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PURCHASING DEPARTMENT

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TO: All Bidders

FROM: City of Cambridge

DATE: March 12, 2024

RE: File No. 11428 – Amigos Elementary School Roof Replacement - Addendum No. 1

Please see attached.

All other details remain the same.

Elizabeth Unger
Purchasing Agent

Addendum No. 1





6 March 2024

ADDENDUM NO. 1

RE: MSBA Accelerated Repair Program Civitects Project No. 21103.01
Cambridge Amigos Elementary School Roof Replacement

To all Bidders on the Project titled:

Amigos Elementary School Roof Replacement

Reference Contract Documents dated 22 February 2024.

The attention of bidders submitting bids for the above subject project is called to the following addendum to the specifications and drawings. The items set forth herein, whether of omission, addition, substitution, or clarifications are all to be included in and form a part of the bid submitted.

THE NUMBER OF THIS ADDENDUM (1) MUST BE ENTERED IN THE APPROPRIATE SPACE "B" PROVIDED AFTER "THIS BID INCLUDES ADDENDA NUMBERED:" OF THE CONTRACT FORM ENTITLED "FORM FOR GENERAL BID" for **GENERAL BIDDERS**.

THE NUMBER OF THIS ADDENDUM (1) MUST BE ENTERED IN THE APPROPRIATE SPACE "B" PROVIDED AFTER "THIS SUB-BID INCLUDES ADDENDA NUMBERED:" OF THE CONTRACT FORM ENTITLED "FORM FOR FILED SUB-BID" for **SUB- BIDDERS**.

This Addendum No. 1 consists of 6 pages, and the following Attachments amounting to 34 pages, for a total of 40 pages:

ATTACHMENTS

Pre-Bid Sign-in Sheet

Re-issued Specification Sections: 04 01 20 Maintenance of Unit Masonry; 085113 Aluminum Windows

Re-issued Drawings: HM1.1, D1.1, A1.1, A2.1, A3.1, A3.2, A3.3

The Contract Documents are hereby modified as follows:

ITEM NO.	BIDDER CLARIFICATIONS	DESCRIPTION
1.	BIDDER QUESTION	Q: It appears that the Masonry FSB will be providing pricing for Alternate No. 2. however this is not broken out on the bid form. In addition, Alt No. 2 includes work from multiple trades (sheet metal, roofing, masonry). It may be beneficial to clarify scope of work for each trade as it relates to the alternative. Could you separate out the scope into multiple alternatives and provide a line on the bid form specific to each trade.

RESPONSE

R: Prime Contractor (Roofer) is responsible to carry any disposal costs. Resoldier and any new copper shall be included in roofing bid. Note one area of repair is shown as base bid. Copper Reglet under Alternate No. 2 is existing. Raking out and repointing joints with new sealant shall be by mason.

2. **BIDDER QUESTION** Q: Is the mason responsible for cutting the joint for the new reglet? What trade owns the sheet metal at the reglet?
- RESPONSE** R: The Roofer shall supply metal flashing, the mason shall install. See modifications to specifications below.
3. **BIDDER QUESTION** Q: Is the mason removing/disposing of the existing coping cap or roofer?
- RESPONSE** R: Removal/disposal of existing coping cap shall be by Prime Contractor (Roofer) where not shown for reuse.
4. **BIDDER QUESTION** Q: Does the GC own access/staging/hoisting for all subcontractors for scope of work?
- RESPONSE** R: No, filed sub bid trades to be responsible for their own staging. See specification modifications below. As example, plumber shall be responsible for any lifts, ladders, etc to access work.
5. **BIDDER QUESTION** Q: Hvac spec page 450 of 476. The last page of hvac spec is labeled "page 19 of 25" ? Is the numbering incorrect? Or are we missing pages 20 thru 25 of hvac spec?
- RESPONSE**
- Electrical spec page 476 of 476 the last page of electrical spec is labeled page 24 of 25? Is there a page 25 of 25?
- R: The total number of pages were incorrect for both specification sections. No pages are missing.
6. **BIDDER QUESTION** Q: Would the City of Cambridge entertain a substitution request for 60 mil PVC?
- RESPONSE** R: The City of Cambridge has decided not to use PVC membranes due to chemicals involved. 80 mils, nominal TPO with 30 year warranty remains the specified roof system.

BIDDING AND CONTRACT REQUIREMENTS

ITEM NO.	SECTION or DRAWING NO.	PARAGRAPH or DETAIL	DESCRIPTION
7.	01 10 00 Summary of Work	1.11	DELETE the following paragraph in its entirety: 1.11.G.4.
8.	01 50 00 Temporary Facilities and Controls	3.04.H.	DELETE the following paragraph: H. Staging and Scaffolding: Where staging and scaffolding is required, the Contractor shall provide the entire installation. SUBSTITUTE the following paragraph: H. Staging and Scaffolding: Where staging and scaffolding is required, all Filed Subcontractors shall provide the entire installation required for the completion of their work, and the Contractor shall provide the entire installation required for the completion of the work of the Contractor.

9. 04 01 20
Maintenance of
Unit Masonry Incorporate the changes as indicated in blue and underline in reissued specification section 04 01 20 Maintenance of Unit Masonry.
10. 08 51 13
Aluminum
Windows Incorporate the changes as indicated in blue and underline in reissued specification section 08 51 13 Aluminum Windows.
11. 07 62 00 Sheet 1.02.3.a
Metal Flashing
and Trim **DELETE** the following paragraph:
 - a. Formed through wall flashing and counterflashing.**SUBSTITUTE** the following paragraph:
 - a. **Formed counterflashing.**
12. 07 62 00 Sheet 1.02.4
Metal Flashing
and Trim **ADD** the following paragraph and renumber current paragraphs 4 and 5 to be 5 and 6:
 - 4. **Manufactured Product furnished to Masonry Filed Sub Bid for installation in existing masonry:**
 - a. **Reglets.**
13. 07 62 00 Sheet 1.02.B.1.
Metal Flashing
and Trim **ADD** the following paragraph and renumber current paragraphs 1 and 2 to be 2 and 3:
 - 1. Division 04 Section "Maintenance of Unit Masonry."
14. 07 62 00 Sheet 2.06.A.
Metal Flashing
and Trim **ADD** the following paragraph and re-letter current paragraph A to be B:
 - A. Furnish reglets to Masonry Filed Sub Bid for installation in masonry.
15. 07 92 00 Joint 2.02.A, 2.02.B.
Sealants **ADD** the following paragraphs and re-letter current paragraph A and B to be B and C:
 - A. Nonstaining Joint Sealants: No staining of substrates when tested in accordance with ASTM C1248.
 - B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 795.
 - b. Pecora Corporation; 895 NST.
 - c. Tremco Incorporated; Spectrem 2.
16. 07 92 00 Joint 3.06.A.
Sealants **ADD** the following paragraph and re-letter current paragraph A to be B:
 - A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Metal to metal joints, including brake metal to aluminum

windows.

2. Silicone Joint Sealant: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.

17. 08 80 00
Glazing 2.02.A.

DELETE paragraph 2.02.A. in its entirety.

SUBSTITUTE the following paragraph 2.02.A. in its entirety.

- A. Basis-of-Design Products: Subject to compliance with requirements, provide **Guardian Glass; SN68** or comparable product by one of the following:
1. Viracon, Inc.
 2. Vitro Architectural.

18. 08 80 00
Glazing 2.02.B.

DELETE paragraph 2.02.B. in its entirety and re-letter current paragraph C to be B.

19. 08 80 00
Glazing 3.07.A.

DELETE paragraph 3.07.A. in its entirety.

SUBSTITUTE the following paragraphs:

- A. **Glass Type:** Low-E Insulating-Glass Units for fixed glazing locations.
1. Overall Unit Thickness: 1-inch.
 2. Thickness of Indoor and Outdoor Lites: 6.0 mm.
 3. Interspace Content: Argon.
 4. Outdoor Lite: Clear fully tempered float glass.
 5. Indoor Lite: Clear fully tempered glass.
 6. Low-E Coating: Sputtered on second surface.
 7. Visible Light Transmittance: 70 percent minimum.
 8. Winter Nighttime U-Factor: 0.24 maximum.
 9. Solar Heat Gain Coefficient: 0.38 maximum.
 10. Outdoor Visible Reflectance: 11 percent maximum.
 11. Provide safety glazing labeling.
- B. **Glass Type:** Triple glazed, Low-E Insulating-Glass Units for use in aluminum window.
1. Overall Unit Thickness: 1-3/4 inches maximum.
 2. Thickness of Each Lite: 6.0 mm.
 3. Interspace Content: Argon.
 4. Outdoor and Interior Lites: Clear fully tempered float glass.
 5. Low-E Coating: Sputtered on second surface.
 6. Low-E Coating: Sputtered on fourth surface.
 7. Visible Light Transmittance: 56 percent minimum.
 8. Winter Nighttime U-Factor: 0.12.
 9. Solar Heat Gain Coefficient: 0.31 maximum.
 10. Outdoor Visible Reflectance: 12 percent maximum.
 11. Provide safety glazing labeling.

20.	G0.1	Building Code Analysis, 2.0	ADD the following: 2.4 Wind Borne Debris Region: No
21.	HM1.1	Hazardous Materials Abatement Roof Plan	Incorporate the clarifications and/or revisions as indicated on reissued sheet HM1.1.
22.	D1.1	Demolition Roof Plan	Incorporate the clarifications and/or revisions as indicated on reissued sheet D1.1.
23.	D1.1	Key Notes 7A, 11	Incorporate the clarifications and/or revisions as indicated on reissued sheet D1.1.
24.	A1.1	Renovation Roof Plan	Incorporate the clarifications and/or revisions as indicated on reissued sheet A1.1.
25.	A1.1	Key Notes 7, 11, A and B	Incorporate the clarifications and/or revisions as indicated on reissued sheet A1.1.
26.	A2.1	Window Type A	Incorporate the clarifications and/or revisions as indicated on reissued sheet A2.1.
27.	A2.1	Detail 6: Renovation Section	Incorporate the clarifications and/or revisions as indicated on reissued sheet A2.1.
28.	A2.1	Detail 7: Window Jamb at Transom	DELETE Detail 7 in its entirety SUBSTITUTE Detail 7 Window Jamb at Transom as shown on reissued sheet A3.2.
29.	A2.1	Detail 8: Window Jamb at Casement	DELETE Detail 8 in its entirety SUBSTITUTE Detail 8 Window Jamb at Casement as shown on reissued sheet A3.2
30.	A2.1	Detail 9: Window Head and Jamb	DELETE Detail 9 in its entirety SUBSTITUTE Detail 9 Window Head and Sill as shown on reissued sheet A3.2
31.	A3.1	Detail 1, Typical Roof System: Concrete Slab at Roof A & B; Detail 2, Typical Roof System: Terra Cotta Planks at Roof B; Detail 4, Typical Roof System: Metal Deck Infill; Detail 7, Enlarged Detail: Roof Termination at Counterflashing; Detail 8, Enlarged Detail: Masonry Reglet; Detail 10, Roof Edge at Roof A; Enlarged Detail	Incorporate the clarifications and/or revisions as indicated on reissued sheet A3.1.

		11, Roof Edge at Roof A; Enlarged Detail 12, Emergency Scupper at Roof A	
32.	A3.2	Detail 2, Roof Edge at Roof B; Enlarged Detail 4, Roof Edge at Roof B;	Incorporate the clarifications and/or revisions as indicated on reissued sheet A3.2.
33.	A3.2	Detail 8: Roof Edge at Roof C Rising Wall	DELETE Detail 8 in its entirety SUBSTITUTE Detail 8 Roof Edge at Window Above Roof C as shown on reissued sheet A3.2.
34.	A3.2	Detail 11: Roof Edge at Roof C Rising Wall	ADD Detail 11 Roof Edge at Roof C Rising Wall as shown on reissued sheet A3.2.
35.	A3.3	Typical Detail 1: Vent Stack; Typical Detail 2: Roof Drain; Typical Detail 4: Penetration with Boot; Typical Detail 5: Penetration with Liquid Flashing; Detail 7: Roof Hatch; Typical Detail 8: Mechanical Curb; Typical Detail 9: Gooseneck; Detail 11: Roof Hatch	Incorporate the clarifications and/or revisions as indicated on reissued sheet A3.3.

All other portions of the Contract Documents remain **unchanged**.

The Filed Sub-Bid and General Bid due dates remain unchanged.

Please be reminded to acknowledge this Addendum on the bid forms.

END OF ADDENDUM NO. 1

Amigos School

Cambridge, MA

Pre-Bid Site Visit

Roof Replacement

March 5, 2024

Print name	Company	Email Address/Contact Info
1. <u>Frank Geary</u>	<u>CPSD</u>	<u>fgeary@cpsd.us</u>
2. <u>Paul Gibson</u>	<u>Gibson Roofs</u>	<u>paul@gibsonroofs.com</u>
3. <u>Steven Medeiros</u>	<u>Civitects, PC</u>	<u>smedeiros@civitects.com</u>
4. <u>Jon Labbe</u>	<u>Ace Restoration</u>	<u>slabbe.ace@gmail.com</u>
5. <u>Angel Lopez</u>	<u>Ultimate Abatement</u>	<u>norwichlab@outlook.com</u>
6. <u>Manuel Aquino</u>	<u>Triumph Roofing</u>	<u>Manny@TriumphRoofinginc.com</u>
7. <u>Paw Kalous</u>	<u>Hill-Liro</u>	<u>kalousp@hill-liro.com</u>
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____

**AMIGOS ELEMENTARY SCHOOL ROOF REPLACEMENT
CAMBRIDGE, MA
MSBA ACCELERATED REPAIR PROGRAM**

SECTION 04 01 20 – MAINTENANCE OF UNIT MASONRY

PART 1 - GENERAL

1.01 GENERAL PROVISIONS – FILED SUB-BID REQUIRED AS PART OF 04 00 01 MASONRY FILED SUB BID

- A. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law Chapter 149, Sections 44A to 44J inclusive; and applicable Section of the MGL, Public Contract Law Chapter 30 as amended.

1.02 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.03 SUMMARY

- A. Section includes maintenance of unit masonry consisting of brick clay masonry restoration and cleaning as follows:
1. Repointing joints with sealant.
 2. Cleaning exposed unit masonry surfaces.
 3. Miscellaneous masonry accessories.
 4. All hoisting and scaffolding for completion of masonry work.
 5. Masonry waste disposal.
- B. Related Sections:
1. Division 01 Section “Alternates” for bidding requirements of this Section.
 2. [Division 01 Section "Cutting and Patching."](#)
 3. [Division 02 Section "Selective Demolition."](#)
 4. [Division 04 Section "Unit Masonry."](#)
 5. Division 07 Section “Sheet Metal Flashing and Trim.”
 6. Division 07 Section “Joint Sealants” for general requirements related to joint sealants specified in this Section.

1.04 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."
1. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.

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1.05 DEFINITIONS

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- ~~B. Medium Pressure Spray: 400 to 800 psi; 4 to 6 gpm.~~
- C. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.

1.06 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths (f_m) at 28 days.
- B. Determine net-area compressive strength (f_m) of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

1.07 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Samples for Initial Selection: For the following:
 - 1. [Face brick, in the form of straps of five or more bricks.](#)
 - 2. [Colored mortar.](#)
 - 3. Sealant Materials: See Division 07 Section "Joint Sealants."
 - 4. Include similar Samples of accessories involving color selection.
- C. Samples for Verification: For the following:
 - 1. [Face brick, in the form of straps of five or more bricks.](#)
 - 2. [Colored-mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.](#)
 - 3. Sealant Materials: See Division 07 Section "Joint Sealants."
 - 4. Accessories: Each type of anchor, accessory, and miscellaneous support.
 - 5. Accessories embedded in masonry.
- D. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
 - 1. Joint reinforcement.
- E. Quality-Control Program.
- F. Restoration Program.

