



CITY OF CONROE

Est. 1904

City of Conroe
PO Box 3066
Conroe, Texas 77305

ADDENDUM NO. 1

DATE ISSUED October 9, 2020

PROJECT NAME: 1015-2020 Roof Replacement at Conroe Recreation Center

This revision shall be considered part of the contract documents for the above named project, and shall be incorporated integrally with the previously issued documents. Wherein provisions of the revisions differ from the provisions of the original documents and/or the provisions of previously issued addendum, the provisions of this revision shall govern and take precedence.

Questions and Answers:

Q. Per the roof plan sheet R-200 references R-203 sheet for the details however I do not see sheet R-203 in the documents. Can this be provided?

A. Clarified in attached specs.

Q. Also is there a sheet A-202?

A. Clarified in attached specs.

Q. Will the bids be open to the publicly?

A. Yes, Bids are Publicly opened in the Council Chambers on Oct 15, 2020 at 2pm. Late bids not accepted and returned.

Q. When will the project be awarded?

A. Award will take place at the November Council Meeting

Q. Do not see in the bid form days to complete, is this being requested?

A. This will be confirmed during award process.

Q. Is there certain days and hours that work is allowed?

A. 7:30am-530pm Mon-Sat

Q. Would any VE items or options be reviewed?

A. No.

Company Name: _____



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Q. Is there any certain design pressures that we are to meet?

A. Design pressures are to meet wind uplift requirements for ASCE-7

Q. The under side of the existing appears to have a spray foam adhered to it, chances are with the attachment of the new Zee’s and roof panels that some of this may come off, clean up is not an issue but will any repair be required and if so how do we address this not knowing how much?

A. Any damage to existing conditions must be repaired and are the responsibility of contractor.

Q. Will the gym be in use while installing of the new roof system?

A. Yes.

Q. Would it be possible to extend the bid date by a few days?

A. No.

Q. Sheet R-200 references detail 1/R-204 which shows a 4 inch ISO over area A in which meet with area B, is the 4 inch ISO to cover all of area A or just the East half where it butt’s up to area B?

A. The insulation is to be installed on the entire roof area A and the thickness is to be field verified to provide a continuous roof plane from Area A to Area B. The 4” is only a recommendation and the final thickness is the responsibility of the contractor.

By the signature affixed below, Addendum No. 1 is hereby incorporated into and made a part of the above referenced solicitation.

ACKNOWLEDGED

Authorized Signature

Printed Name

Respondent/Contractor

Date

Kristina Colville, Purchasing manager



C.K. Ray Recreation Center Roof Replacement Project Manual

Conroe Rec Center Roof Replacement Scope of Work:

1. Remove existing box vents and install new r-panel ridge cap to close openings.
2. Cut existing r-panel roof at eaves flush with existing structure and wall panels and remove existing rake and eave trim.
3. At existing R-panel roof install cross hatched 16 ga. galvanized framing over the existing roof system. Bottom framing to be spaced 40" o.c. fastened to each purlin from low eave of roof to the ridge. Top section of subframing to be spaced 48" o.c. attached to bottom layer. Top section to be fabricated to encapsulate polyiso roof insulation and cover board described below and to provide attachment point for standing seam clips.
4. At existing standing seam metal roof install one layer 16 ga. galvanized framing over existing roof system attached at each purlin from low eave of roof to expansion joint.
5. Provide and install new 16 ga. galvanized eave framing at rake and low eaves.
6. At existing R-Panel roof install polyisocyanurate roof insulation board at the required thickness (4" – 5") to eliminate transition from roof Area – A to roof Area-B and provide for continuous roof plane as detailed on R-201. Roof insulation to meet ASTM C 1289, Type II, Class 1, Grade 2.
7. Required thickness of insulation to be responsibility of contractor.
8. At existing standing seam roof install 1" polyisocyanurate roof insulation board. Roof insulation to meet ASTM C 1289, Type II, Class 1, Grade 2.
9. At all roof areas install ½" high density closed cell polyisocyanurate roof insulation 80 psi minimum density cover board over base layers of insulation.
10. Install Carlisle WIP 300 self-adhering high temperature underlayment over cover board per project details.
11. Install new 24 ga. acrylic coated galvalume 180 degree mechanically seamed 2" x 16" standing seam metal roof system. Roof system to be installed per project plans and specifications.
Basis of design: Berridge Manufacturing Double Lock Zee Lock.
12. New standing seam metal roof to be installed using continuous zee-rib clip that run the length of seam.
13. Install all necessary trim components as detailed in project plans.
14. All panels are to be roll formed onsite in continuous lengths. No cross seams will be accepted.
15. Flash all roof penetrations per project plans and specifications.
16. At r-panel to existing standing seam transition, demo siding as necessary to install blocking as needed for flush rake wall plane.
17. Remove existing siding as needed at rake walls to provide for proper through wall flashing installation. Reinstall siding after through wall installation.
18. At parapet wall, remove existing skirt metal and coping cap and provide new through wall flashing according to project plans and specifications.
19. Install new 24 ga. galvalume plus skirt metal and 24 ga. galvalume plus sheetmetal coping cap with continuous 22 ga. cleat.
20. Remove existing siding as necessary at expansion joint and install new 24 ga. galvalume plus expansion joint flashing. Reinstall existing siding.
21. Demo existing louvers at east wall and install new wall panels to match existing.
22. Provide 22 ga. galvanized cleat fastened through existing wall panel to existing eave strut and plywood.
23. Provide 24 ga. prefinished Kynar 500 fascia metal attached to cleat. Color to match wall panels.
24. Provide new closures at top of wall panels.

25. Demo existing gutters and downspouts and provide new 24 ga. prefinished Kynar 500 6" box style gutters and 4x4 downspouts. Color to match existing wall panels.
26. Provide 1/8" gutter brackets 3' o.c. Gutter brackets to be wrapped with 24 ga. prefinished sheetmetal to match gutter color.
27. Provide new concrete splash blocks at each downspout location.
28. Provide (2) year workmanship warranty.
29. Contractor is solely responsible for disposal of materials in accordance with all applicable state, federal or local laws, regulations or requirements.

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes standing-seam metal roof panels.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at location designated by City of Conroe.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review structural loading limitations of deck, purlins and rafters during and after roofing.
 - 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 8. Review temporary protection requirements for metal panel systems during and after installation.
 - 9. Review procedures for repair of metal panels damaged after installation.
 - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Sustainable Design Submittals:

1. Product Test Reports: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirements.
2. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.

C. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 3 inches per 12 inches (1:5).

