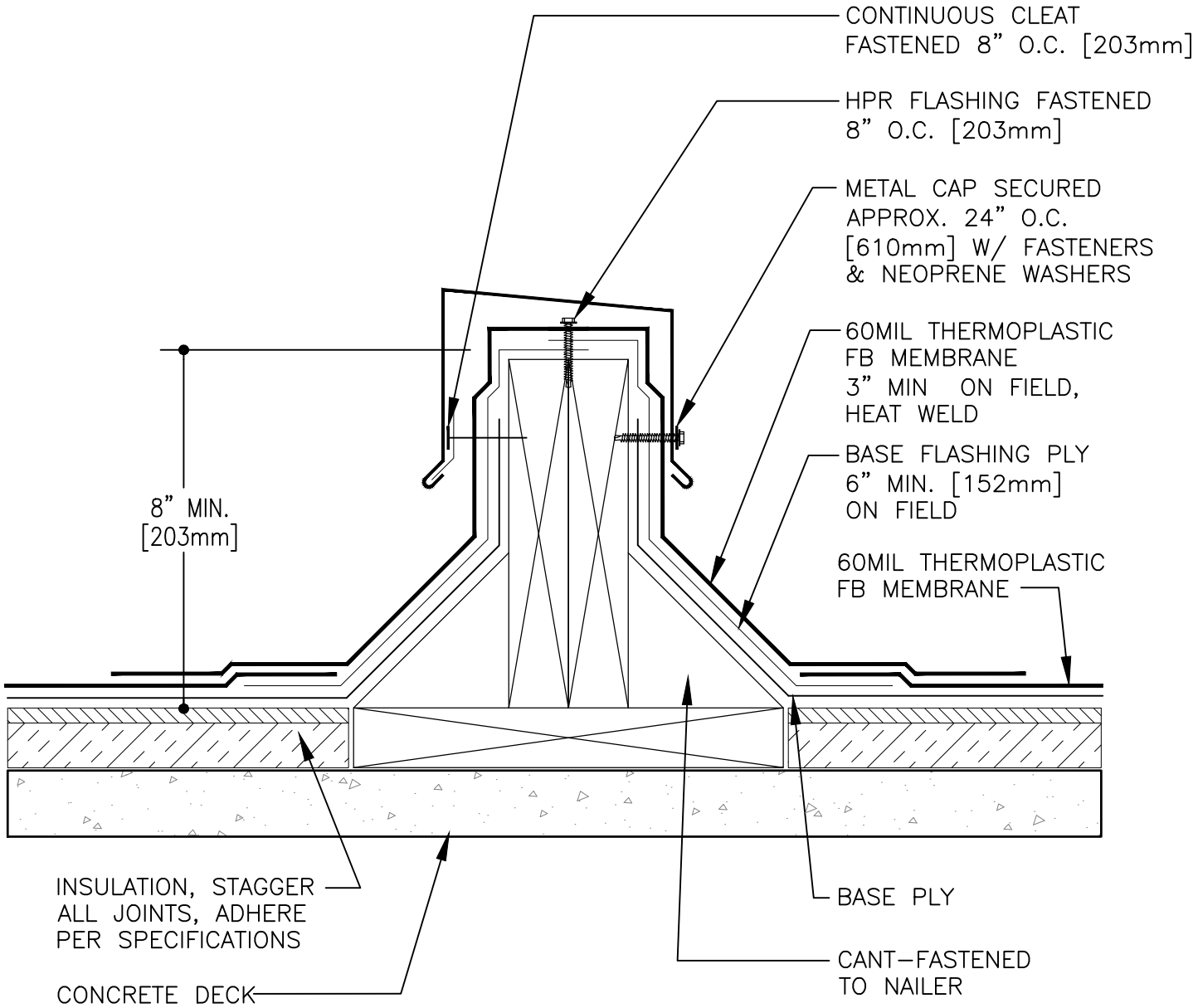

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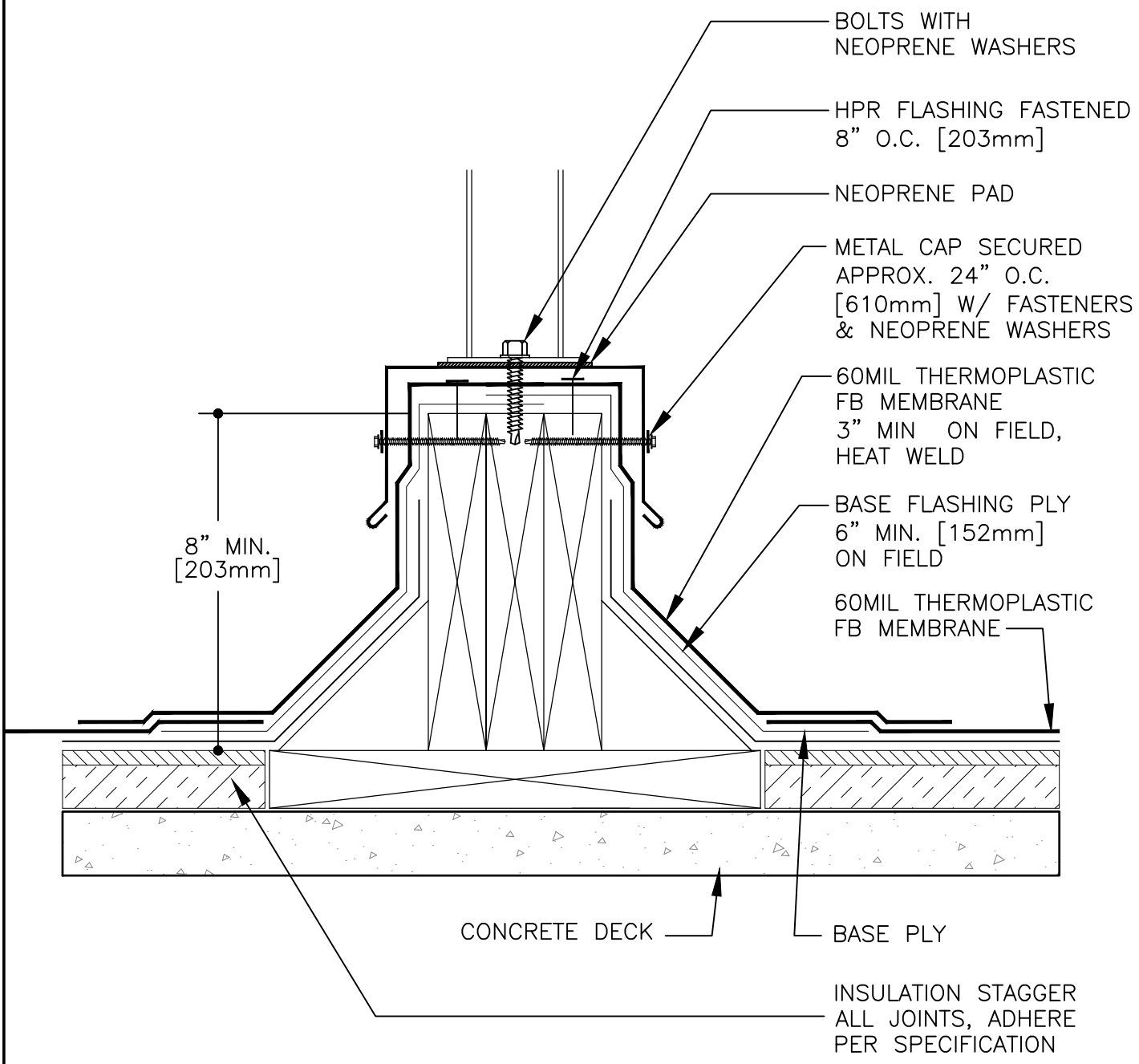