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- G. Cleaning Program.

1.08 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.
- C. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
 - 1. Include methods for keeping pointing mortar damp during curing period.
 - 2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- D. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Architect. Perform additional paint and stain removal, general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.
- E. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
 - 1. Repointing: Rake out joints in 2 separate areas, each approximately 36 inches high by 48 inches wide for each type of repointing required and repoint one of the areas.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to masonry restoration and cleaning including, but not limited to, the following:
 - a. Construction schedule. Verify availability of materials, Restoration Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application, sequencing, tolerances, and required clearances.

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1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
- B. Repoint mortar joints only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Masonry restoration is not permitted when the air temperature falls below 40 deg F.
 - 1. [New masonry work to be actively maintained at or above 40 deg F for a minimum of 72 hours.](#)
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.
- E. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least 7 days after completion of cleaning.

1.11 SEQUENCING AND SCHEDULING

- A. Order replacement materials at earliest possible date to avoid delaying completion of the Work.
- B. Order sand for pointing mortar immediately after approval of mockups. Take delivery of and store at Project site a sufficient quantity to complete Project.
- C. Perform masonry restoration work in the following sequence:
 - 1. Rake out mortar from joints to be repointed.
 - 2. Point mortar joints.
 - 3. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
 - 4. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
 - 5. Clean masonry surfaces.

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PART 2 - PRODUCTS

2.01 FACE BRICK

- A. Face Brick: ASTM C 216, Grade SW, Type FBS:
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi.
 2. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested per ASTM C 67.
 3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
 4. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.
 5. Application: Use where brick is exposed, unless otherwise indicated.
 6. Where shown to "match existing," provide face brick matching color range, texture, and size of existing adjacent brickwork.

2.02 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.
- D. Masonry Cement: The use of masonry cement is not permitted.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.
- F. Colored Cement Product: Packaged blend made from portland cement and lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Colored Portland Cement-Lime Mix:
 - 1) Flamingo Brixment; Portland & Lime Blend.
 - 2) Lafarge North America Inc.; Eaglebond.
 - 3) Lehigh Cement Company; Lehigh Custom Color Portland/Lime Cement.
 2. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.

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3. Pigments shall not exceed 10 percent of portland cement by weight.
4. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.

2.03 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
1. Do not use calcium chloride in mortar.
 2. Limit cementitious materials in mortar to portland cement and lime.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar Mixes: At Contractor's option, provide job-mixed mortar or preblended dry mortar mix. Provide colors required for each application indicated.
- C. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
1. Basis of Design Product: Subject to compliance with requirements, provide the following, or equal:
 - a. Spec Mix; Portland Lime & Sand and Portland Lime and Sand/Color.
- D. Pigmented Mortar: Use colored cement product.
1. Application: Use pigmented mortar for exposed mortar joints with the following units:
 - a. Face brick.
- E. Mortar Types for Unit Masonry: Comply with ASTM C 270, Proportion Specification.
1. For exterior masonry veneer, use Type N.

2.04 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing, General: Furnished by Division 07 Section "Sheet Metal Flashing and Trim" for installation by this Section.
- B. Metal Flashing: Provide metal flashing as follows:
1. Fabricate continuous flashings in sections in length required to suit length of masonry to be replaced at one time. Provide splice plates at joints of formed, smooth metal flashing.
 2. Fabricate wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.

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3. Fabricate wall flashing with drip edge. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
- D. Termination Bars: Stainless-steel sheet 1/8 inch by 1-1/2 inches with a 3/8 inch sealant flange at top.

2.05 CLEANING MATERIALS

- A. Water: Potable.
- B. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups of tetrasodium polyphosphate, 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.
- C. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Dominion Restoration Products, Inc.; Bio-Cleanse.
 - b. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
 - c. PROSOCO; Enviro Klean 2010 All Surface Cleaner.
- D. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.
 1. Products: Subject to compliance with requirements, provide the following, or equal:
 - a. Diedrich Technologies Inc.; Diedrich 202V Vana-Stop New Masonry.

2.06 ACCESSORY MATERIALS

- A. Masking Tape: Nonstaining, nonabsorbent material, compatible with pointing mortar, joint primers, sealants, and surfaces adjacent to joints; that will easily come off entirely, including adhesive.
- B. Miscellaneous Products: Select materials and methods of use based on the following, subject to approval of a mockup:
 1. Previous effectiveness in performing the work involved.
 2. Little possibility of damaging exposed surfaces.
 3. Consistency of each application.
 4. Uniformity of the resulting overall appearance.
 5. Do not use products or tools that could do the following:

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- a. Remove, alter, or in any way harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in contract.
- b. Leave a residue on surfaces.

2.07 CHEMICAL CLEANING SOLUTIONS

- A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.01 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
 1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.
- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
 2. Keep wall wet below area being cleaned to prevent streaking from runoff.
 3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
 4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
 5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.02 CLEANING MASONRY, GENERAL

- A. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Use only those cleaning methods indicated for each masonry material and location.

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1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
 2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
 - a. Equip units with pressure gages.
 3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
 4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
 - ~~5. For high pressure water spray application, use fan shaped spray tip that disperses water at an angle of at least 40 degrees.~~
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush or spray application. Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
- E. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- F. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.03 PRELIMINARY CLEANING

- A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, caulking, asphalt, and tar.
1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
 2. Remove paint and caulking with alkaline paint remover.
 3. Remove asphalt and tar with solvent-type paint remover.
 - a. Apply paint remover only to asphalt and tar by brush without prewetting.
 - b. Allow paint remover to remain on surface for 10 to 30 minutes.
 - c. Repeat application if needed.

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3.04 CLEANING BRICKWORK

- A. Cold-Water Wash: Use cold water applied by medium-pressure spray.
- B. Detergent Cleaning:
 - 1. Wet masonry with cold water applied by low-pressure spray.
 - 2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
 - 3. Rinse with cold water applied by low-pressure spray to remove detergent solution and soil.
 - 4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
- C. Mold, Mildew, and Algae Removal:
 - 1. Wet masonry with cold water applied by low-pressure spray.
 - 2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
 - 3. Scrub masonry with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that masonry surface remains wet.
 - 4. Rinse with cold water applied by low-pressure spray to remove mold, mildew, and algae remover and soil.
 - 5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
- D. Nonacidic Liquid Chemical Cleaning:
 - 1. Wet masonry with cold water applied by low-pressure spray.
 - 2. Apply cleaner to masonry by brush or low-pressure spray. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.
 - 3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
 - 4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

3.05 REPOINTING MASONRY

- A. Rake out and repoint joints to the following extent:
 - 1. All joints in areas indicated.
 - 2. Deteriorated joints, under Unit Price, as directed by the Architect in the field.

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- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved mockup:
 - 1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1 inch or not less than that required to expose sound, unweathered mortar, [not greater than 1-1/2 inches](#).
 - a. [Repoint in lifts of 1/4 inch maximum, allowed to dry to thumb-print hard before installation of next lift.](#)
 - b. Tool joints to match existing mortar.
 - 2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - 3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.
 - a. Cut out mortar bed joints using angle grinders with diamond-impregnated metal blades without damage to bricks. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
 - 1) [The use of oscillating multi-tools is permitted to remove mortar at vertical or horizontal joints.](#)
 - b. Cut out ends of vertical mortar joints by hand with cape chisels and resilient mallet.
 - 4. Remove joint sealant residue wherever encountered during repointing operations.
- D. Pointing with Sealant: Comply with Division 07 Section "Joint Sealants." and as follows:
 - 1. After raking out, keep joints dry and free of mortar and debris.
 - 2. Clean and prepare joint surfaces. Prime joint surfaces unless sealant manufacturer recommends against priming. Do not allow primer to spill or migrate onto adjoining surfaces.
 - 3. Fill sealant joints with specified joint sealant.
 - a. Install cylindrical sealant backing beneath the sealant. Where space is insufficient for cylindrical sealant backing, install bond-breaker tape.
 - b. Install sealant using only proven installation techniques that ensure that sealant is deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding masonry and matching the contour of adjoining mortar joints.
 - c. Install sealant as recommended in writing by sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:

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- 1) [Fill joints to a depth equal to half of joint width, but not more than 3/87 inch deep or less than 3/16 inch deep in accordance with ASTM C 1193, except as modified by manufacturer.](#)
 - d. Tool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant from surfaces adjacent to joint.
 - e. Sanded Joints: Immediately after first tooling, apply ground-mortar aggregate to sealant, gently pushing aggregate into the surface of sealant. Lightly retool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant and aggregate from surfaces adjacent to joint.
 - 1) [Comply with sealant manufacturer recommendations.](#)
 - f. [Mask adjacent surfaces prior to sealant installation.](#) Do not allow sealant to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces, particularly rough textures. Remove excess and spillage of sealant promptly as the work progresses. Clean adjoining surfaces by the means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.
- E. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.
- F. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

3.06 FLASHING

- A. [General: Install flashing in masonry where indicated on Drawings.](#)
- B. [Reglets: Comply with Division 07 Section "Sheet Metal Flashing and Trim."](#)
- C. [Install flashing as follows, unless otherwise indicated:](#)
 1. [Install termination bar at top edge of flashing and apply manufacturer's rubberized asphalt based termination mastic continuously at the top edge of the termination bar.](#)
- D. [Install reglets for flashing and other related construction where they are shown to be built into masonry.](#)

3.07 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.
 1. Do not use metal scrapers or brushes.

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- B. Acidic Chemical Cleaning:
 - 1. Wet masonry with cold water applied by low-pressure spray.
 - 2. Apply cleaner to masonry by brush or low-pressure spray. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - 3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
 - 4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use a steam cleaning.
- C. Wash adjacent woodwork and other nonmasonry surfaces. Use detergent and soft brushes or cloths.
- D. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- E. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

3.08 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to the Massachusetts State Building Code.
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - ~~2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.~~
- C. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
 - 1. Payment for these services will be made by Owner.
 - 2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.
- D. Mortar Test (Property Specification): For each mix provided, in accordance with ASTM C780. Test mortar for mortar air content and compressive strength.
- E. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

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- F. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- G. Notify inspectors, Architect, and Owner's Representative in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors, Owner's Representative, and Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.09 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
 - 1. Disposal: Separate, salvage, recycle and dispose of materials in accordance with the Commonwealth of Massachusetts "Waste Ban" 310 CMR 19.017.

END OF SECTION

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SECTION 08 51 13 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.01A, entitled "Related Documents."

1.02 SUMMARY

- A. Section includes:
 - 1. Operable aluminum-framed window for exterior location.
- B. Related Sections:
 - 1. Division 01 Section "Alternates" for bidding requirements of this Section.
 - 2. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking and shims.
 - 3. Division 07 Section "Sheet Metal Flashing and Trim" for brake metal trim flashing.
 - 4. Division 07 Section "Joint Sealants" for installation of joint sealants installed with aluminum-framed systems and for sealants to the extent not specified in this Section.
 - 5. Division 08 Section "Glazing" for glazing requirements for aluminum windows.

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review and discuss the finishing of aluminum windows that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
 - 3. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
 - 4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
 - 5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

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1.04 DEFINITIONS

- A. Performance class designations according to AAMA/WDMA 101/I.S.2/NAFS:
 - 1. AW: Architectural.
- B. Performance grade number according to AAMA/WDMA 101/I.S.2/NAFS:
 - 1. Design pressure number in pounds force per square foot used to determine the structural test pressure and water test pressure.
- C. Structural Test Pressure: For uniform load structural test, is equivalent to 150 percent of the design pressure.
- D. Minimum Test Size: Smallest size permitted for performance class (gateway test size). Products must be tested at minimum test size or at a size larger than minimum test size to comply with requirements for performance class.

1.05 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified, and that are of minimum test size indicated below:
 - 1. Size required by AAMA/WDMA 101/I.S.2/NAFS for gateway performance, not less than 4'-0" x 6'-0".
- B. Delegated Design: Design aluminum-framed systems, including comprehensive engineering analysis by a qualified professional engineer licensed in the Commonwealth of Massachusetts, using performance requirements and design criteria indicated.
- C. Structural Performance: Provide aluminum windows capable of withstanding the effects of the following loads, based on testing units representative of those indicated for Project that pass AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Structural Test:
 - 1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure," based on mean roof heights above grade indicated on Drawings.
 - a. Basic Wind Speed: 128 mph.
 - b. Risk Category: III.
 - c. Exposure Category: B.
 - d. [Zone 4: -27.0 lbf/sq. ft.](#)
 - e. [Zone 5: -49.5 lbf/sq. ft.](#)
 - 2. Deflection: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less, at design pressure based on testing performed according to AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Deflection Test or structural computations.

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- D. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F material surfaces.

1.06 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions for each type of aluminum window indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, installation details, and the following:
1. Mullion details, including reinforcement and stiffeners.
 2. Joinery details.
 3. Expansion provisions.
 4. Flashing and drainage details.
 5. Weather-stripping details.
 6. Thermal-break details.
 7. Glazing details.
 8. Window cleaning provisions.
 9. For installed products indicated to comply with design loads, include structural analysis data prepared by or under the supervision of a qualified professional engineer licensed in the Commonwealth of Massachusetts detailing fabrication and assembly of aluminum windows and used to determine the following:
 - a. Structural test pressures and design pressures from wind loads indicated, and the Massachusetts State Building Code.
 - b. Deflection limitations of glass framing systems.
 10. Provide verification on Shop Drawings that manufacturer has reviewed and approved submitted details.
 11. Confirm that performance ratings and warranties apply with this installation.
- C. Delegated-Design Submittal: For aluminum windows indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Samples for Verification: For aluminum windows and components required, prepared on Samples of size indicated below.
1. Main Framing Member: 12-inch- long, full-size sections of extrusions with factory-applied color finish.
 2. Hardware: Full-size units with factory-applied finishes.
 3. Weather Stripping: 12-inch- long sections.
- E. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

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- F. Qualification Data: For Installer, professional engineer and testing agency.
- G. Field quality-control test reports.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency for each type, class, grade, and size of aluminum window. Test results based on use of downsized test units will not be accepted.
- I. Maintenance Data: For operable window sash, operating hardware, weather stripping, and finishes to include in maintenance manuals.
- J. Warranty: Special warranty specified in this Section.

1.07 QUALITY ASSURANCE

- A. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.
 - 1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 - 2. Engineering Responsibility: Preparation of data for aluminum windows, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.
- C. Source Limitations for Aluminum-Framed Systems: Obtain aluminum windows from a single source from a single manufacturer.
- D. Product Options: Information on Drawings and in Specifications establishes requirements for aluminum windows' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Fenestration Standard: Comply with AAMA/WDMA 101/I.S.2/NAFS, "North American Fenestration Standard Voluntary Performance Specification for Windows, Skylights and Glass Doors," for definitions and minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.

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- F. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.
- G. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build in-place mockup of typical wall area as directed by Architect.
 - a. Include one full size window unit of each operating type with typical flashing installed at head, jamb and sill; insulation, and interior trim.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 PROJECT CONDITIONS

- A. Field Measurements: Verify aluminum window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.09 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
 - c. Faulty operation of movable sash and hardware.
 - d. Deterioration of metals, other materials, and metal finishes beyond normal weathering.
 - e. Failure of insulating glass.
 - f. Failure due to air leakage and water infiltration.
 - 2. Warranty Period:
 - a. Window System: 10 years from date of Substantial Completion.
 - b. Glazing: 10 years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which fluoropolymer finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

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- C. Special Project Warranty: Submit Installer's warranty, signed by Installer, covering Work of this Section, including all installation components of aluminum windows for the following warranty period:
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide **EFCO Corporation; XTherm Series 325X** or comparable product by one of the following:
 - 1. Kawneer; OptiQ AA 4325 Series.
 - 2. Oldcastle Building Envelope; Signature Series 3375.
 - 3. Wausau Window and Wall Systems; INvent 3250i.