D. Calculations:

1. Include calculations with registered engineer seal, verifying roof panel and attachment method resist wind pressures imposed on it pursuant to applicable building codes.

E. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

F. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Manufacturer and Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in architectural sheet metal products.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockup of typical roof area and eaves, as shown on Drawings; approximately 48 inches (1200 mm) square by full thickness, including attachments, structural sub-framing, underlayment and accessories.
 - 2. Build mockups for typical roof area only, including accessories.
 - a. Size: 48 inches (1200 mm) by 48 inches (1200 mm).
 - b. Each type of exposed seam and seam termination
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels until installation. Remove as panels are being installed. Verify film is not left on installed panels.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Special Galvalume Substrate Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, or perforating.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: 20 years and 6 months from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, chipping, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.
- C. Special Installer Warranty: Furnish a written warranty signed by the Panel Applicator guaranteeing materials and workmanship for watertightness of the roofing system, flashings, penetrations, and against all leaks.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 29 percent.

- B. Solar Reflectance Index (SRI): Three-year-aged SRI not less than 32 or initial SRI not less than 39 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- C. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for steep-slope roof products.
- D. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:
 - 1. Three-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
 - 2. Three-year, aged Solar Reflectance Index of not less than 64 when calculated according to ASTM E 1980.
- E. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to UL 580:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings
 - 3. Deflection Limits: For wind loads, no greater than 1/180 of the span.
- F. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E 1680 and ASTM E 283 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).
- G. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646 and ASTM E 331 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 15 lbf/sq. ft. (718.2 Pa).
- H. Hydrostatic Head Resistance: No water penetration when tested according to ASTM E2140.
- I. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 - 1. Uplift Rating: UL 90.
- J. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
 - 1. Fire/Windstorm Classification: Class 1A- 90
 - 2. Hail Resistance: SH.
- K. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of

joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

2.2 STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
 1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
 2. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1637.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels : Formed with vertical ribs at panel edges and panel striations between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Berridge Manufacturing Company; Double-Lock Zee-Lock (180° Seam) or comparable product by one of the following:
 - a. Drexel Metals 200S
 - b. The Garland Company
 - c. CENTRIA SDP200
 - d. Or prior approved equal
 2. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 - a. Nominal Thickness: 0.024 inch (0.61 mm)
 - b. Exterior Finish: Two-coat fluoropolymer
 - c. Painted materials shall have a removable plastic film to protect the paint during roll forming, shipping and handling.
 - d. Color: Acrylic Coated Galvalume
 3. Clips: Continuous Zee-Rib to accommodate thermal movement.
 - a. Material: 0.024-inch (0.61-mm) nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.

- b. Material: 0.064-inch (1.63-mm) nominal thickness, zinc coated (galvanized) base with 0.033 inch (0.84 mm) stainless-steel top.
- 4. Joint Type: Double folded.
- 5. Panel Coverage: 16 inches (406 mm).
- 6. Panel Height: 2.0 inches (51 mm).

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 40 mils (1.02 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer. Underlayment to contain exposed rubberized asphalt bead along the membrane edge to ensure watertightness of lap seams.
 - 1. Thermal Stability: Stable after testing at 250 deg F; ASTM D 1970.
 - 2. Low-Temperature Flexibility: Passes after testing at minus 45 deg F; ASTM D 1970.
 - 3. Manufacturers:
 - a. Carlisle Metal Products WIP 300HT

2.4 ROOF INSULATION

- A. Insulation Board: Thickness as indicated on drawings. Closed cell glass reinforced polyisocyanurate insulation board complying with ASTM C1289, Type I, Class 2, Grade 2.
- B. Cover Board: shall be supplied in ½” thickness and with an aged R-value of 2.5, with 80 psi minimum density approved by manufacturer for use. Acceptable cover board insulation types:
 - 1. Closed cell polyisocyanurate with premium performance coated inorganic glass facers, passing ASTM D 3273 for mold resistance and ASTM C 1621 for compressive strength.
 - a. Carlisle Securshield HD
 - b. Duro-Last Duro-Guard ISO HD board
 - c. Johns Manville ProtectoR HD Board
 - d. Sika Sarnatherm Roof Board – H

2.5 MISCELLANEOUS MATERIALS

- A. Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide a minimum 16 ga. Galvanized subframing. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
 - 1. Provide a minimum 16 ga. Galvanized subframing in pan of existing roof panels.

- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 - 2. Sub Flashing: Provide sub flashing fabricated of same metal as metal panels at all areas detailed in project plans.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 120-inch (2400-mm) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter brackets spaced a maximum of 36 inches (914 mm) o.c., fabricated 1/8" steel and wrapped in prefinished metal same color as gutter. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal wall panels.
- E. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot (3-m) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- F. Roof Curbs: Fabricated from same material as roof panels, 0.024 inch (0.61 mm) nominal thickness; galvalume or stainless steel; supply an integral full-length cricket for curbs wider than 24 inches (610 mm) supported by a structural metal deck. Fabricate curb flashing from 0.024 inch (0.61 mm). On open framing, provide roof underlayment and decking at and about roof curb per roofing manufacturer's requirements. Maintain a minimum of 1/2 of roofing panel width on each side of roof curb, and start panels a minimum of 9 inches (229 mm) up slope of roof curb, flashing roofing panels to roof curb per project details. Fabricate curb and subframing to withstand indicated loads of size and height of roof top equipment. Where required insulate roof curbs with rigid insulation.
- G. Panel Fasteners: Zinc-coated steel, corrosion resisting steel, zinc cast head, or nylon capped steel, type and size as approved for the applicable loading requirements.
- H. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Joint Sealant: Silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

2.6 FABRICATION

- A. General: Fabricate and finish metal panels and accessories by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Metal panels are to be fabricated on-site using factory set, non-adjustable, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations, project plans and details, and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 3. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: 22 ga. cleat material

2.7 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of 0.75 ± 0.05 mil (0.0013 mm) over 0.2 ± 0.05 mil (0.0013 mm) primer coat, to provide a total dry film thickness of

- 0.95± 0.10 mil (0.024 mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.35 mil (0.009 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
 2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 36 inches (914.4 mm). Roll laps with roller. Cover underlayment within 14 days or as directed by the underlayment product manufacturer.
 1. Apply over the entire roof surface.