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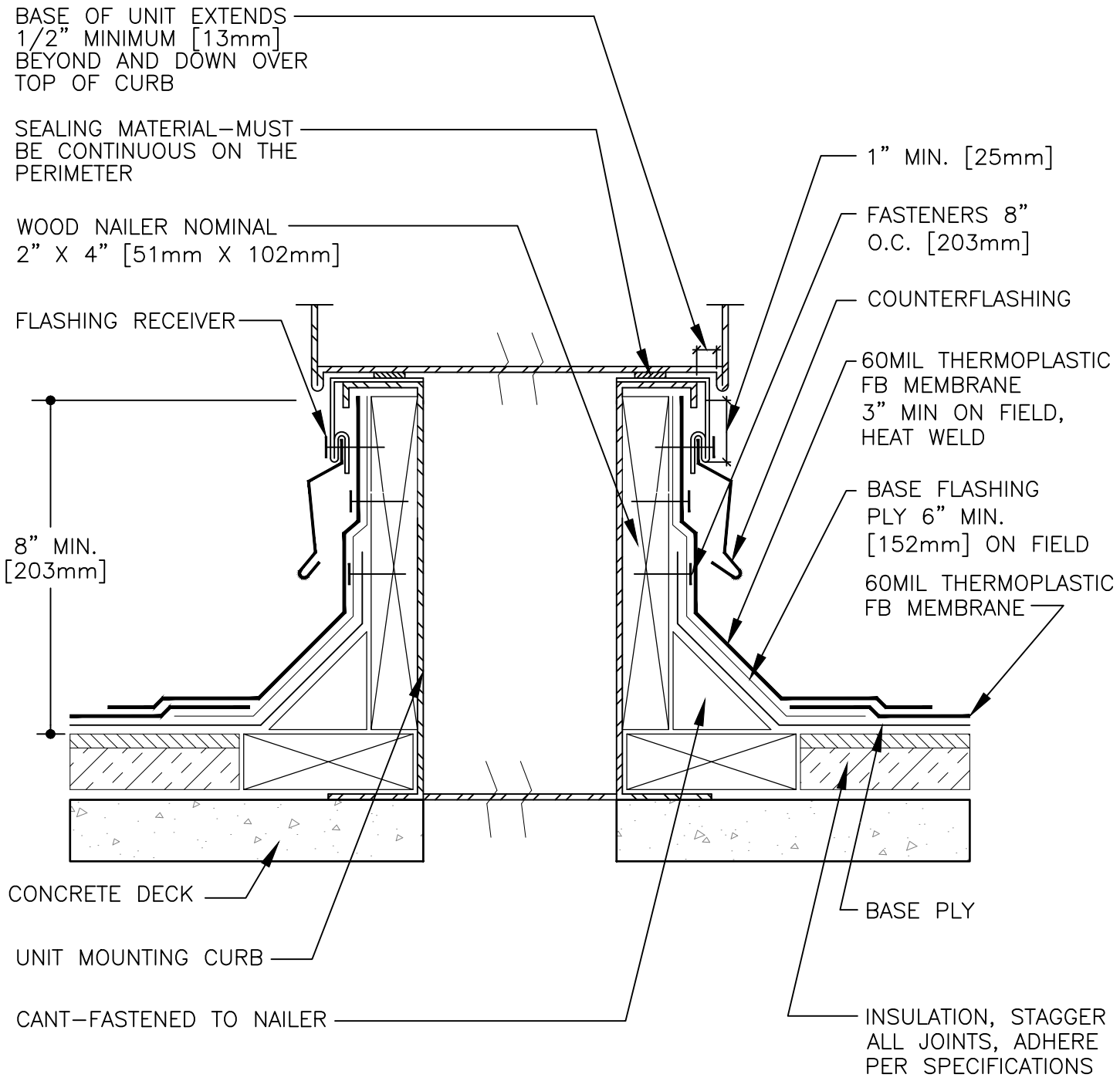

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