2.02 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi ultimate tensile strength, not less than 16,000-psi minimum yield strength, and not less than 0.125-inch thickness at any location for the main frame and sash members.
- B. Fasteners: Aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
 - 1. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125 inch thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, splined grommet nuts.
 - 2. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- E. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action and for complete concealment when aluminum window is closed.

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1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/WDMA 101/I.S.2/NAFS.
- F. Replaceable Weather Seals: Comply with AAMA 701/702.
- G. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

2.03 ALUMINUM WINDOWS

- A. Operation:
 1. Project-out casement / fixed.
- B. AAMA/WDMA Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA 101/I.S.2/NAFS unless more stringent performance requirements are indicated.
 1. Basis of Design Performance Class and Grade:
 - a. Projected: AW-PG120-AP.
 2. Minimum Performance Class and Grade: AW-PG80-AP.
- C. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of not less than 68 for frame and 50 for glass.
- D. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F for fixed and 0.32 Btu/sq. ft. x h x deg F for operable units.
 1. Refer to Division 08 Section "Glazing" for insulated glass units. Provide basis of design insulated glass units indicated or comparable units to provide fixed and operable aluminum windows with maximum U-values indicated to comply with 2021 IECC as amended.
- E. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.33 for operable units at all orientations and 0.38 for fixed units.
- F. Air Infiltration: Maximum rate not more than indicated when tested according to ASTM E 283.
 1. Maximum Rate: 0.10 cfm/sq. ft. of area at an inward test pressure of 6.24 lbf/sq. ft. for fixed and projected units.
- G. Water Resistance: No water leakage when tested in accordance with ASTM E 331/ASTM E 547.
 1. Test Pressure: 20 percent of positive design pressure, but not less than 12 lbf/sq. ft. in accordance with AAMA 101, Tables 7.1 and 7.2.

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2.04 GLAZING

- A. Glass and Glazing Materials: Comply with Division 08 Section "Glazing" for insulated glass units and glazing requirements applicable to factory glazed aluminum window units.
- B. Glazing Materials:
 - 1. Setting Blocks/Edge Blocking: Provide in sizes and locations recommended by GANA Glazing Manual. Setting blocks used in conjunction with soft-coat low-e glass shall be silicone.
 - 2. Back-bedding tapes, expanded cellular glazing tapes, toe beads, heel beads and cap beads shall meet the requirements of applicable specifications cited in AAMA 800.
 - 3. Glazing gaskets shall be non-shrinking, weather-resistant, and compatible with all materials in contact.
 - 4. Spacer tape in continuous contact with structural silicone shall be tested for compatibility and approved by the sealant manufacturer for the intended application.
 - 5. Gaskets in continuous contact with structural silicone shall be extruded silicone or compatible material.

2.05 HARDWARE

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows, and sized to accommodate sash or ventilator weight and dimensions. Do not use aluminum in frictional contact with other metals. Where exposed, provide solid bronze.
- B. Project-Out Hardware:
 - 1. Operating hardware shall be 4-bar stainless steel arms or equal.
 - 2. Weatherstrip: Santoprene.
- C. Locks and Latches: Designed to allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only.
 - 1. Provide custodial access lock "AC Lock", two locks at the locking jamb, at approximately ¼ points.
 - a. Finish: As selected by Architect from manufacturer's full range.
- D. Sill Cap/Track: Extruded-aluminum track with natural anodized finish, of thickness, dimensions, and profile indicated; designed to comply with performance requirements indicated and to drain to the exterior.

2.06 ACCESSORIES

- A. Joint Sealants: Comply with Division 07 Section "Joint Sealants."

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2.07 FABRICATION

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
 - 1. Construction: Thermally broken.
 - 2. Depth of Frame and Vent: 3-1/4", not greater than 3-1/2".
- B. Framing and Sash Members: Manufacturer's standard extruded-aluminum framing members, wall thickness of not less than 0.065", and reinforced as required to support imposed loads.
 - 1. Frame Components: Mechanically fastened.
 - 2. Operable Window:
 - a. All vent extrusions shall be tubular.
 - b. Each corner shall be mitered, reinforced with an extruded corner key, hydraulically crimped, and "cold welded" with epoxy adhesive.
 - c. Each vent shall utilize two rows of weather stripping installed in specifically designed dovetail grooves in the extrusion. The exterior gasket will be omitted at the vent bottom rail for project-out vents and at the vent top rail for project-in vents, allowing air to pressure equalize the void between the vents and frame.
 - d. The vent shall present a flush appearance with the exterior and interior of the main frame when in the closed position.
- C. Fabricate aluminum windows that are reglazable without dismantling sash or ventilator framing.
- D. Thermally Improved Construction: Fabricate aluminum windows with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.
 - 1. Provide thermal-break construction that has been in use for not less than three years and has been tested to demonstrate resistance to thermal conductance and condensation and to show adequate strength and security of glass retention.
 - a. Thermal barrier: Thermal struts, consisting of glass reinforced polyamide nylon, mechanically crimped in raceways extruded in the exterior and interior extrusions.
 - b. Poured and debridged urethane thermal barriers are not permitted.
 - 2. Provide thermal barriers tested according to AAMA 505; determine the allowable design shear flow per the appendix in AAMA 505.
 - 3. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.
- E. Window Glazing Pocket Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.
- F. Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.

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CAMBRIDGE, MA
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- G. Subframes: Provide subframes with anchors for window units as shown, of profile and dimensions indicated but not less than 0.062-inch- thick extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units. Provide subframes capable of withstanding design loads of window units.
- H. Factory-Glazed Fabrication: Glaze aluminum windows in the factory. Comply with requirements in Division 08 Section "Glazing" and with AAMA/WDMA 101/I.S.2/NAFS.
- I. Glazing Stops: Provide snap-on glazing stops coordinated with Division 08 Section "Glazing" and glazing system indicated. Provide glazing stops to match sash and ventilator frames.

2.08 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. 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 the same piece are not acceptable. 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.

2.09 ALUMINUM FINISHES

- A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate, and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight window installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.

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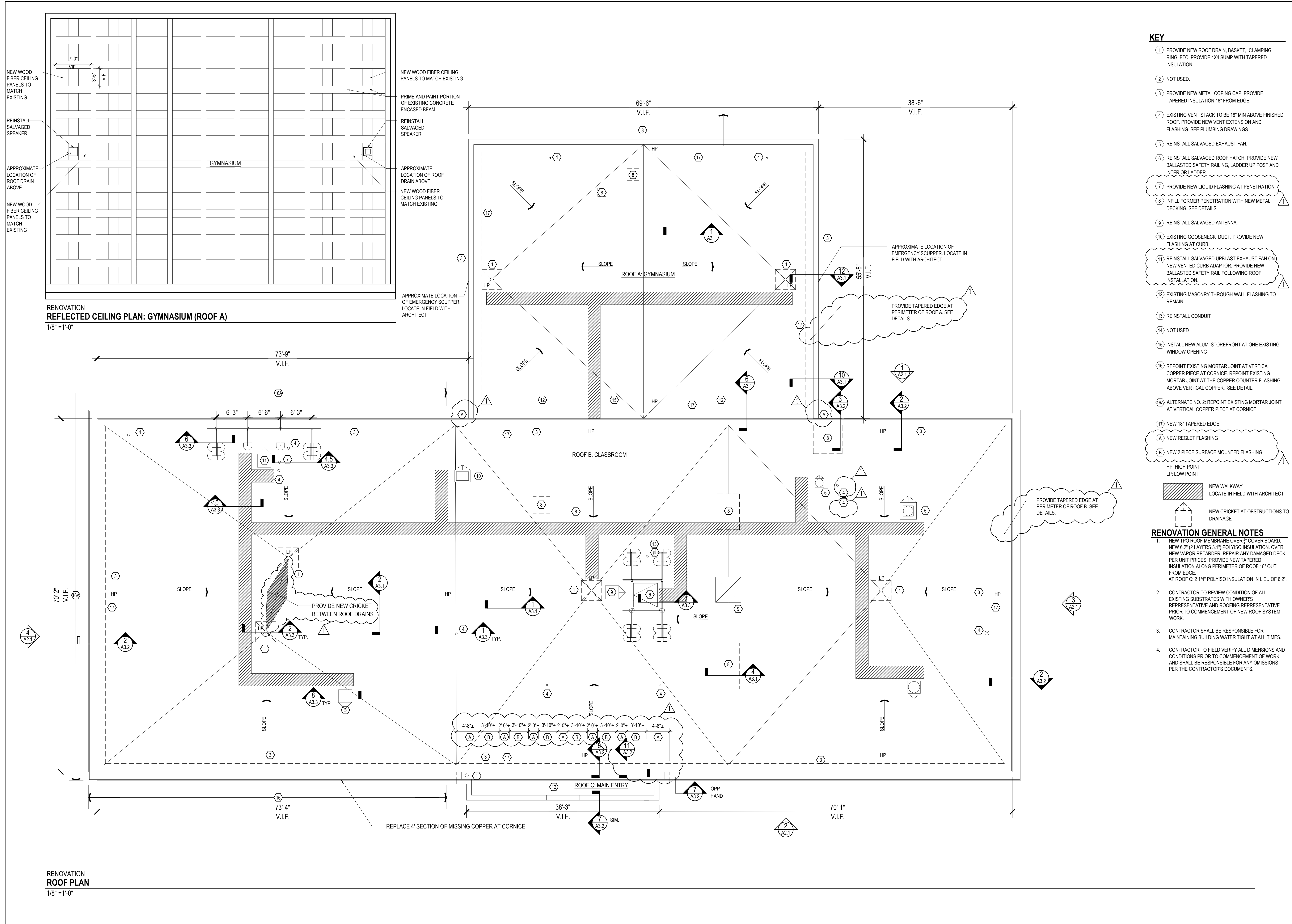
2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.
- B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
 1. Install windows from the exterior.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction. Seal all joints in panning system.
- D. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified third-party testing agency to perform tests and inspections and prepare test reports.
 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
 2. Testing to be coordinated with and witnessed by Architect and Owner's Representative.
- B. Testing Services: Testing and inspecting of installed aluminum windows shall take place as follows:
 1. Water-Spray Test: Areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
 - a. [Perform tests at new window unit as directed by Architect before installation of interior finishes has begun.](#)
 - b. [Perform at least three tests, initial mockup installation and prior to 25 and 75 percent completion.](#)
 2. Air Infiltration: ASTM E 783 at 100% the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 - a. [Perform tests at new window unit as directed by Architect before installation of interior finishes has begun.](#)



RENOVATION REFLECTED CEILING PLAN: GYMNASIUM (ROOF A)
1/8" = 1'-0"

RENOVATION ROOF PLAN
1/8" = 1'-0"

KEY

- 1 PROVIDE NEW ROOF DRAIN, BASKET, CLAMPING RING, ETC. PROVIDE 4X4 SUMP WITH TAPERED INSULATION
- 2 NOT USED.
- 3 PROVIDE NEW METAL COPING CAP. PROVIDE TAPERED INSULATION 18" FROM EDGE.
- 4 EXISTING VENT STACK TO BE 18" MIN ABOVE FINISHED ROOF. PROVIDE NEW VENT EXTENSION AND FLASHING. SEE PLUMBING DRAWINGS
- 5 REINSTALL SALVAGED EXHAUST FAN.
- 6 REINSTALL SALVAGED ROOF HATCH. PROVIDE NEW BALLASTED SAFETY RAILING, LADDER UP POST AND INTERIOR LADDER
- 7 PROVIDE NEW LIQUID FLASHING AT PENETRATION
- 8 INFILL FORMER PENETRATION WITH NEW METAL DECKING. SEE DETAILS.
- 9 REINSTALL SALVAGED ANTENNA.
- 10 EXISTING GOOSENECK DUCT. PROVIDE NEW FLASHING AT CURB
- 11 REINSTALL SALVAGED UPBLAST EXHAUST FAN ON NEW VENTED CURB ADAPTOR. PROVIDE NEW BALLASTED SAFETY RAIL FOLLOWING ROOF INSTALLATION.
- 12 EXISTING MASONRY THROUGH WALL FLASHING TO REMAIN.
- 13 REINSTALL CONDUIT
- 14 NOT USED
- 15 INSTALL NEW ALUM. STOREFRONT AT ONE EXISTING WINDOW OPENING
- 16 REPOINT EXISTING MORTAR JOINT AT VERTICAL COPPER PIECE AT CORNICE. REPOINT EXISTING MORTAR JOINT AT THE COPPER COUNTER FLASHING ABOVE VERTICAL COPPER. SEE DETAIL.
- 16A ALTERNATE NO. 2. REPOINT EXISTING MORTAR JOINT AT VERTICAL COPPER PIECE AT CORNICE
- 17 NEW 18" TAPERED EDGE
- A NEW REGLET FLASHING
- B NEW 2 PIECE SURFACE MOUNTED FLASHING

- HP: HIGH POINT
- LP: LOW POINT
- NEW WALKWAY LOCATE IN FIELD WITH ARCHITECT
- NEW CRICKET AT OBSTRUCTIONS TO DRAINAGE

RENOVATION GENERAL NOTES

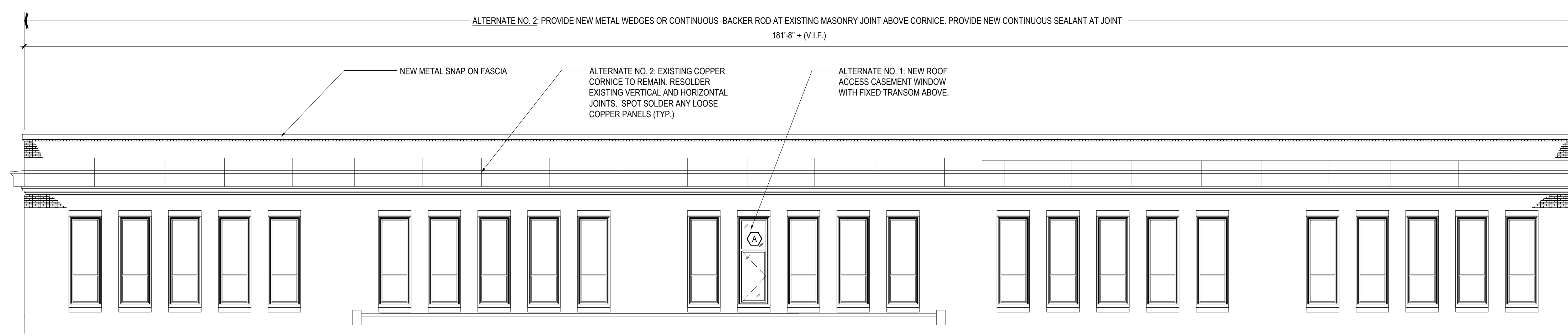
1. NEW TPO ROOF MEMBRANE OVER 1/2" COVER BOARD. NEW 6.2" (2 LAYERS 3.1") POLYISO INSULATION OVER NEW VAPOR RETARDER. REPAIR ANY DAMAGED DECK PER UNIT PRICES. PROVIDE NEW TAPERED INSULATION ALONG PERIMETER OF ROOF 18" OUT FROM EDGE. AT ROOF C: 2 1/4" POLYISO INSULATION IN LIEU OF 6.2".
2. CONTRACTOR TO REVIEW CONDITION OF ALL EXISTING SUBSTRATES WITH OWNER'S REPRESENTATIVE AND ROOFING REPRESENTATIVE PRIOR TO COMMENCEMENT OF NEW ROOF SYSTEM WORK.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING BUILDING WATER TIGHT AT ALL TIMES.
4. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO COMMENCEMENT OF WORK AND SHALL BE RESPONSIBLE FOR ANY OMISSIONS PER THE CONTRACTOR'S DOCUMENTS.