2. In addition to entire roof surface apply additional layer over the roof area indicated below:
 - a. Roof perimeter for a distance up from eaves of 24 inches (610 mm) beyond interior wall line. Turn underlayment down face of eaves.
 - b. Valleys, from lowest point to highest point, for a distance on each side of 18 inches (460 mm). Overlap ends of sheets not less than 6 inches (152 mm).
 - c. Rake edges for a distance of 18 inches (460 mm). Turn underlayment down face of rake.
 - d. Hips and ridges for a distance on each side of 18 inches (305 mm).
 - e. Roof-to-wall intersections for a distance from wall of 12 inches (460 mm) and up wall behind siding minimum 6 inches.
 - f. Around dormers, chimneys, skylights, and other penetrating elements for a distance from element of 18 inches (460 mm).
- B. Flashings: Install flashings to cover underlayment to comply with drawings.

3.4 METAL PANEL INSTALLATION

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 1. Shim or otherwise plumb substrates receiving metal panels to be level to 1/4 inch in 20 ft. (6 mm in 6.1 m).
 2. Flash and seal metal panels at perimeter of all openings. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 3. Locate and space fastenings in uniform vertical and horizontal alignment.
 4. Install flashing and trim as metal panel work proceeds.
 5. **Panels should be continuous without end laps.**
 6. Align bottoms of metal panels and fasten.
 7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
 1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
 2. Aluminum Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use stainless-steel fasteners for surfaces exposed to the interior.
- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

- E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners specified in drawings.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Install pressure plates, if required, at locations indicated in manufacturer's written installation instructions.
 - 3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel are completely engaged.

- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

- G. Flashing and Trim: Comply with performance requirements, project drawings and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with 4" end laps, joints, and seams that will be permanently watertight and weather resistant.
 - 1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

- H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with specified gutter brackets spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

- I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.
 - 1. Provide elbows at base of downspouts to direct water away from building.
 - 2. Connect downspouts to underground drainage system indicated.

- J. Roof Curbs: Install flashing around bases where they meet metal roof panels.

- K. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

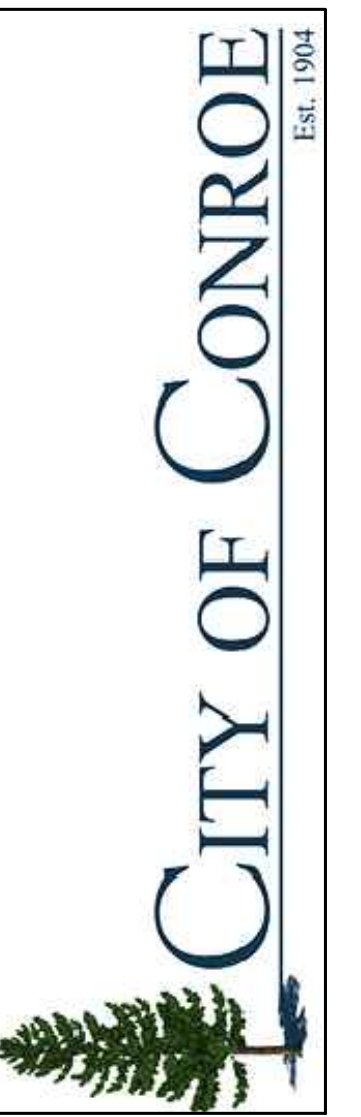
- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113.16



SPECIFIC ROOF NOTES

- ① REMOVE EXISTING BOX VENTS AND INSTALL NEW R-PANEL RIDGE CAP AT OPENINGS.
- ② REMOVE EXISTING SIDING AS NECESSARY TO INSTALL BLOCKING AS NEEDED FOR FLUSH RAKE WALL PLANE.
- ③ REMOVE EXISTING SIDING AT EXPANSION JOINT AND INSTALL NEW EXPANSION JOINT FLASHING. REINSTALL EXISTING SIDING.
- ④ AT EXISTING PARAPET WALL REMOVE EXISTING SKIRT METAL AND COPING CAP AND PROVIDE NEW THROUGH WALL FLASHING PER DETAILS.
- ⑤ INSTALL NEW SKIRT METAL AND COPING CAP WITH CONTINUOUS 22 GA. GALVANIZED CLEAT.
- ⑥ REMOVE EXISTING LOUVERS AT EAST WALL AND INSTALL NEW WALL PANELS TO MATCH EXISTING.
- ⑦ DEMO EXISTING GUTTERS AND DOWNSPOUT AND INSTALL NEW 24 GA. PREFINISHED 6" BOX STYLE GUTTERS WITH $\frac{1}{8}$ " GUTTER BRACKETS 3 FT. O.C. AND 4X4 SMOOTH DOWNSPOUTS. COLOR TO MATCH WALL PANELS.
- ⑧ AT R-PANEL TO STANDING SEAM TRANSITION CROSS HATCHED SUBFRAMING TO BE INSTALLED TO PROVIDE FOR ONE CONTINUOUS ROOF PLANE FROM ROOF AREA-A TO AREA-B



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SHEET DESCRIPTION:

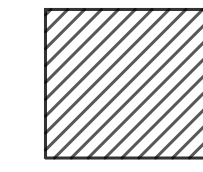
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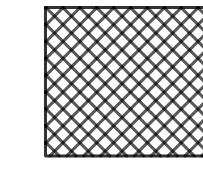
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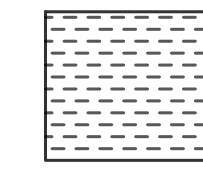
SUBFRAMING BY ROOF AREA



ROOF A - INSTALL 16 GA. GALVANIZED CROSS HATCHED SUBFRAMING OVER EXISTING R-PANEL ROOF TO MAKE FOR ONE ROOF PLANE FROM AREA-A TO AREA-B. BASE LAYER TO BE ATTACHED IN PAN OF R-PANEL FROM LOW EVE TO RIDGE FASTENED TO EA. PURLIN. TOP LAYER ATTACHED TO BASE LAYER. TOP LAYER ZEE TO ENCAPSULATE POLYISO AND COVER BOARD. INSTALL 2-LAYERS POLYISOCYANURATE ROOF INSULATION SYSTEM. FIELD VERIFY THICKNESS OF INSULATION BOARD NEEDED TO PROVIDE ONE ROOF PLANE FROM ROOF A TO ROOF B. INSTALL ½" HD COVER BOARD 80 PSI MIN POLYISOCYANURATE INSULATION WITH COATED GLASS FACERS, MINIMUM R-VALUE OF 2.5 OVER POLYISO.