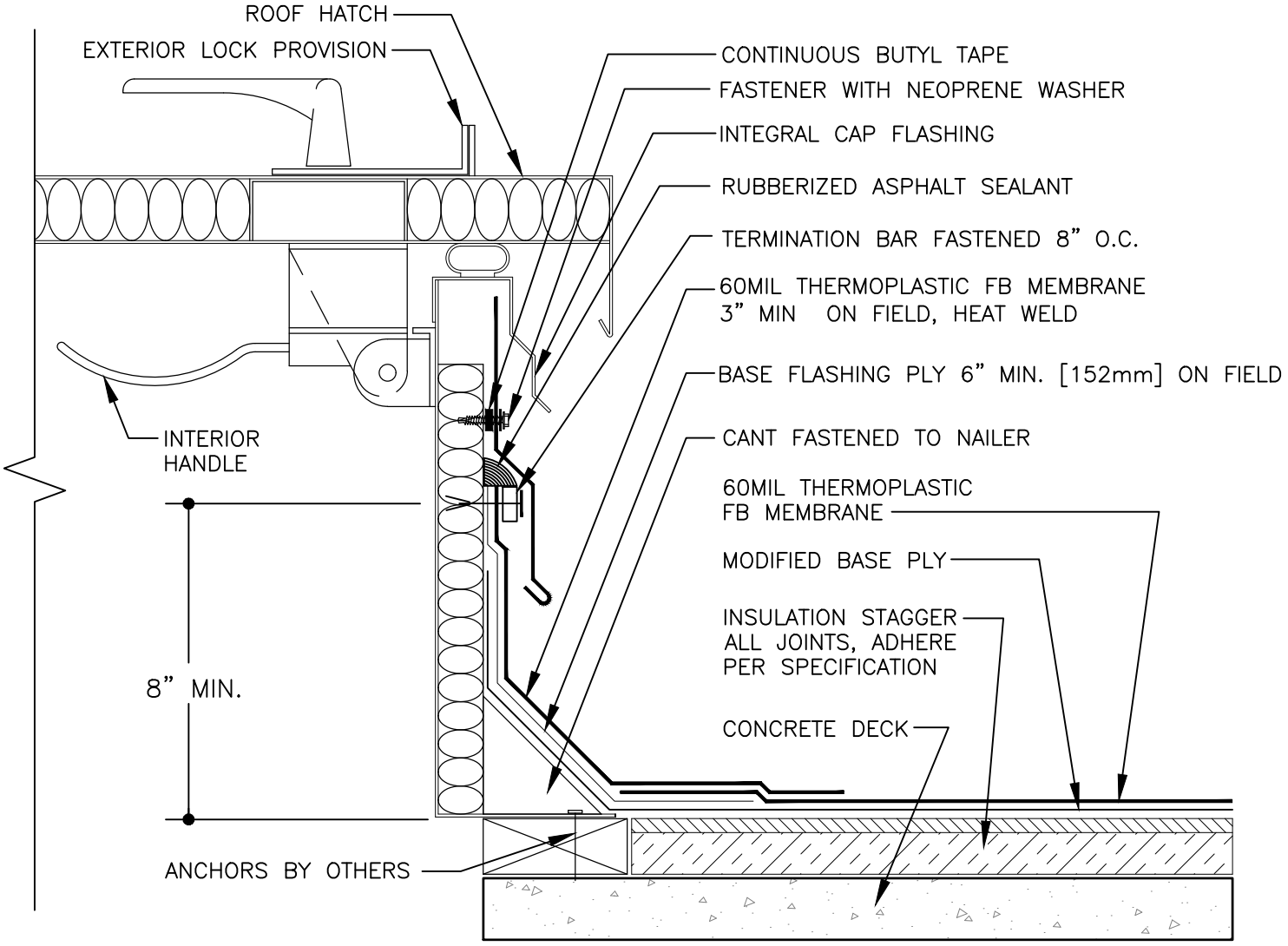

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