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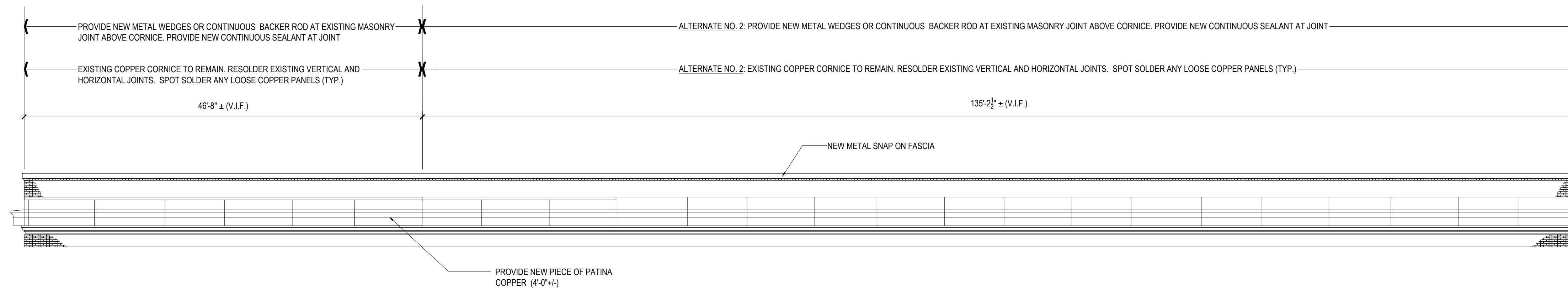
MSBA ACCELERATED REPAIR PROGRAM
AMIGOS ELEMENTARY SCHOOL
15 UPTON STREET
CAMBRIDGE, MA 02139

RENOVATION
ROOF PLAN
PROJECT NO.: 21101.03
SCALE: 1/8" = 1'-0"
DATE: 7 FEBRUARY 2024
REVISIONS: 6 MARCH 2024

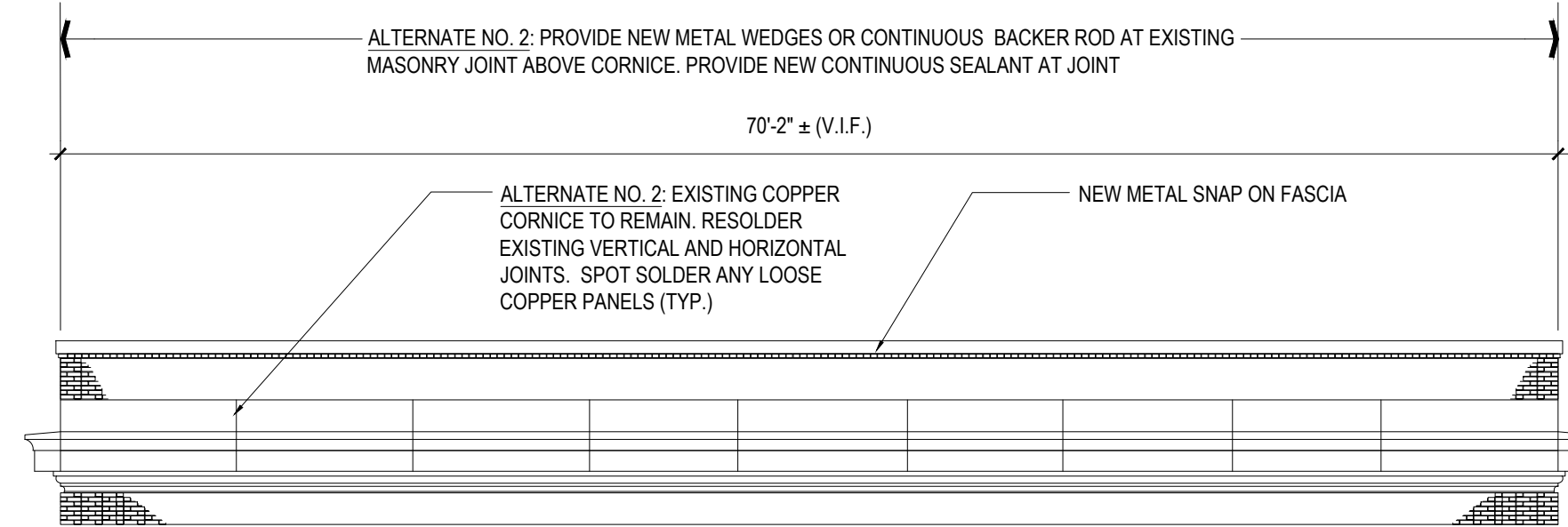
A1.1



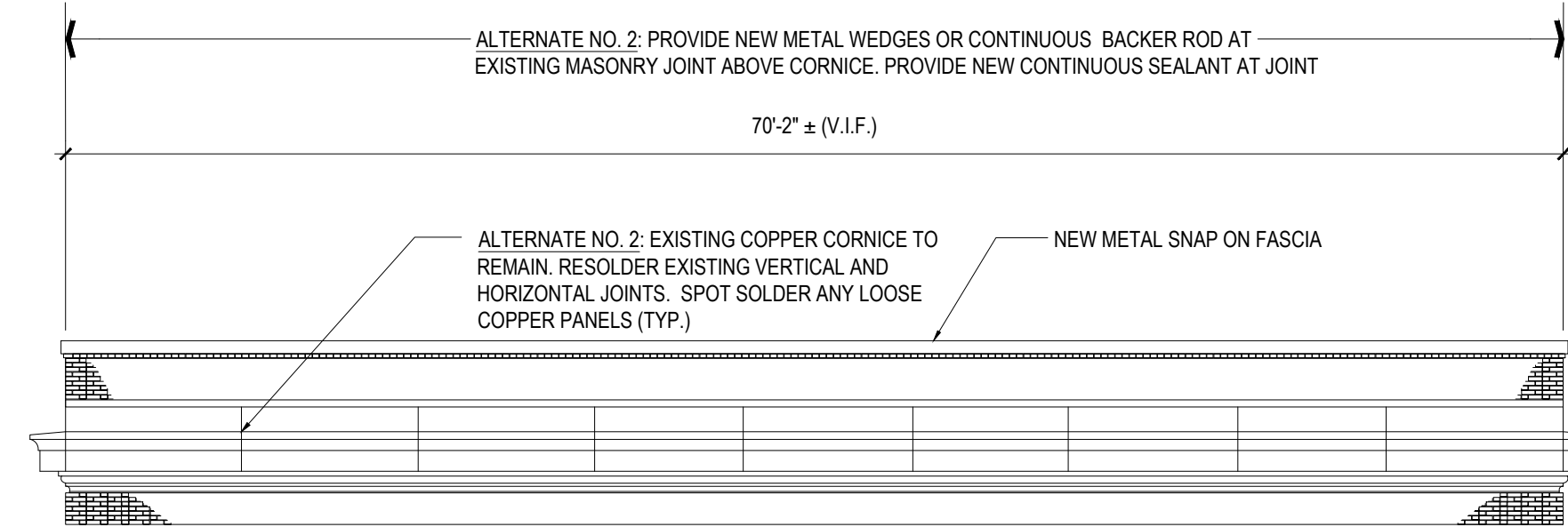
1 RENOVATION: CORNICE NORTH ELEVATION
1/8" = 1'-0"



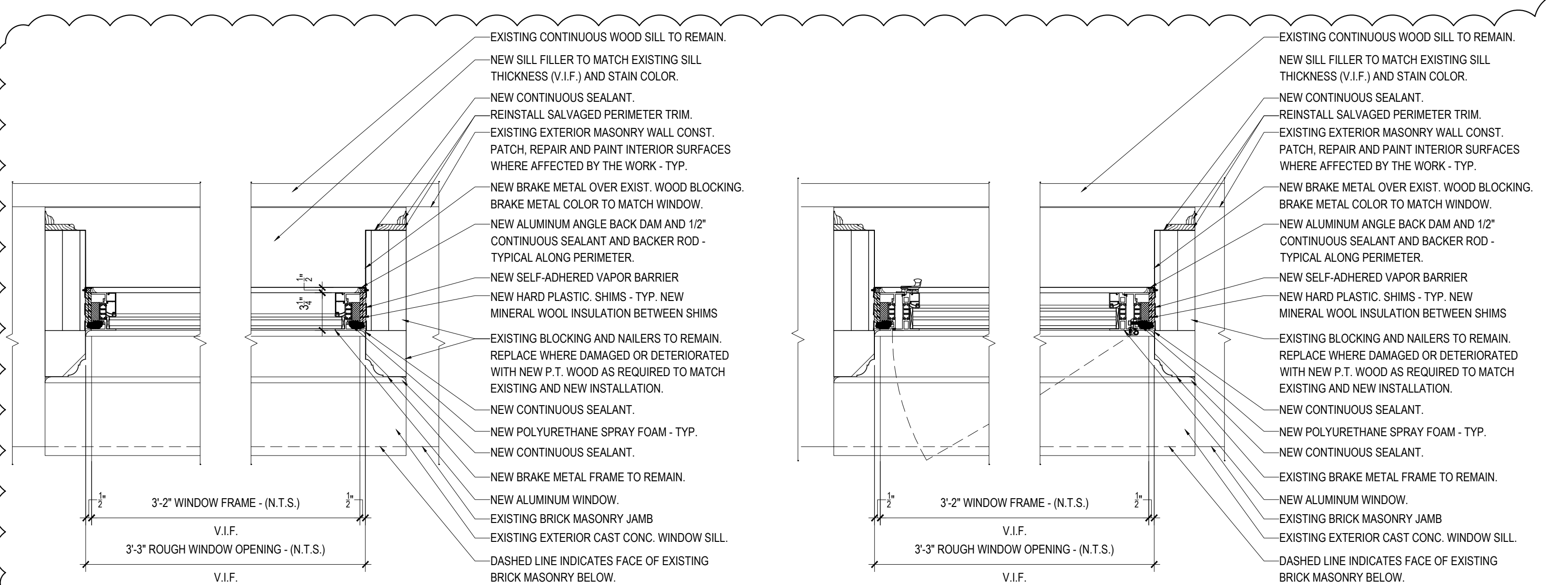
2 RENOVATION: CORNICE SOUTH ELEVATION
1/8" = 1'-0"



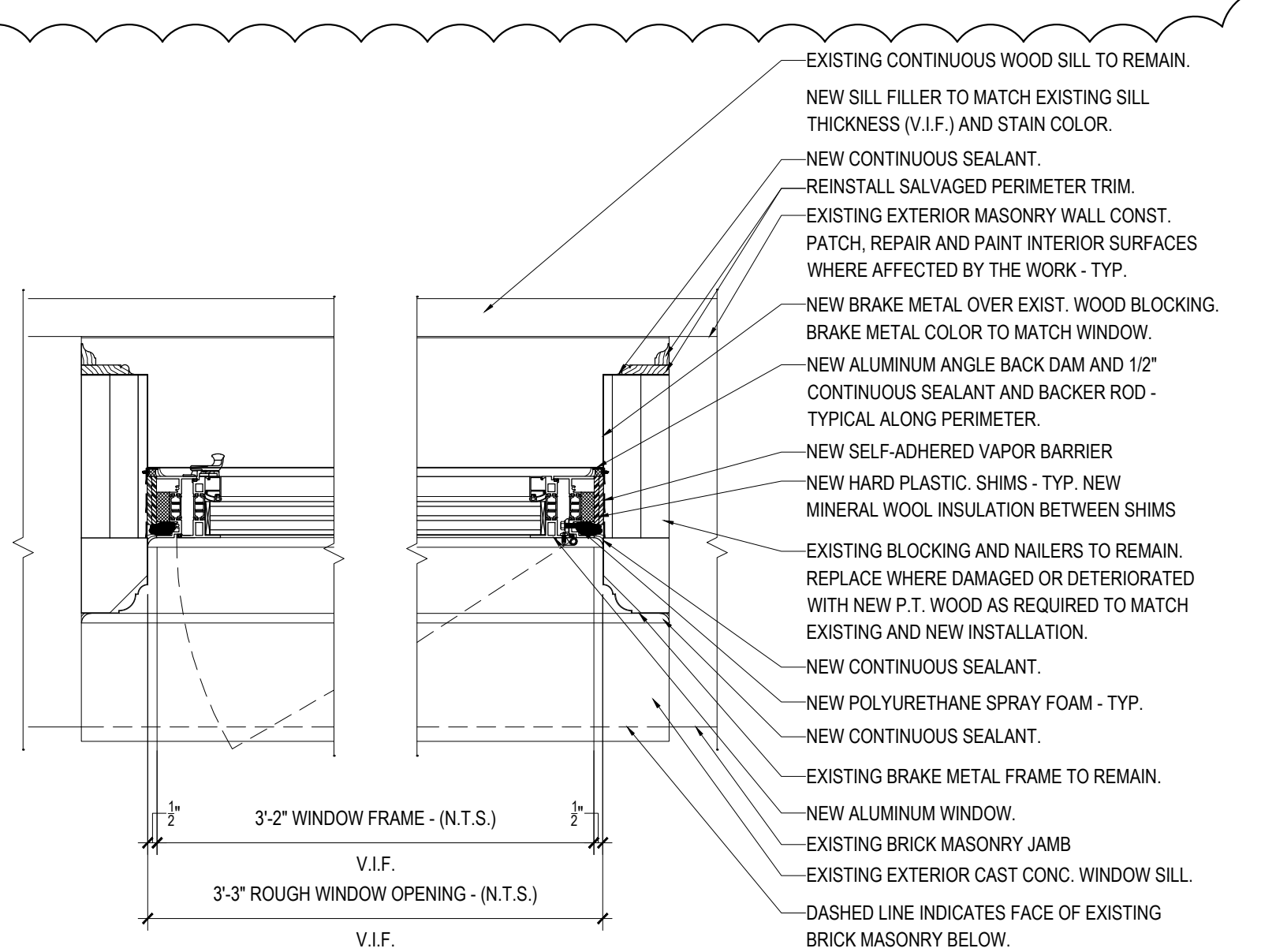
3 RENOVATION: CORNICE EAST ELEVATION
1/8" = 1'-0"