ROOF B - INSTALL 16 GA. GALVANIZED CROSS HATCHED SUBFRAMING OVER EXISTING STANDING SEAM ROOF TO MATCH HEIGHT OF NEW SUBFRAMING AT ROOF A. BASE LAYER TO BE ATTACHED IN PAN OF ROOF PANEL FROM LOW EVE TO RIDGE FASTENED TO EA. PURLIN. TOP LAYER ATTACHED TO BASE LAYER. TOP LAYER ZEE TO ENCAPSULATE POLYISO AND COVER BOARD. INSTALL 1" POLYISOCYANURATE ROOF INSULATION SYSTEM TO MEET WITH ½" HD COVER BOARD 80 PSI MIN POLYISOCYANURATE INSULATION WITH COATED GLASS FACERS, MINIMUM R-VALUE OF 2.5.



ROOF C - INSTALL 16 GA. GALVANIZED CROSS HATCHED SUBFRAMING OVER EXISTING STANDING SEAM ROOF. BASE LAYER TO BE ATTACHED IN PAN OF ROOF PANEL FROM LOW EVE TO RIDGE FASTENED TO EA. PURLIN. TOP LAYER ATTACHED TO BASE LAYER. INSTALL POLYISOCYANURATE ROOF INSULATION SYSTEM TO MEET R-8.2 WITH ½" HD COVER BOARD 80 PSI MIN POLYISOCYANURATE INSULATION WITH COATED GLASS FACERS, MINIMUM R-VALUE OF 2.5.



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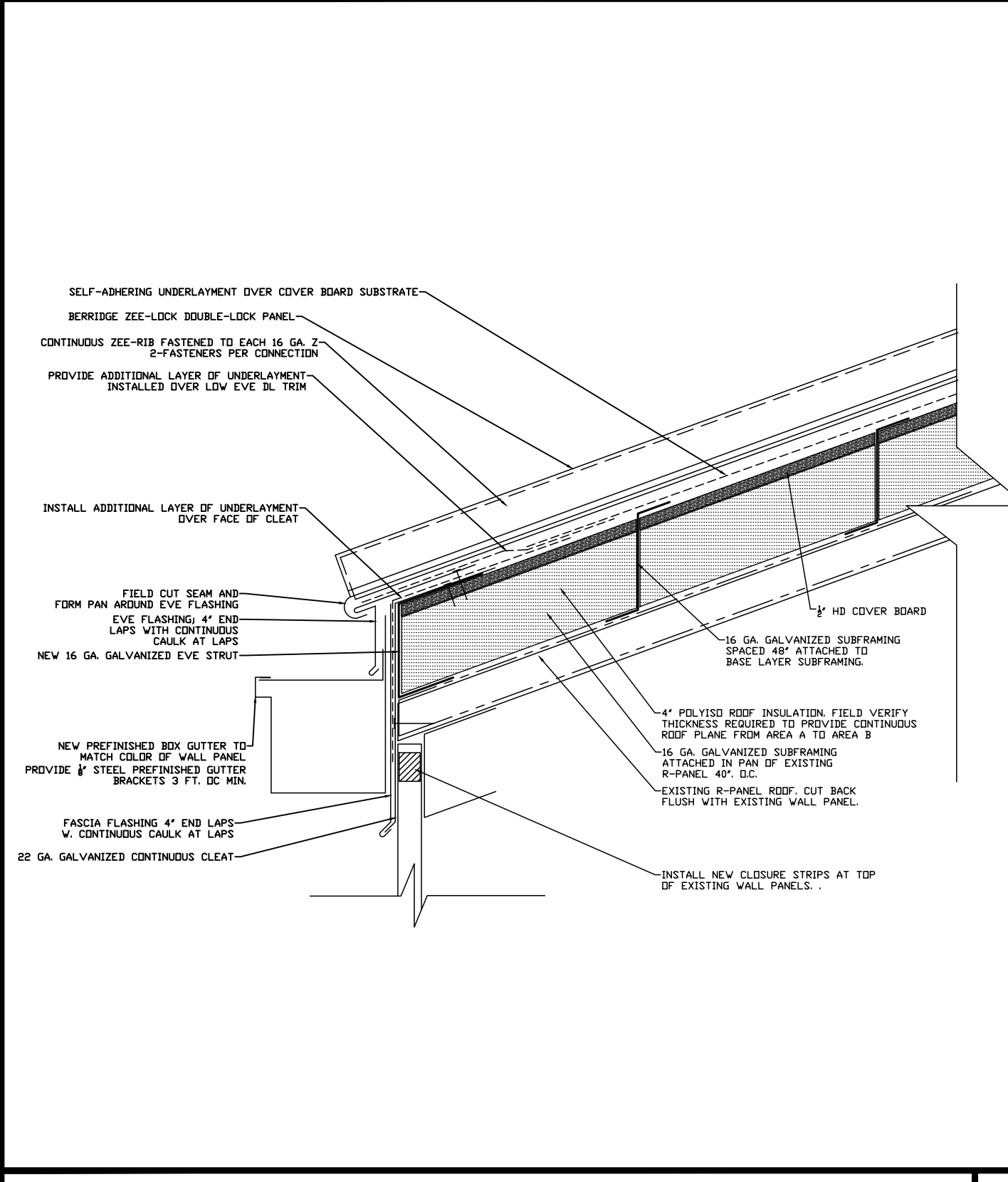
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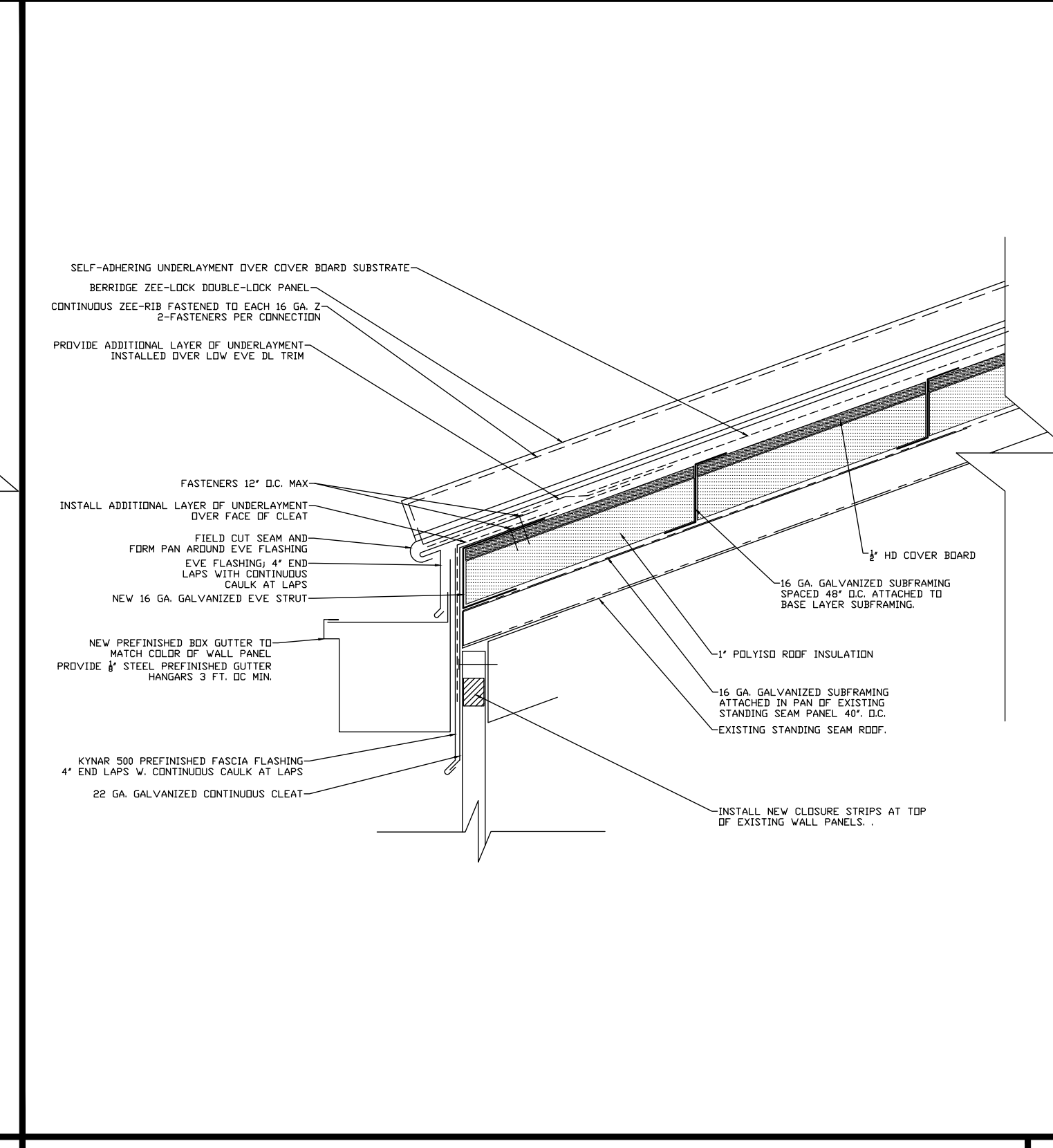
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DETAILS