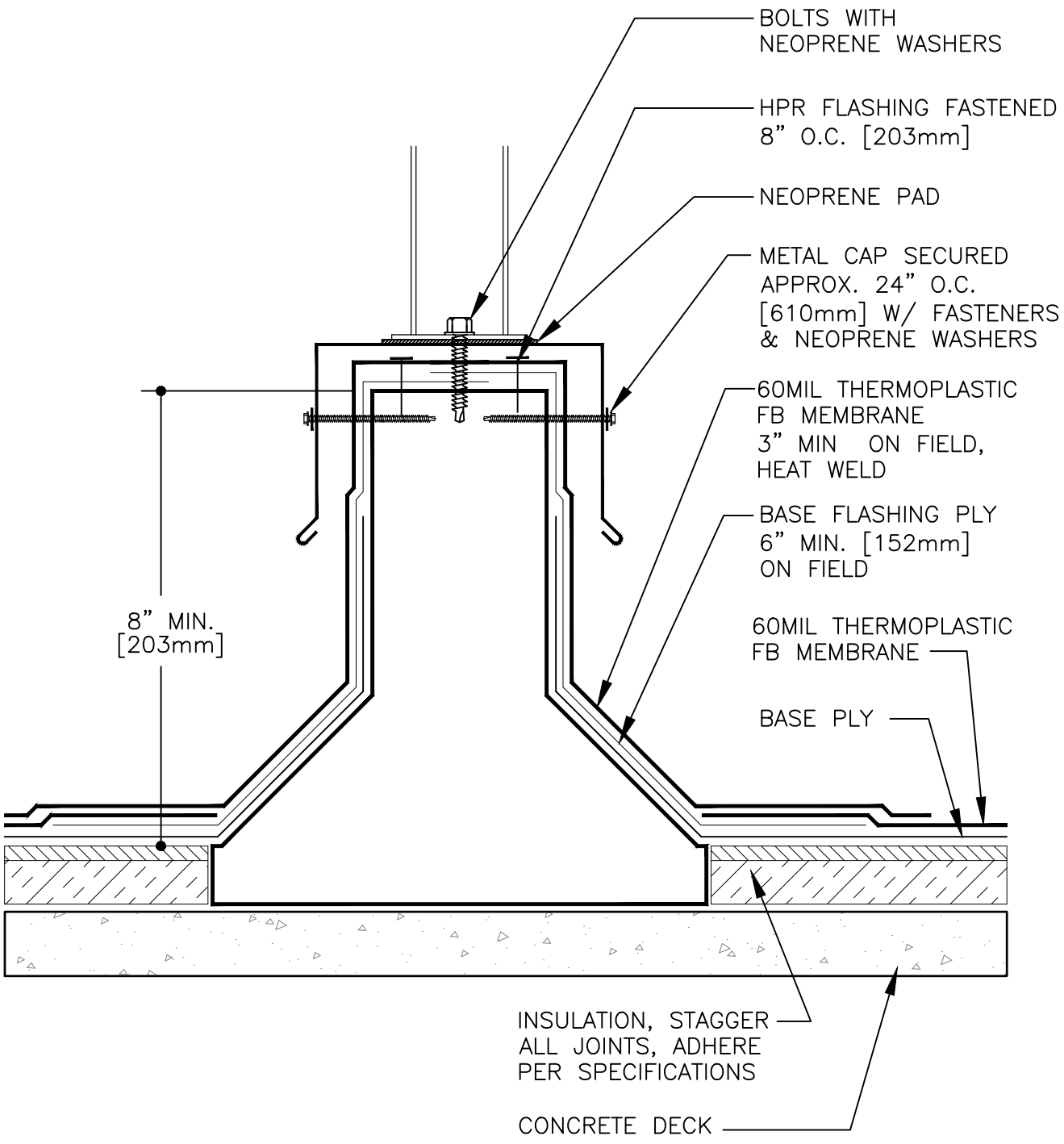

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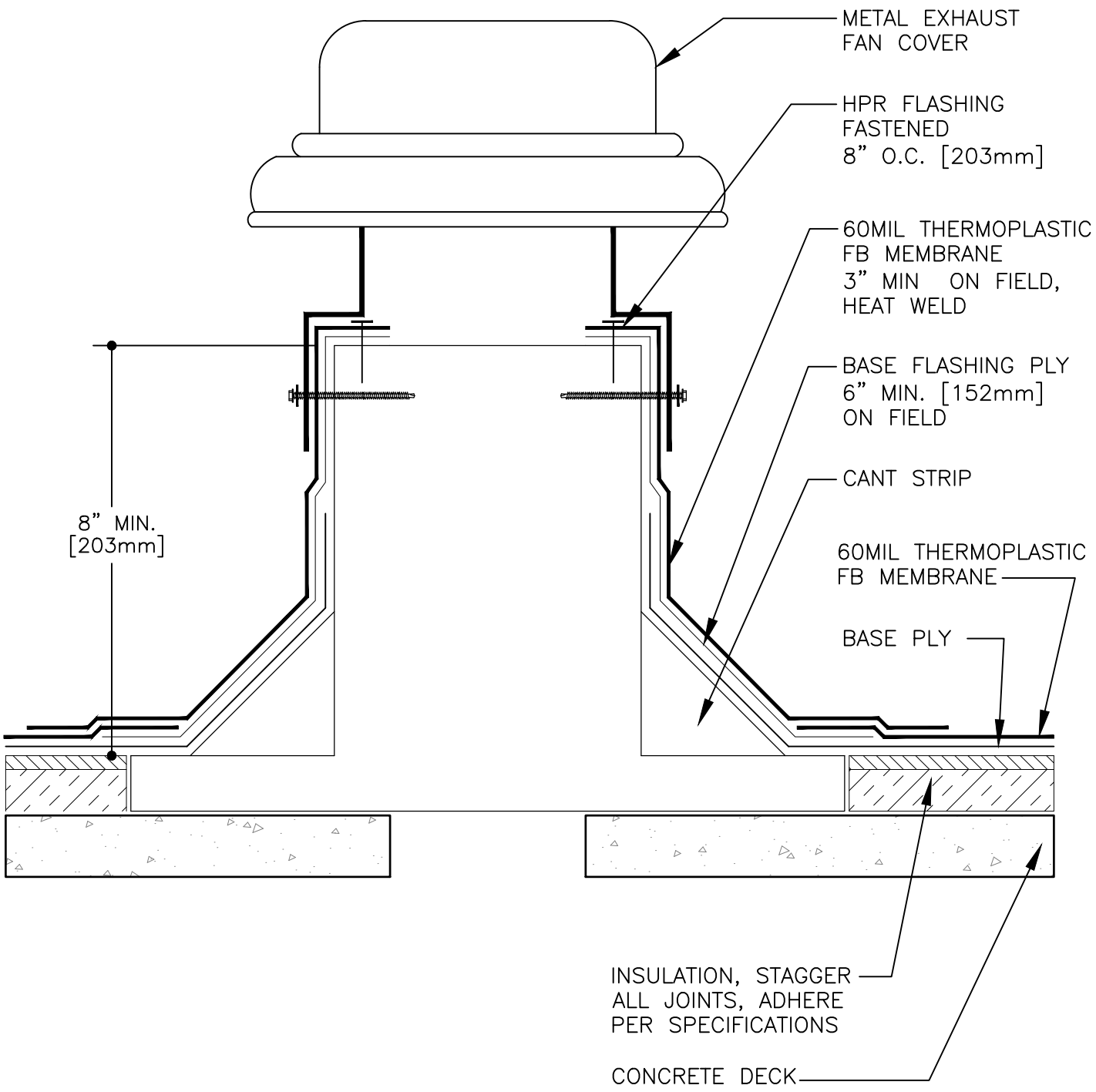