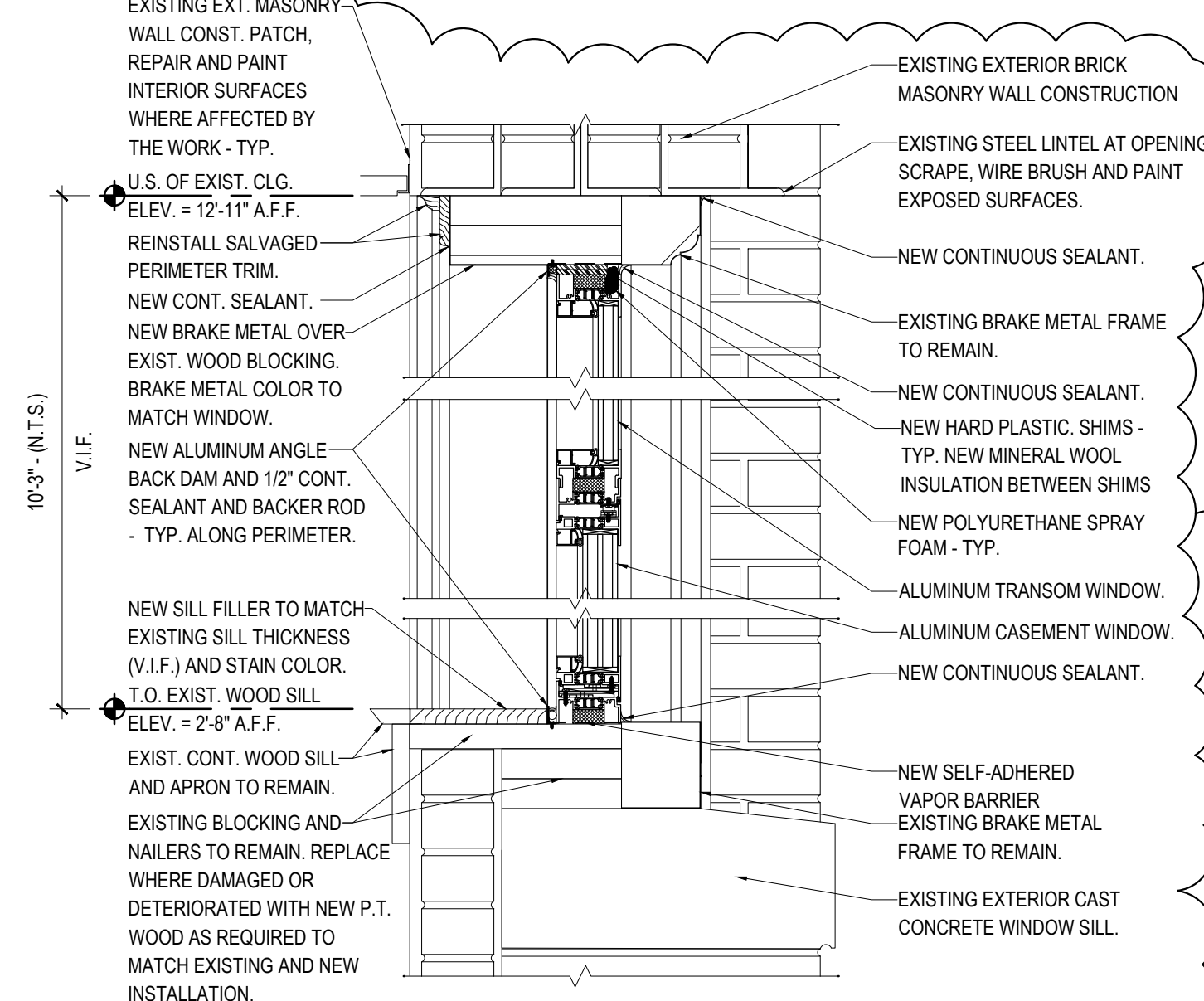
4 RENOVATION: CORNICE WEST ELEVATION
1/8" = 1'-0"



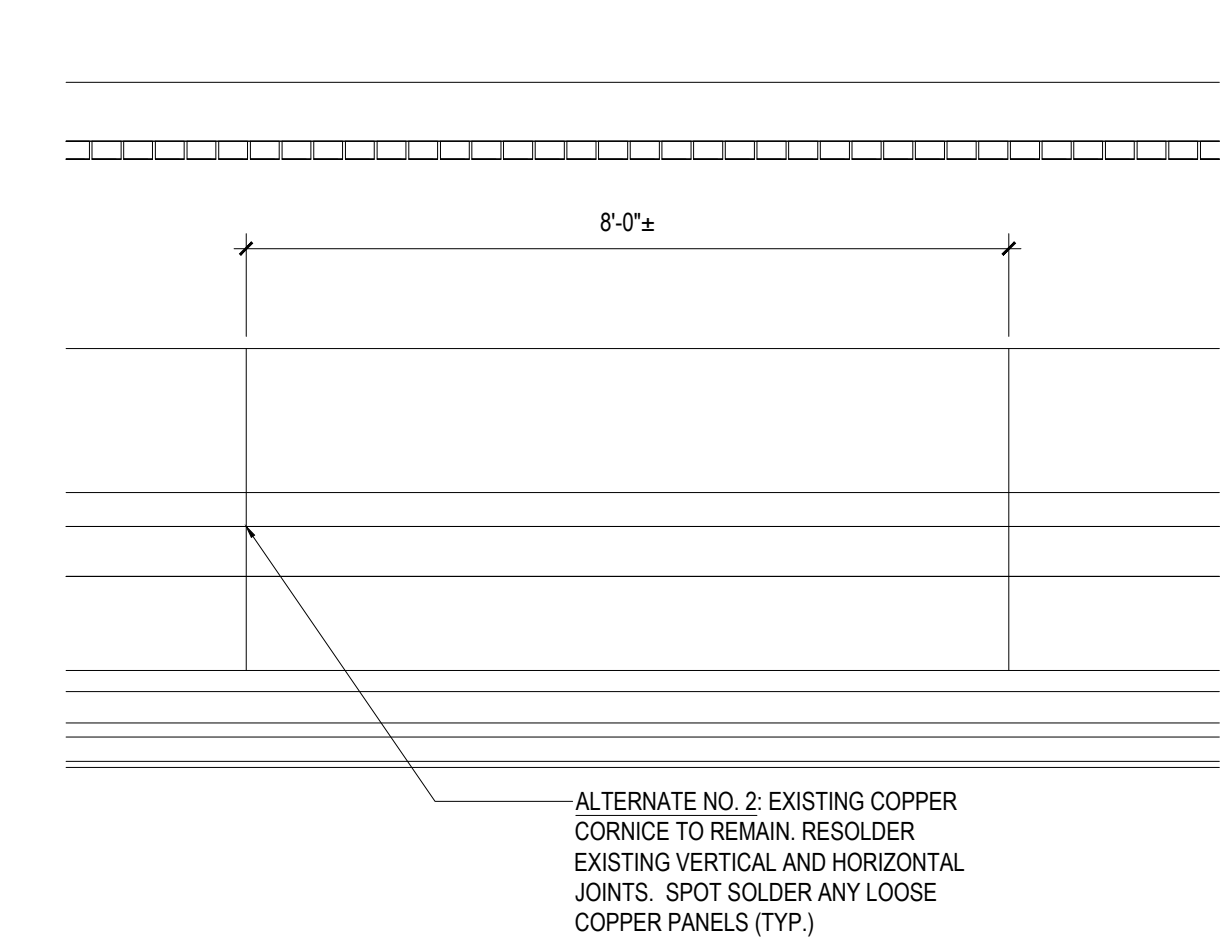
7 DETAIL - WINDOW JAMB AT TRANSOM
1-1/2" = 1'-0"



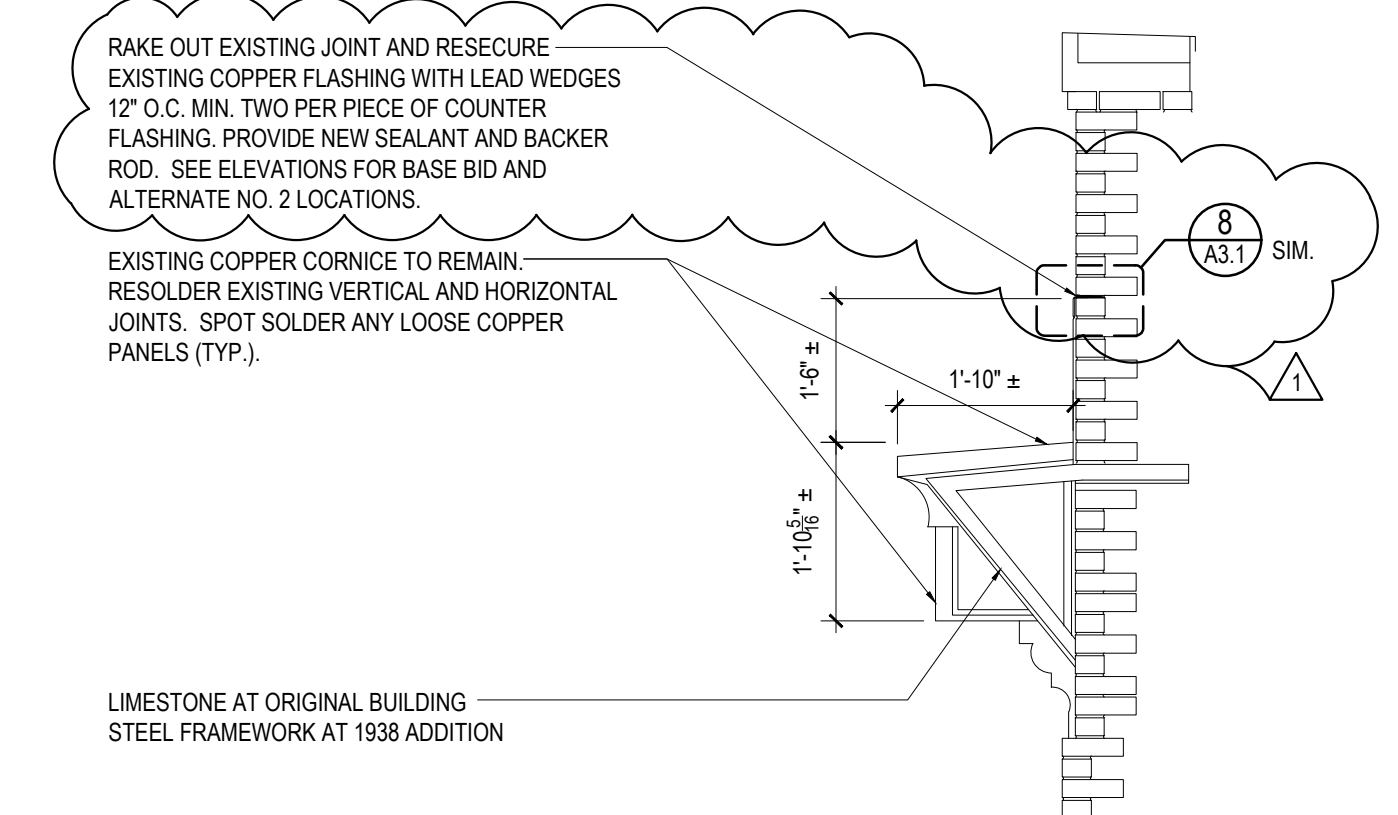
8 DETAIL - WINDOW JAMB AT CASEMENT
1-1/2" = 1'-0"



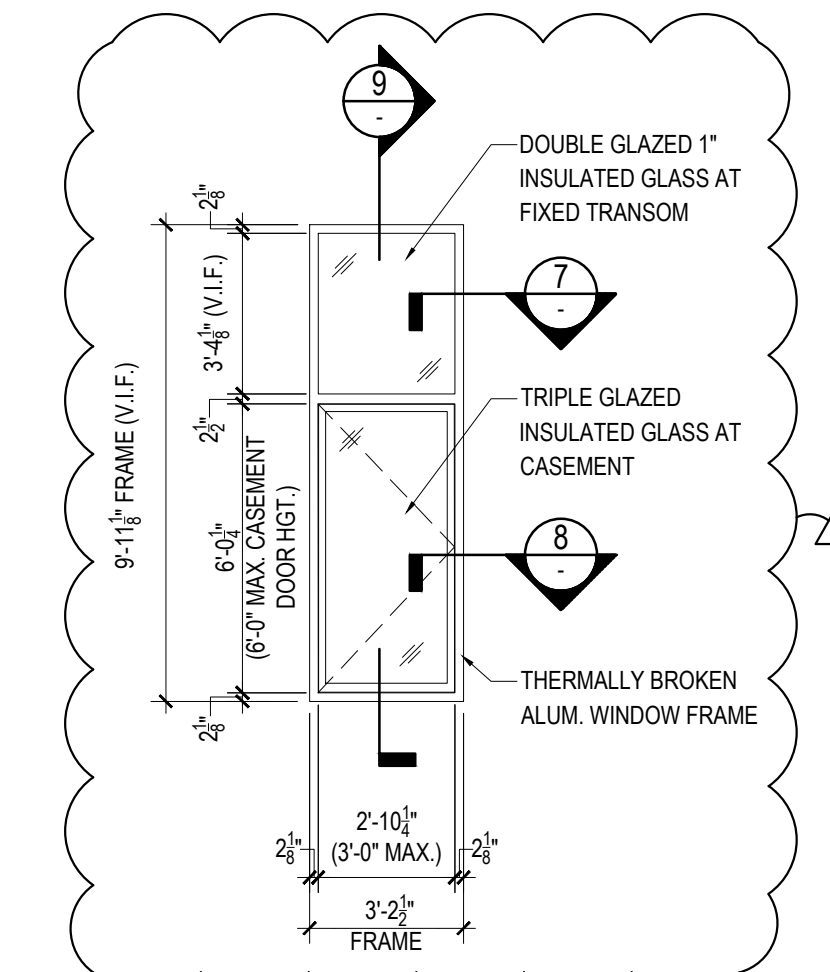
9 DETAIL - WINDOW HEAD AND SILL
1-1/2" = 1'-0"