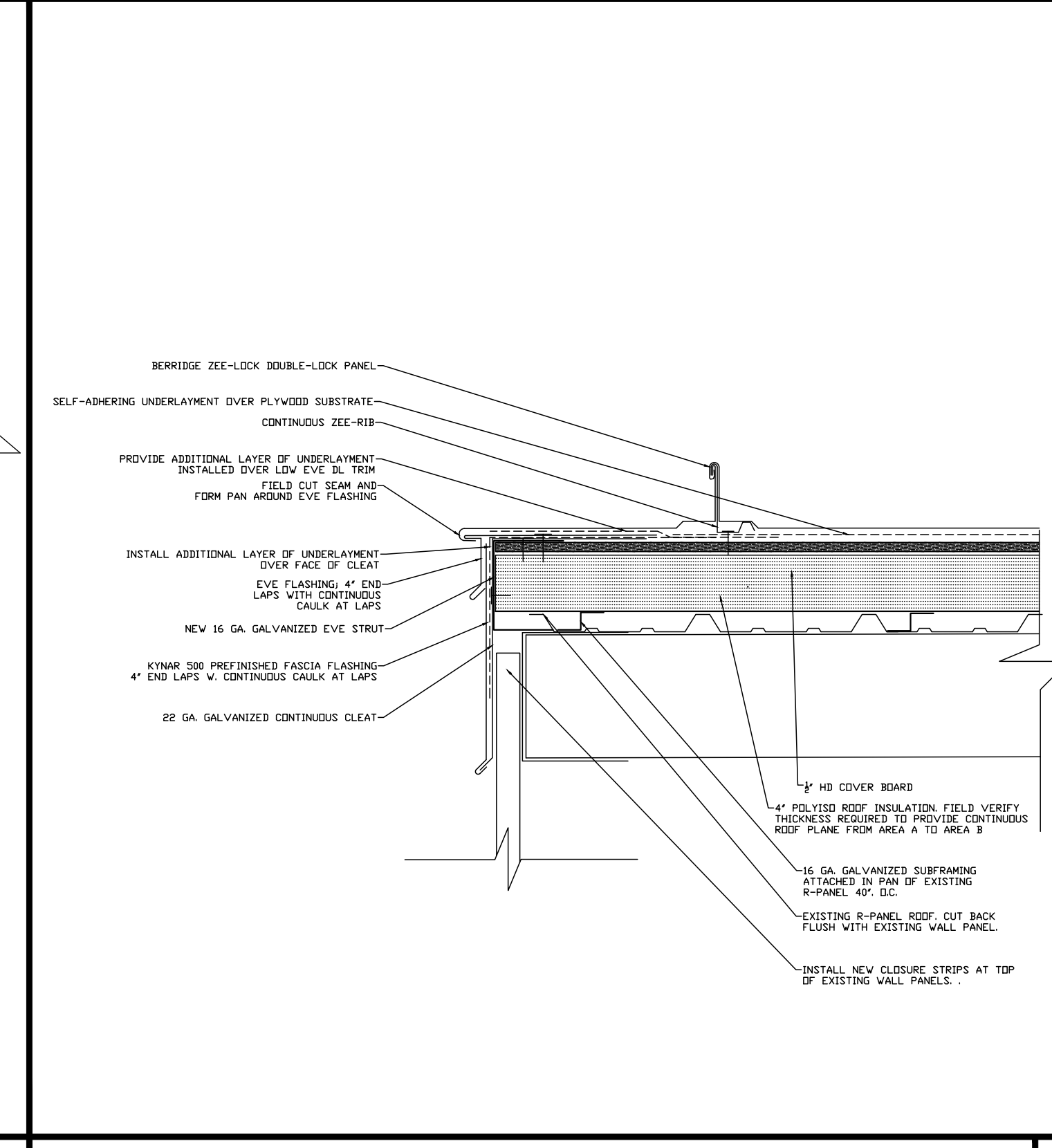
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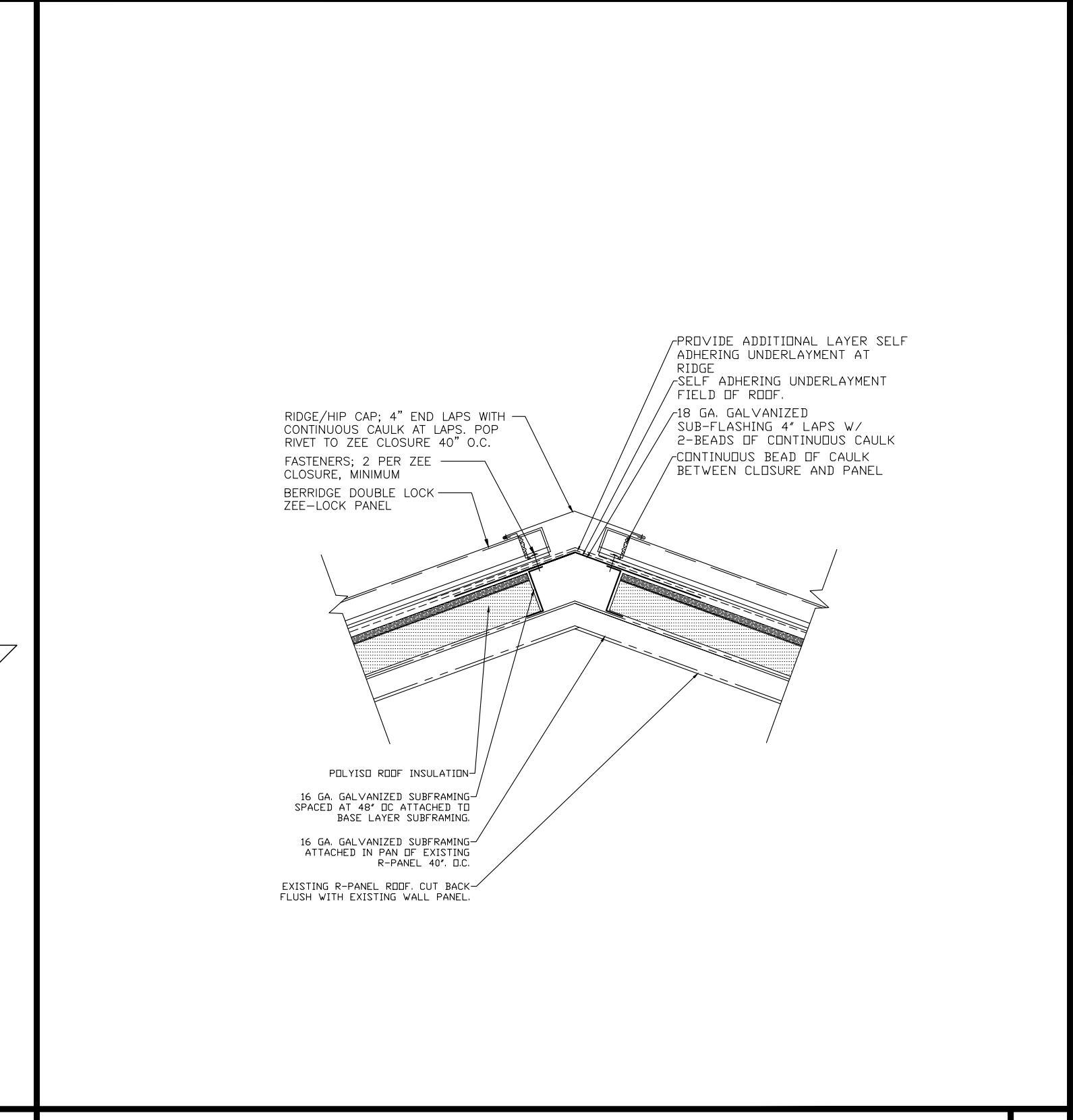
1 ROOF AREA-A LOW EAVE DETAIL