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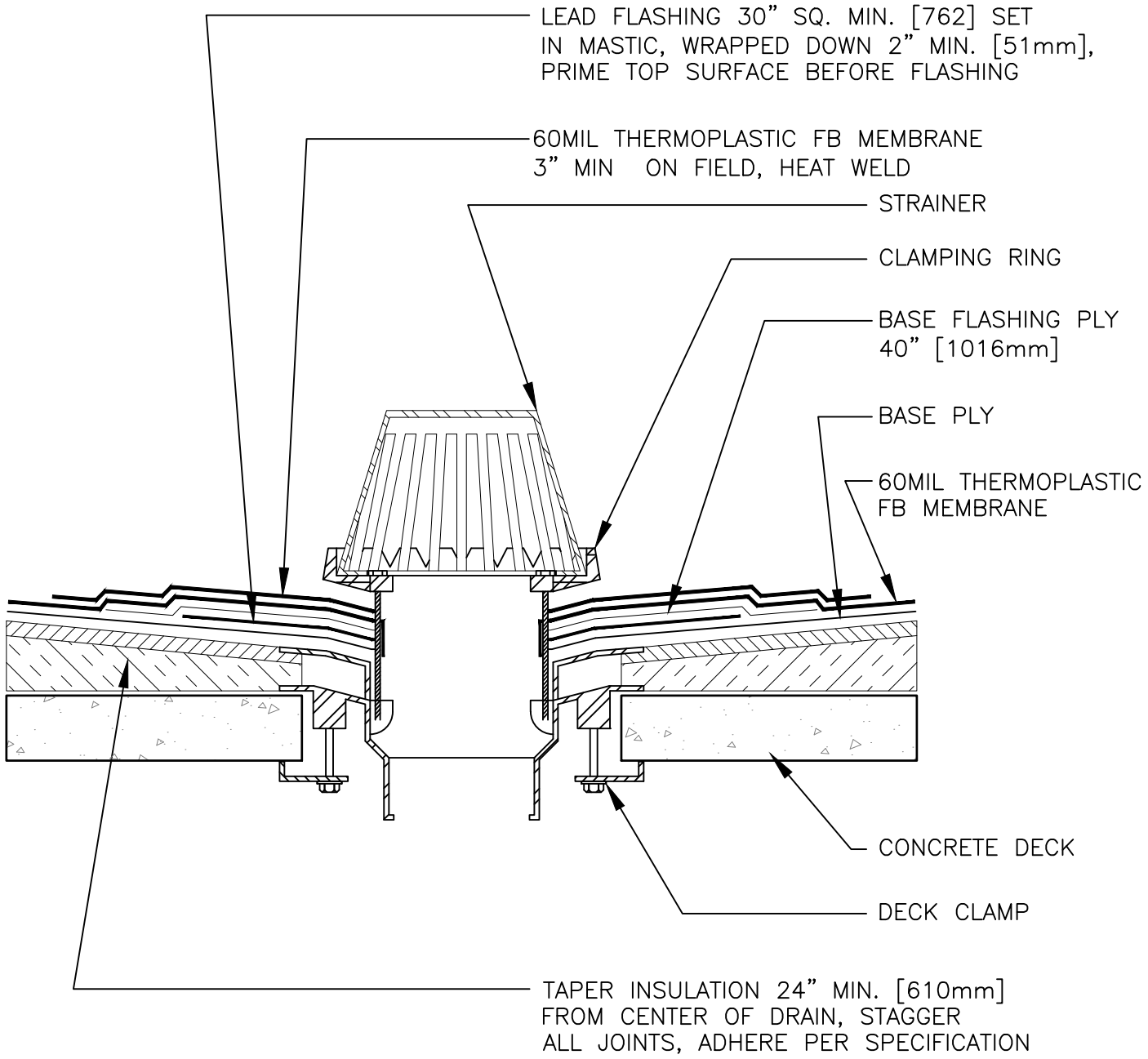

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