5 TYPICAL ELEVATION
1/2" = 1'-0"

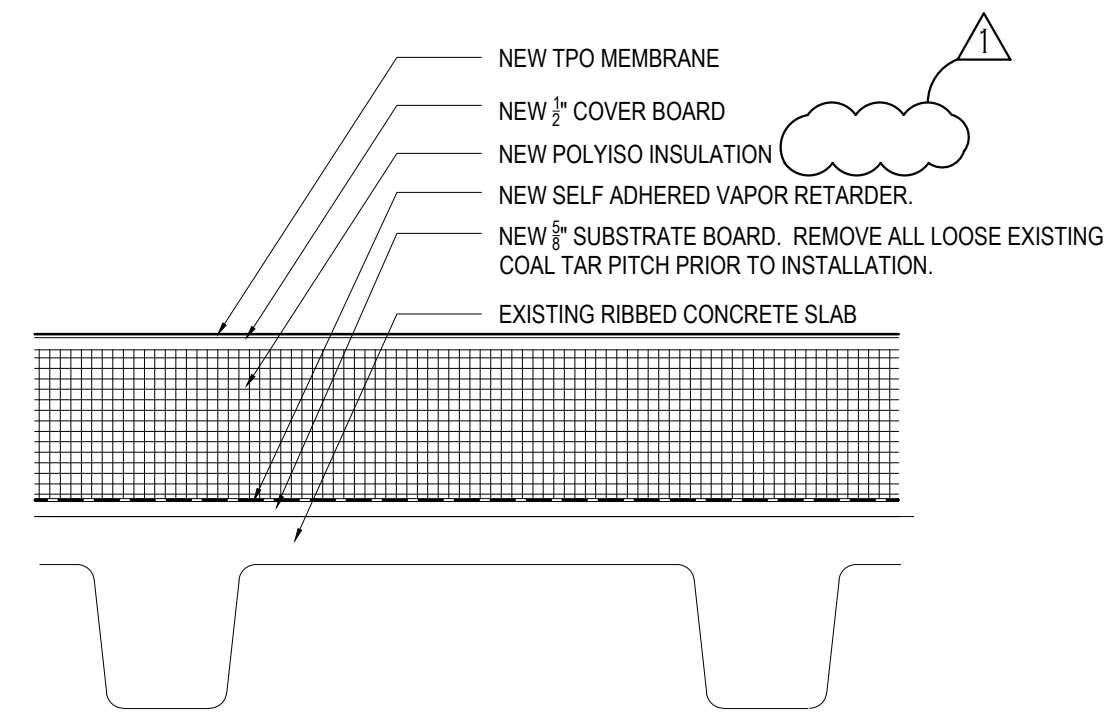


6 RENOVATION: SECTION
1/2" = 1'-0"



WINDOW TYPE A - ALTERNATE NO. 1
CASEMENT WINDOW WITH TRANSOM ABOVE

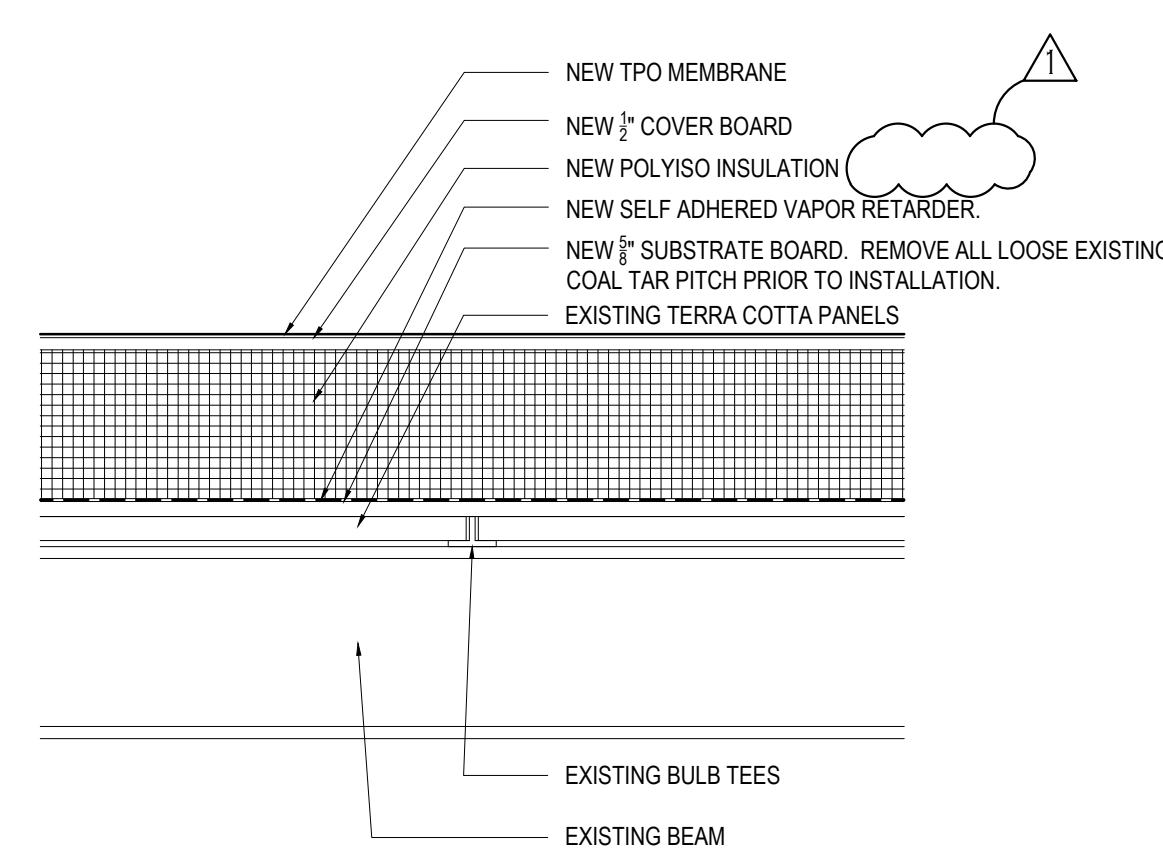
WINDOW TYPES
1/4" = 1'-0"



NOTE: ALL LAYERS TO BE FULLY ADHERED. JOINTS BETWEEN INSULATION LAYERS AS WELL AS COVERBOARD AND SUBSTRATE TO BE STAGGERED. FILL GAPS BETWEEN JOINTS WITH SPRAY FOAM INSULATION

NOTE: ROOF ASSEMBLY ABOVE DECK TO MAINTAIN AVERAGE U-FACTOR OF U-0.032

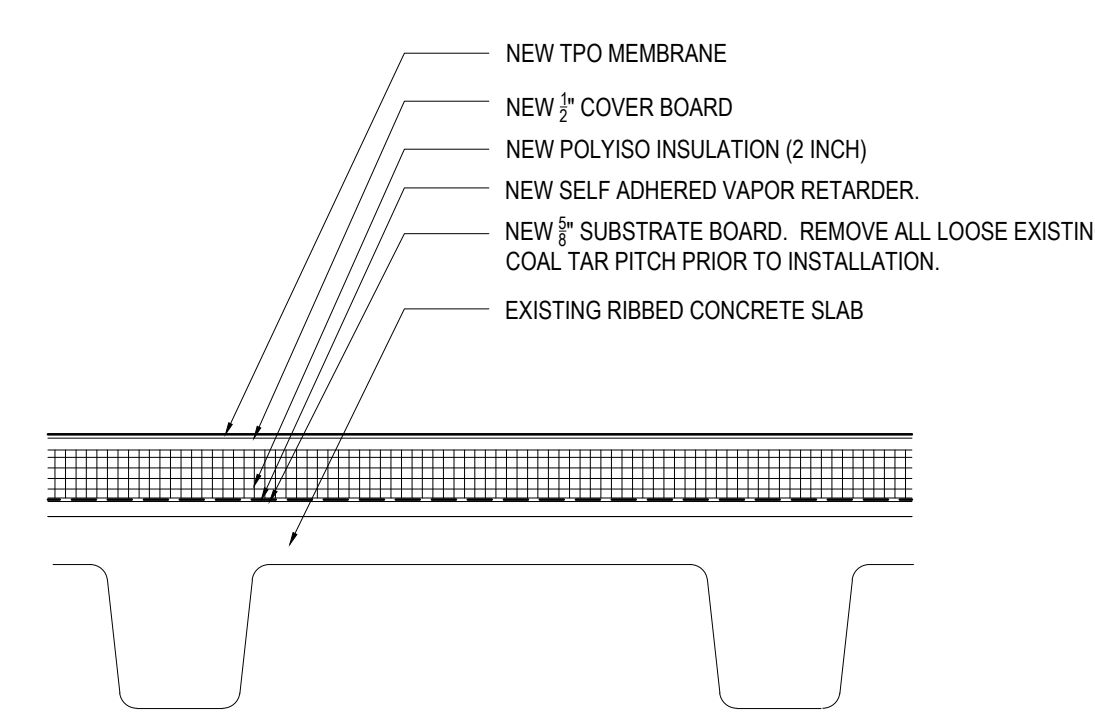
1 TYPICAL ROOF SYSTEM: CONCRETE SLAB AT ROOF A & B
1-1/2" = 1'-0"



NOTE: ALL LAYERS TO BE FULLY ADHERED. JOINTS BETWEEN INSULATION LAYERS AS WELL AS COVERBOARD AND SUBSTRATE TO BE STAGGERED. FILL GAPS BETWEEN JOINTS WITH SPRAY FOAM INSULATION

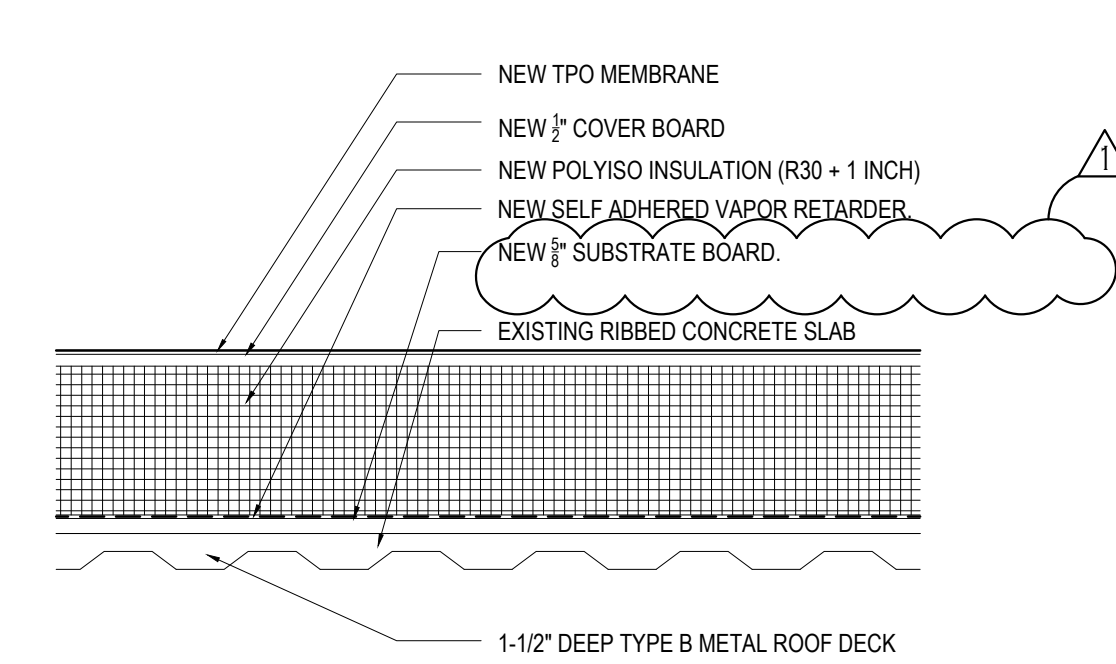
NOTE: ROOF ASSEMBLY ABOVE DECK TO MAINTAIN AVERAGE U-FACTOR OF U-0.032

2 TYPICAL ROOF SYSTEM: TERRA COTTA PLANKS AT ROOF B
1-1/2" = 1'-0"



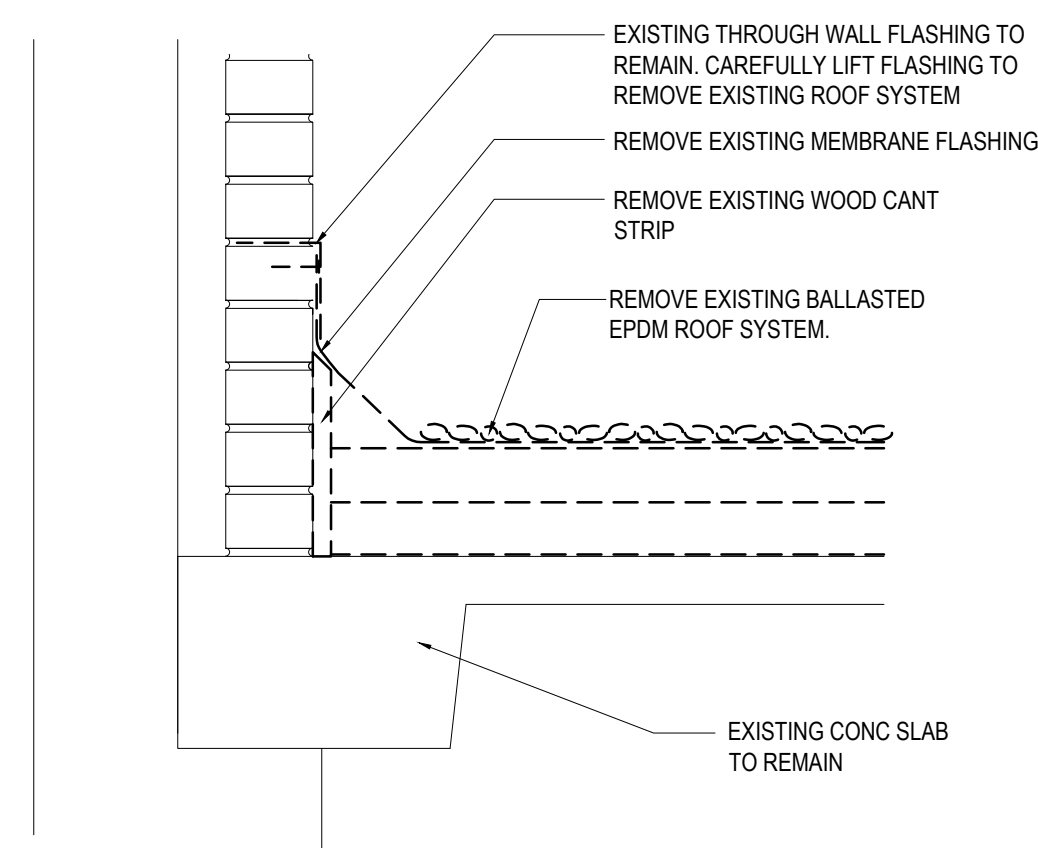
NOTE: ALL LAYERS TO BE FULLY ADHERED. JOINTS BETWEEN INSULATION LAYERS AS WELL AS COVERBOARD AND SUBSTRATE TO BE STAGGERED. FILL GAPS BETWEEN JOINTS WITH SPRAY FOAM INSULATION

3 TYPICAL ROOF SYSTEM: ROOF C
1-1/2" = 1'-0"

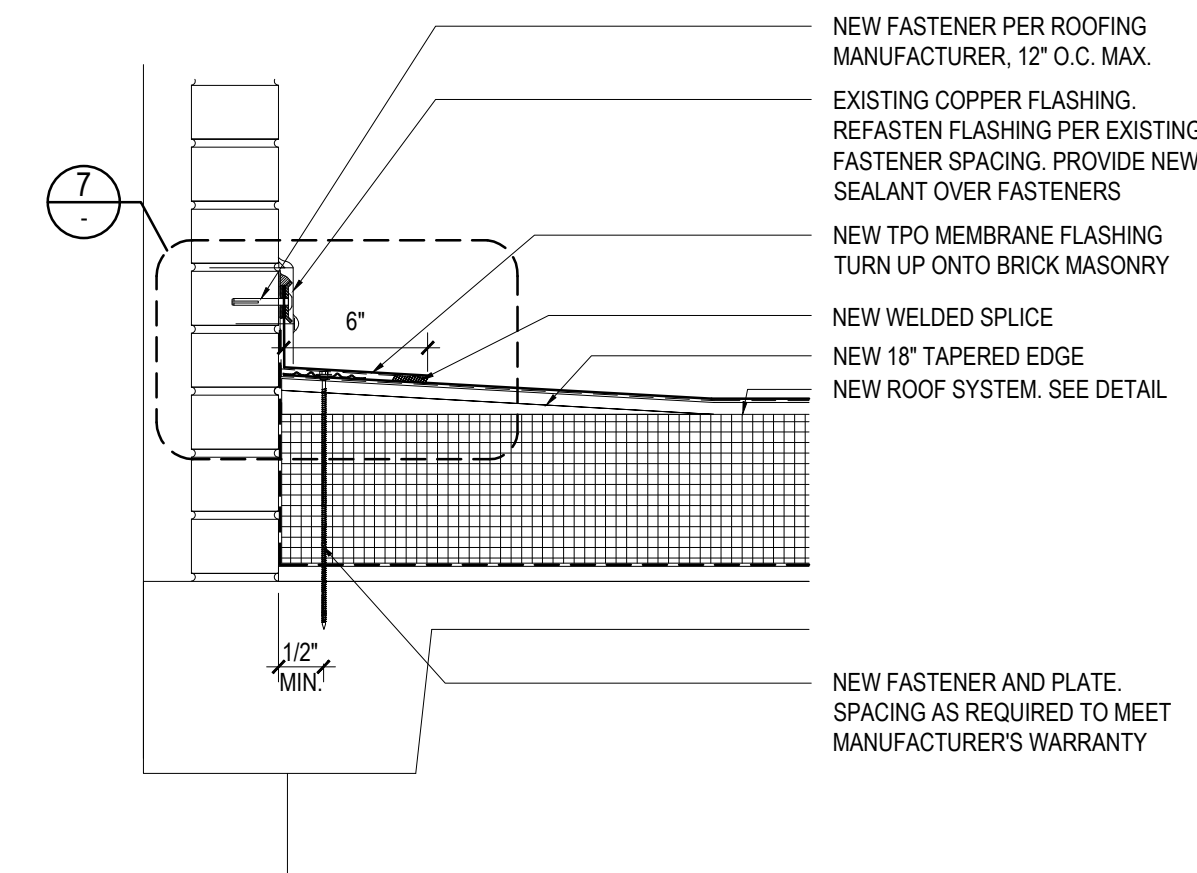


NOTE: ALL LAYERS TO BE FULLY ADHERED. JOINTS BETWEEN INSULATION LAYERS AS WELL AS COVERBOARD AND SUBSTRATE TO BE STAGGERED. FILL GAPS BETWEEN JOINTS WITH SPRAY FOAM INSULATION