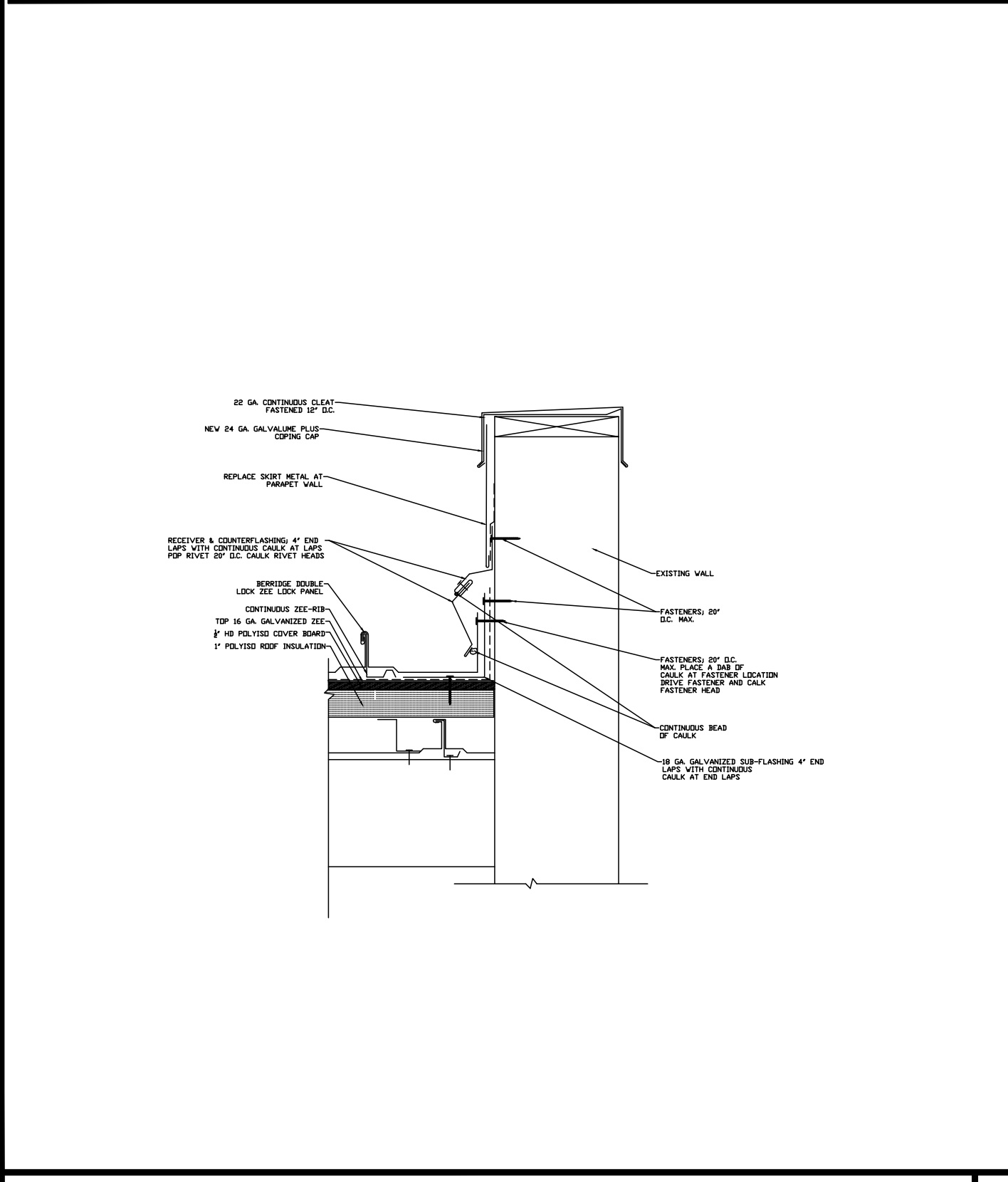
2 ROOF AREA-B LOW EAVE DETAIL



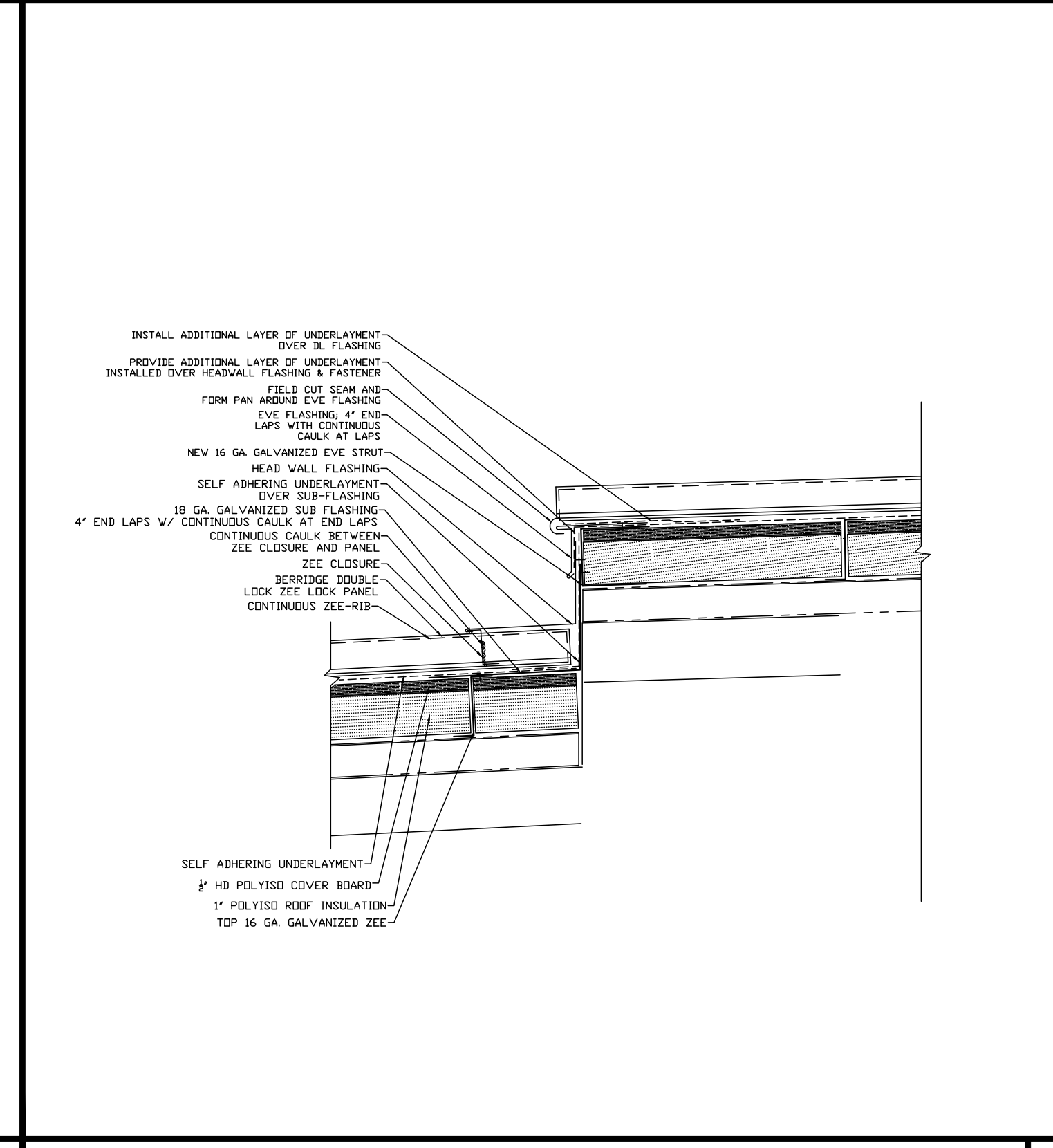
3 ROOF AREA-A RAKE DETAIL