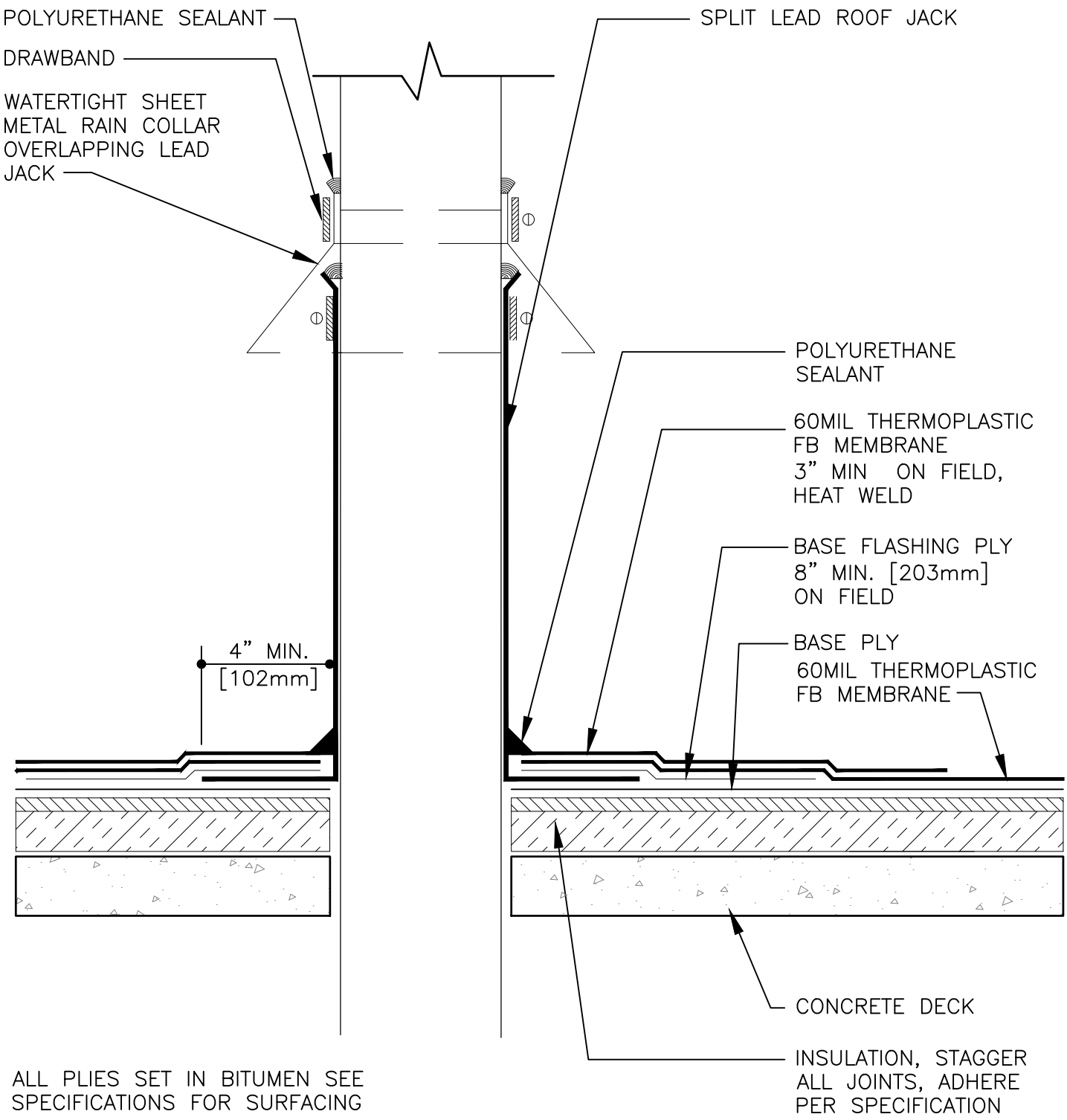

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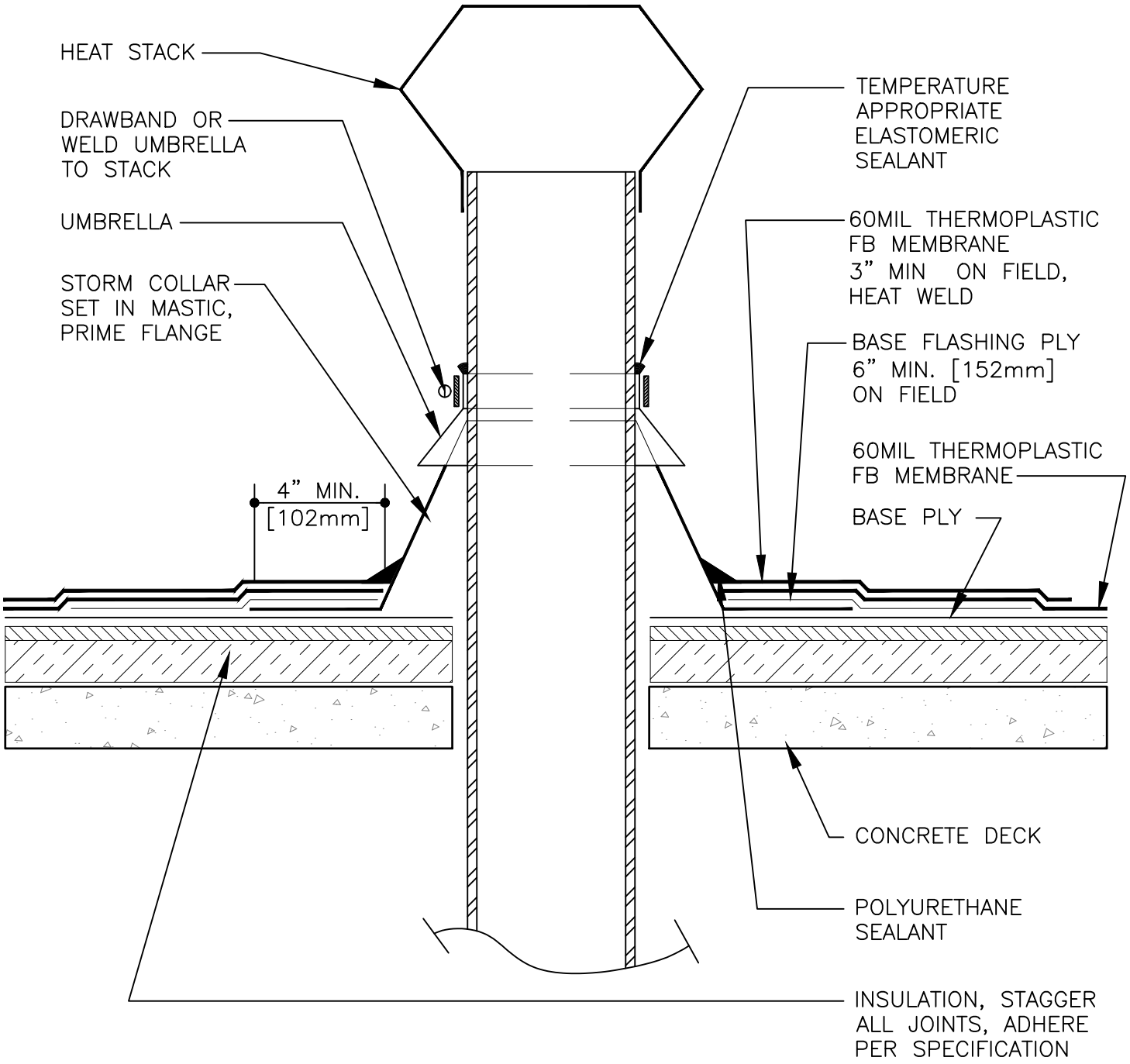