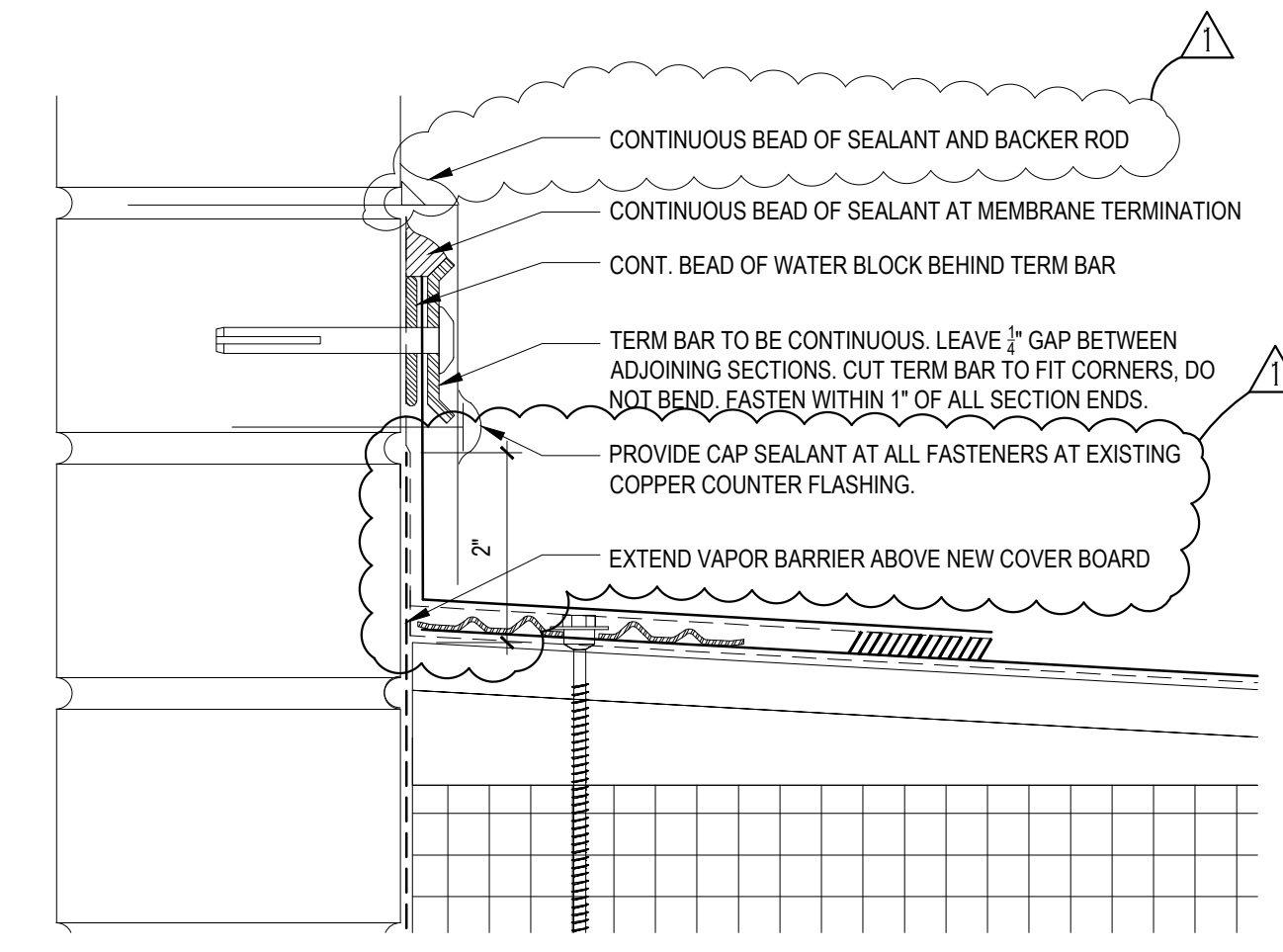
4 TYPICAL ROOF SYSTEM: METAL DECK INFILL
1-1/2" = 1'-0"



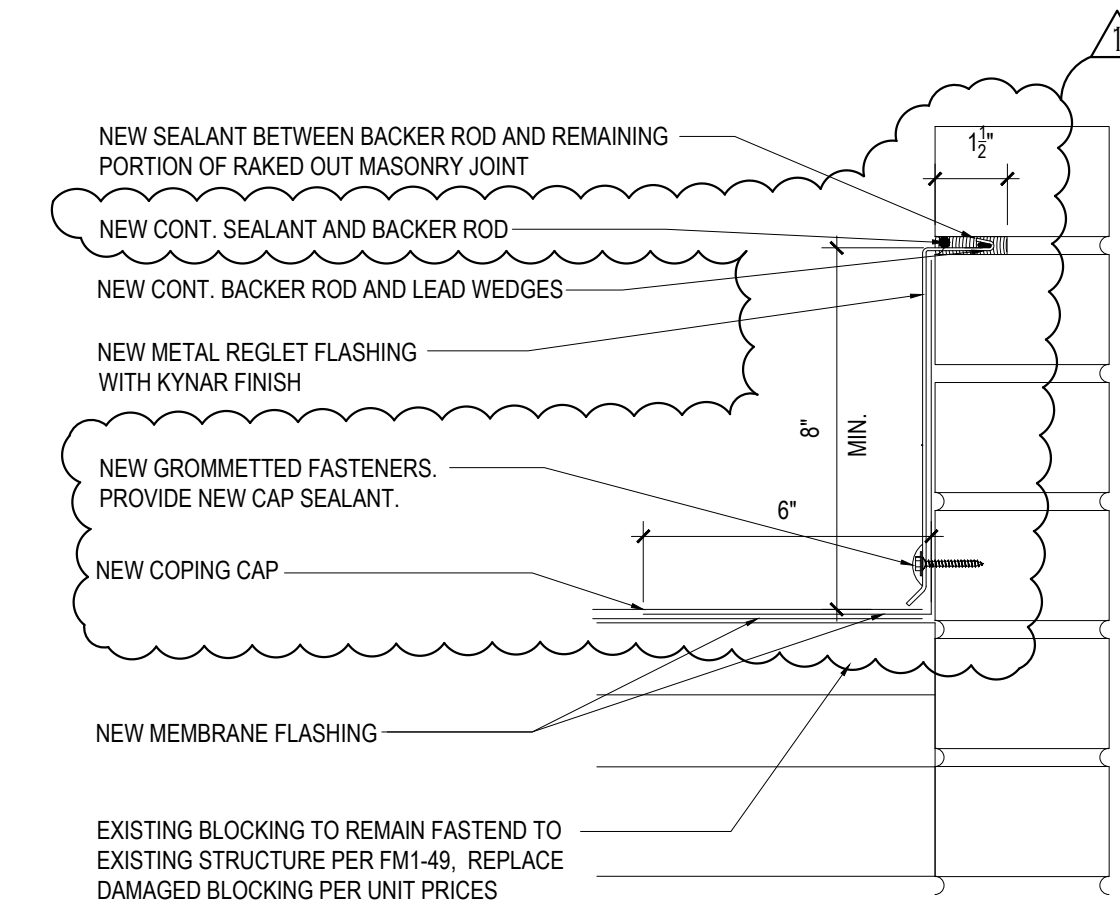
5 DEMOLITION DETAIL: MASONRY RISING WALL ABOVE ROOF A
1-1/2" = 1'-0"



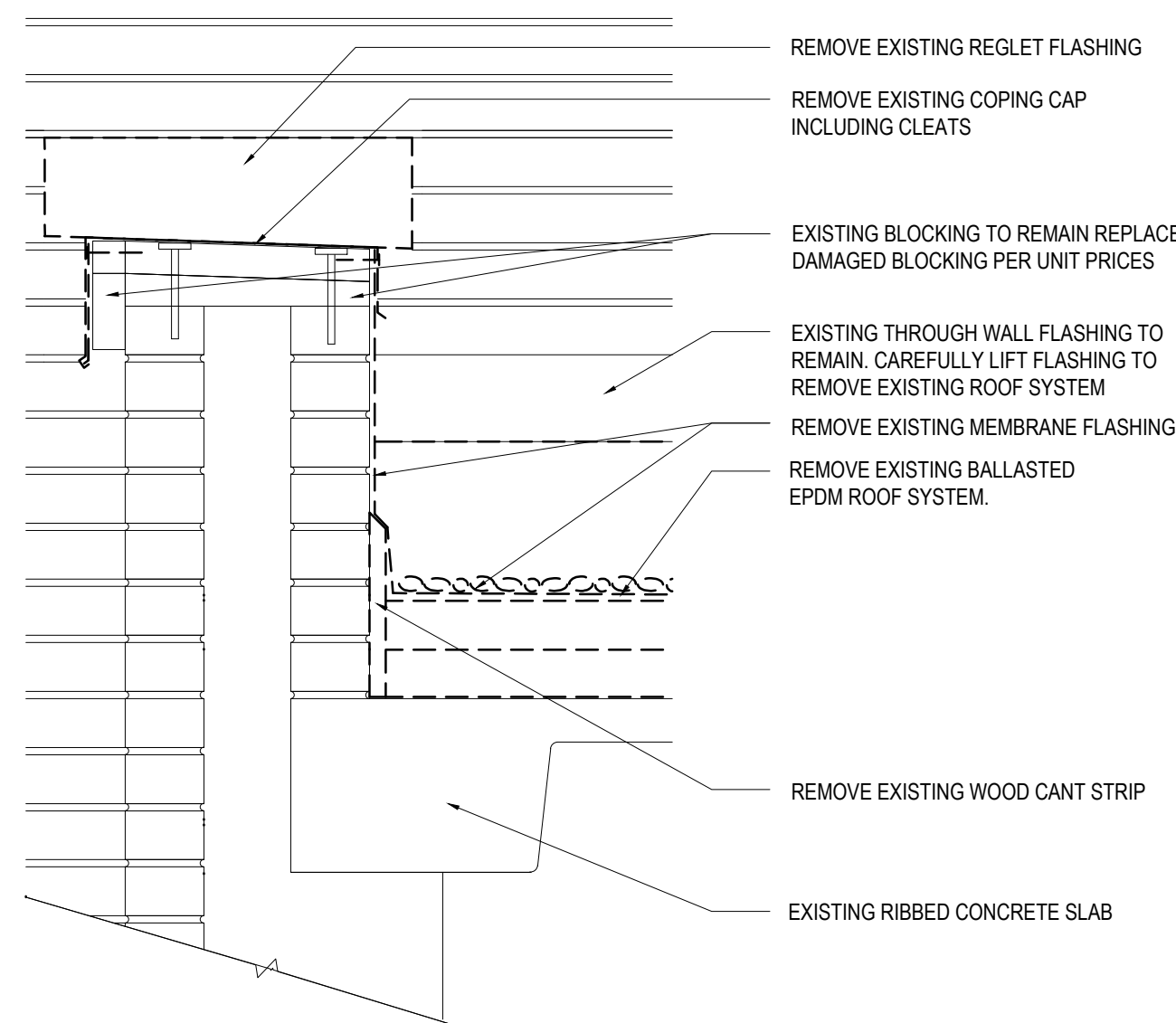
6 RENOVATION DETAIL: MASONRY RISING WALL ABOVE ROOF A
1-1/2" = 1'-0"



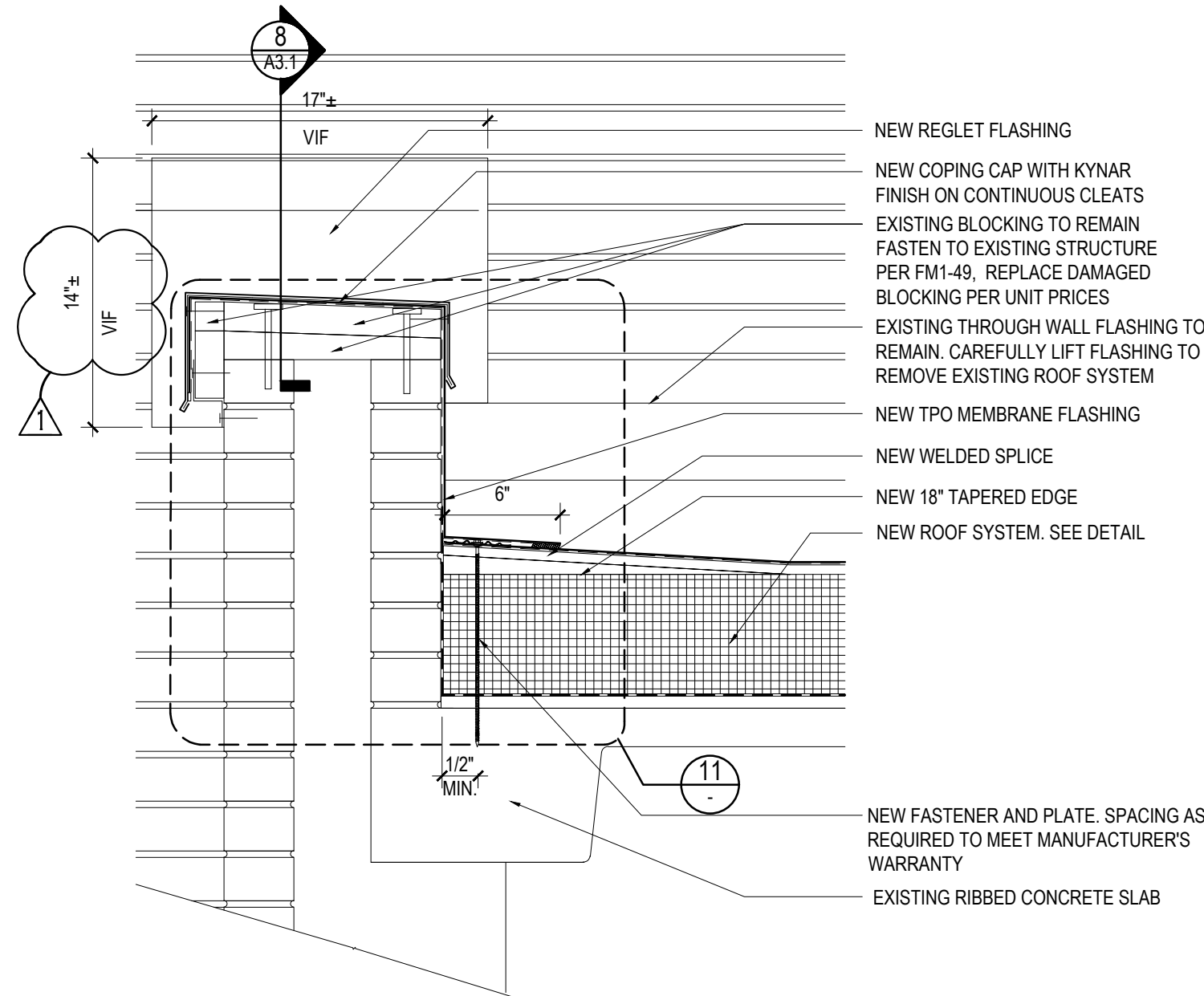
7 RENOVATION ENLARGED DETAIL: ROOF TERMINATION AT COUNTERFLASHING
6" = 1'-0"