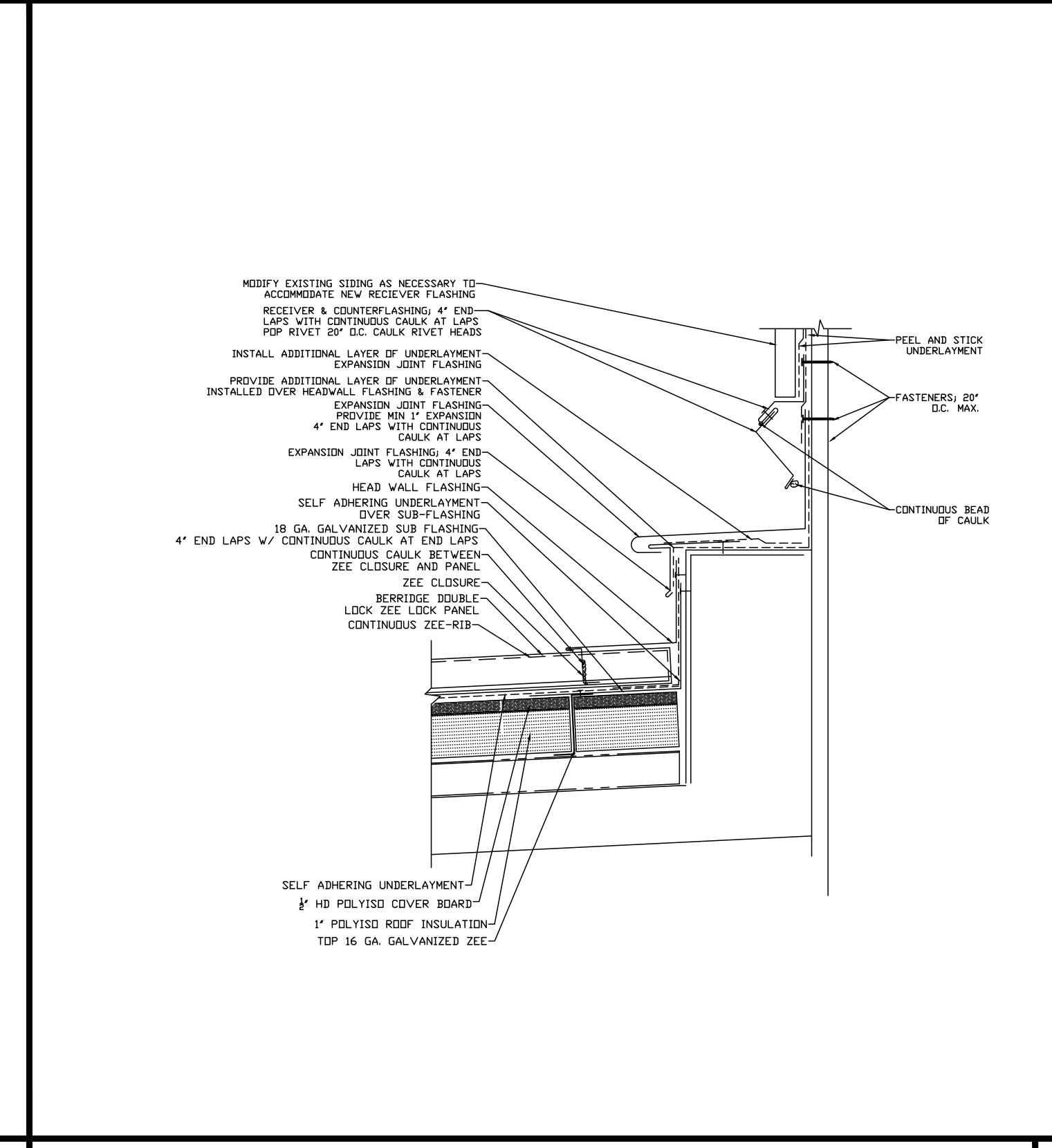
4 ROOF AREA-A RIDGE DETAIL



5 PARAPET WALL DETAIL



6 ROOF TO ROOF TRANSITION DETAIL



7 EXPANSION JOINT DETAIL