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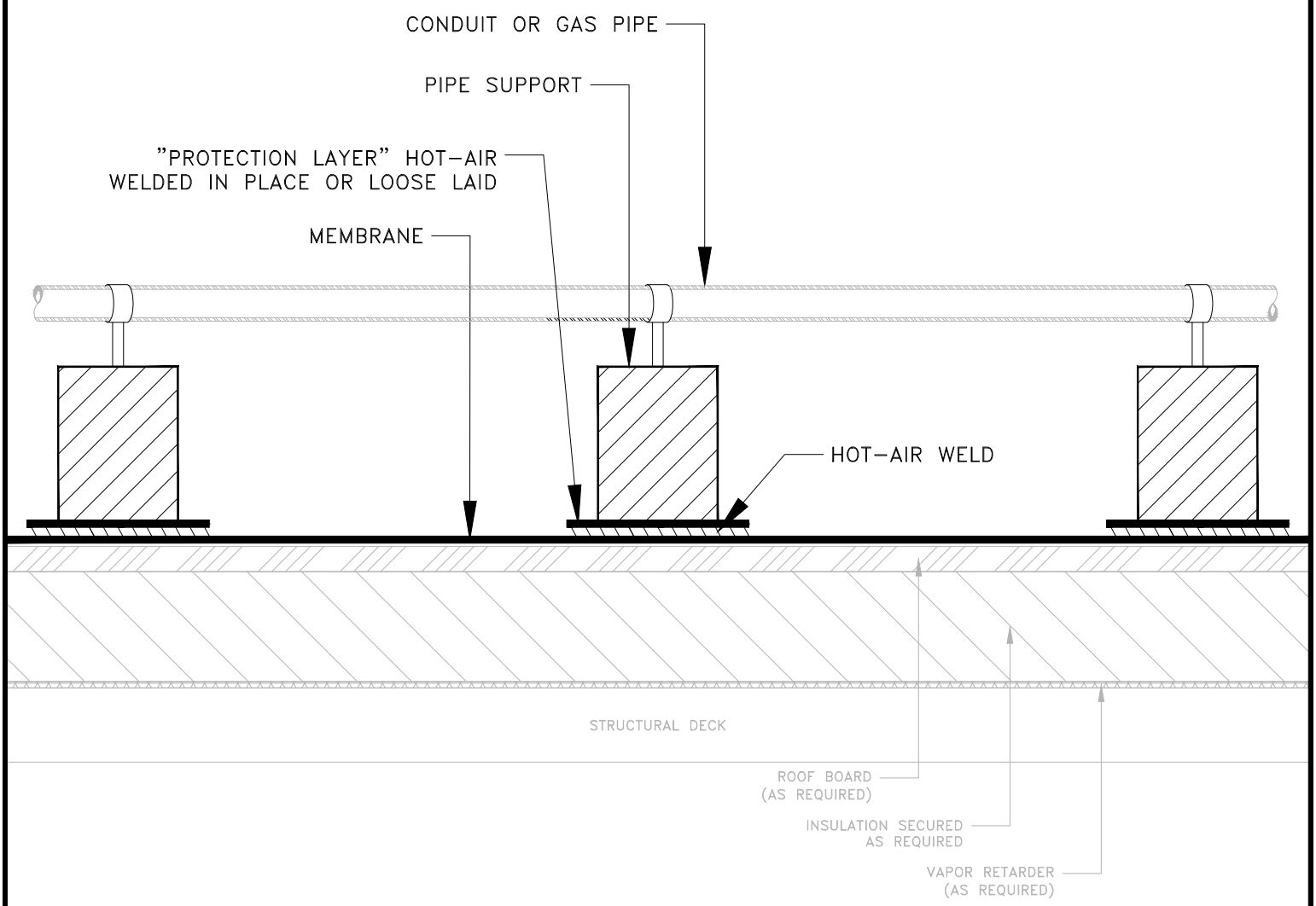

NOTES:

1) PROTECTION LAYER MUST BE A MINIMUM OF 60 MILS AND SHOULD BE APPROXIMATELY 2" LARGER THAN THE SUPPORT IN ALL DIRECTIONS.

PIPE SUPPORT