N/A

8 N/A

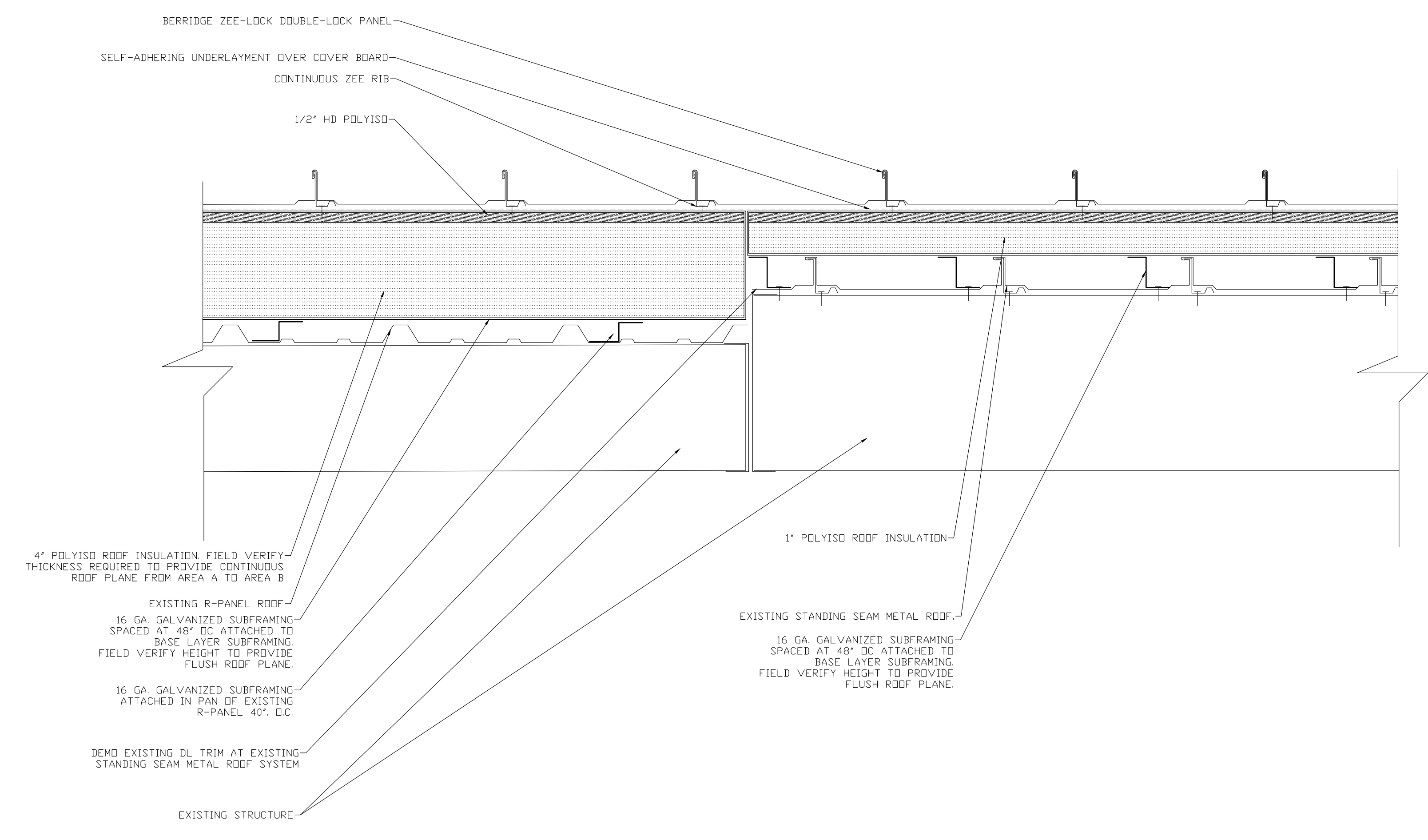
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ROOF A TO ROOF B TRANSITION DETAIL

1