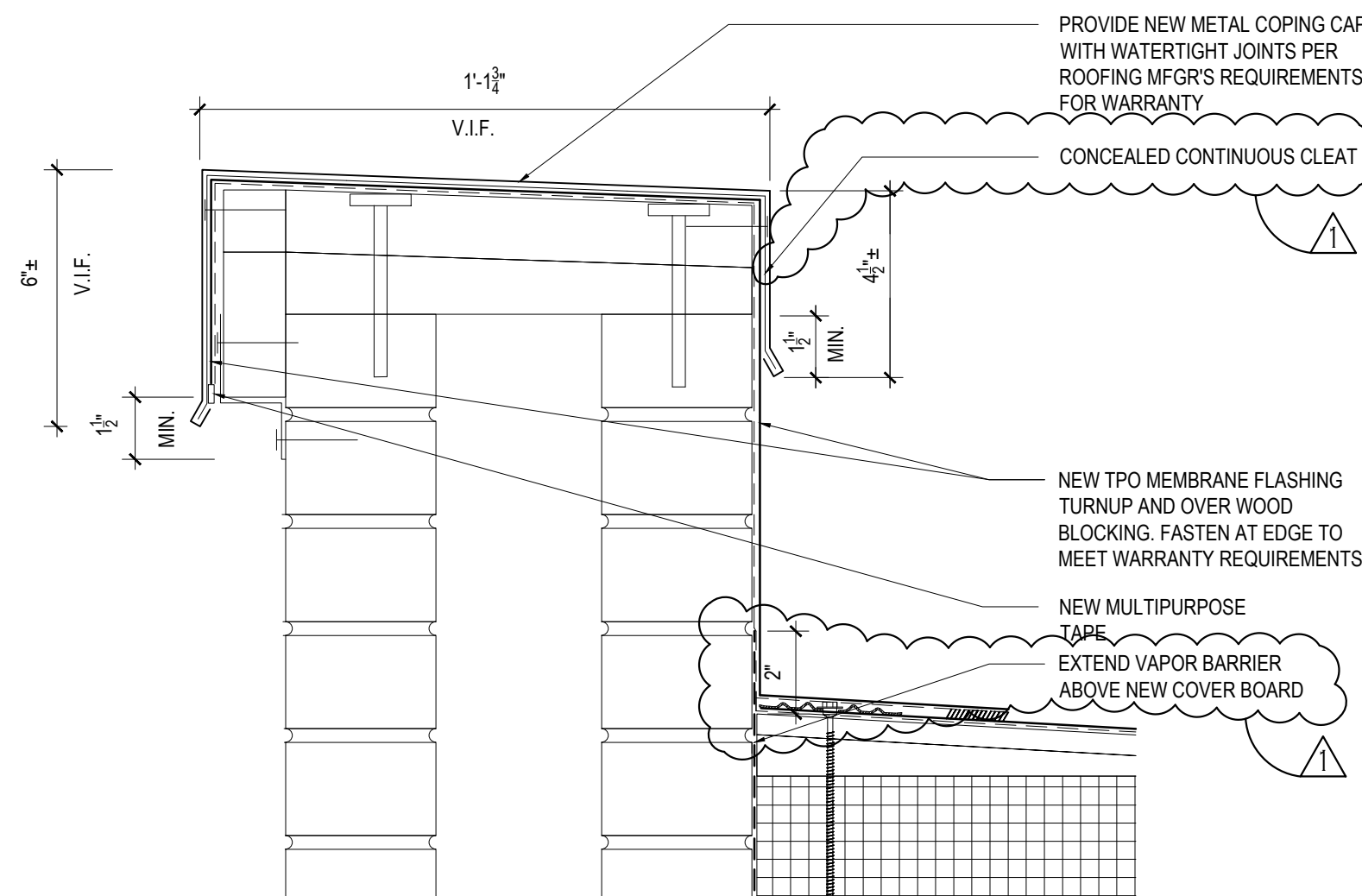
8 RENOVATION ENLARGED DETAIL: MASONRY REGLET
3" = 1'-0"



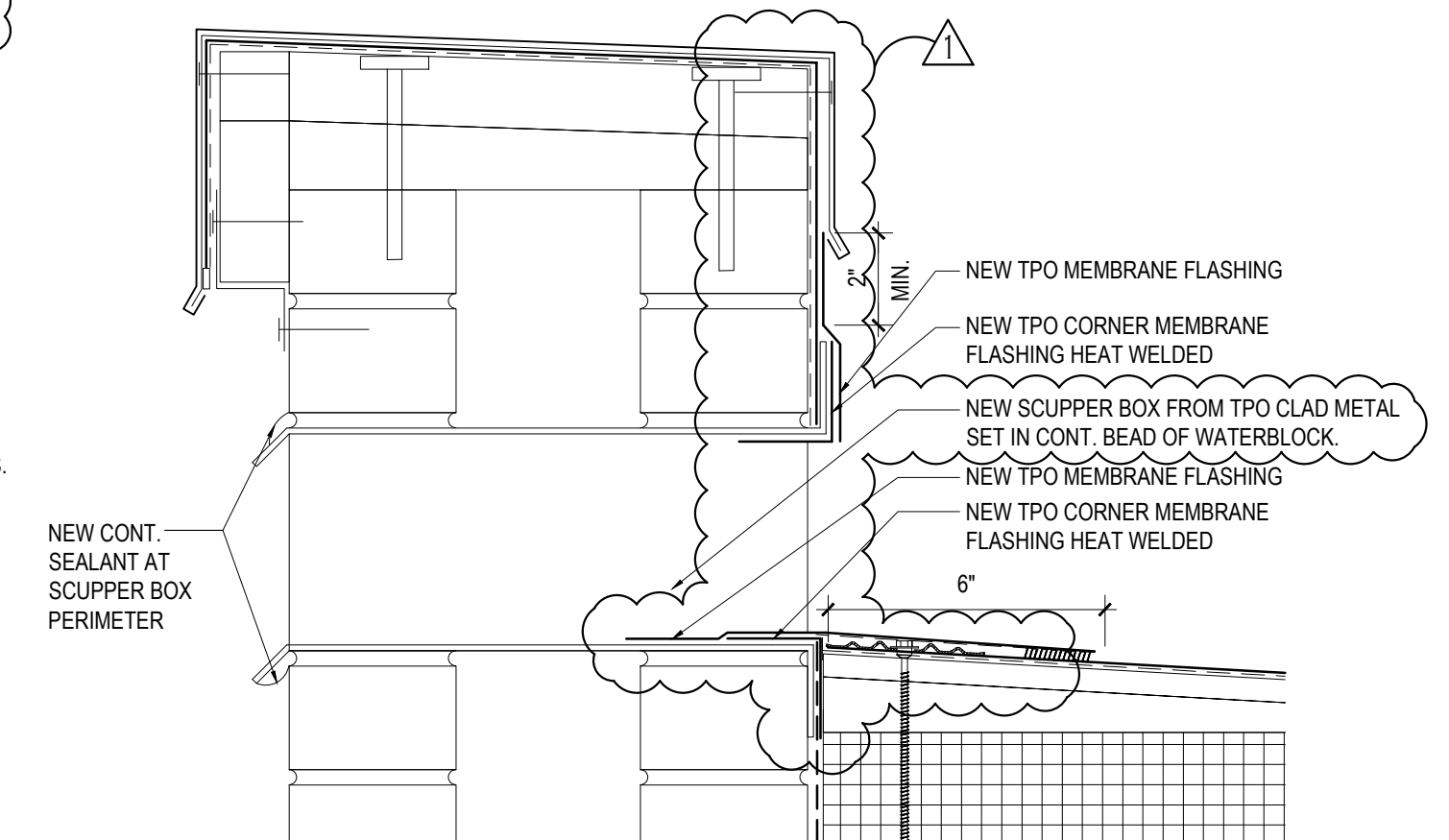
9 DEMOLITION DETAIL: ROOF EDGE AT ROOF A
1-1/2" = 1'-0"



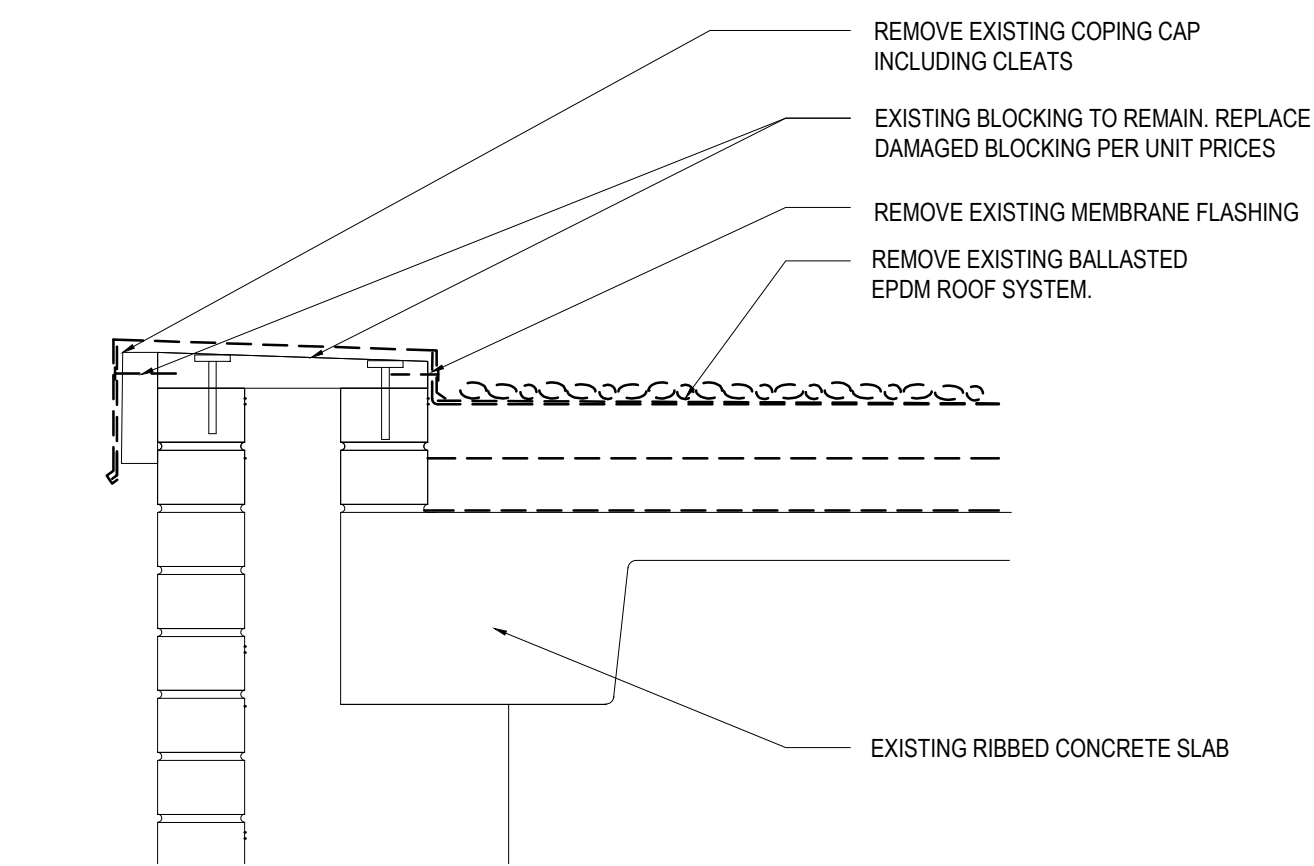
10 RENOVATION DETAIL: ROOF EDGE AT ROOF A
1-1/2" = 1'-0"



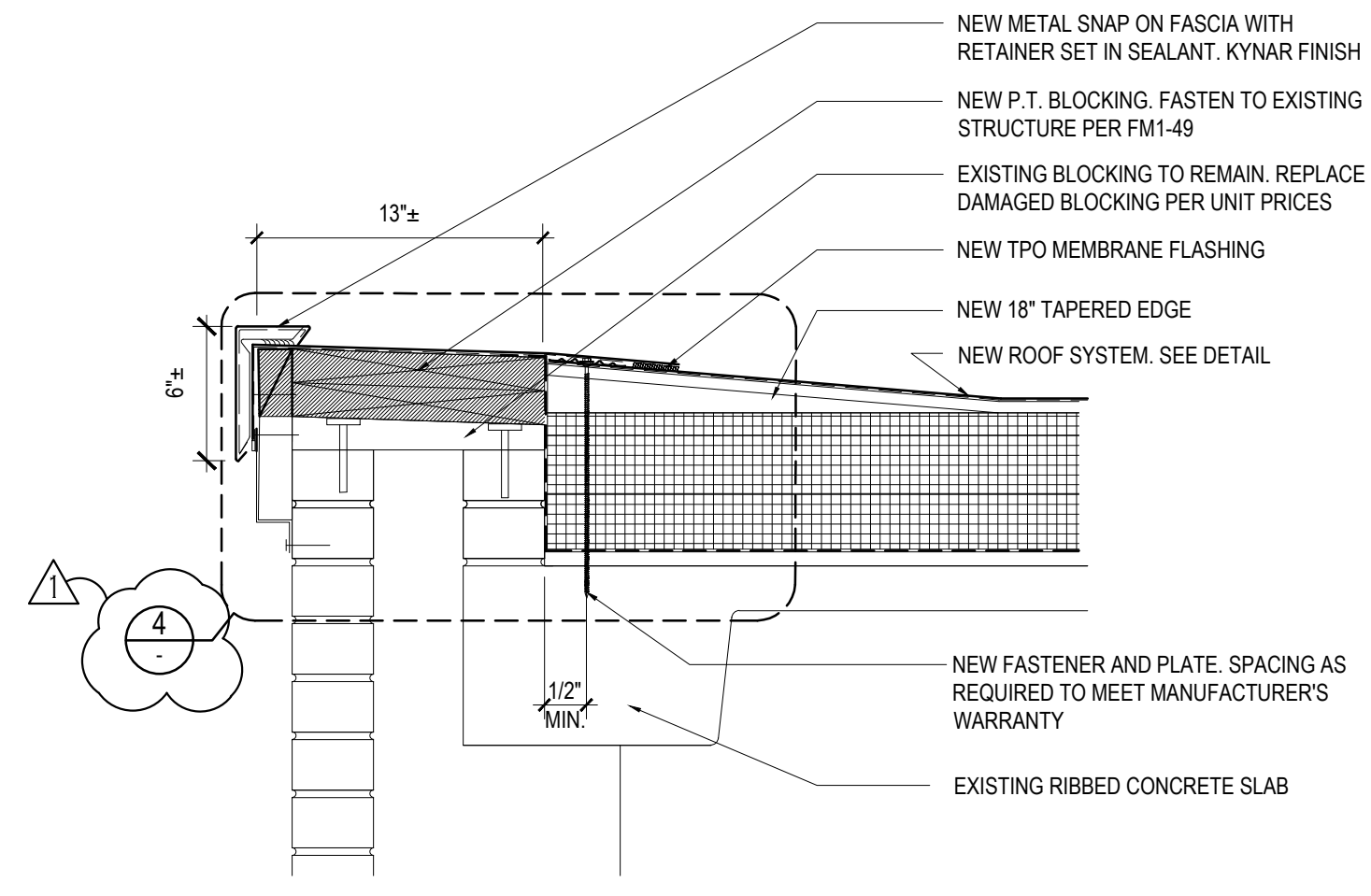
11 RENOVATION ENLARGED DETAIL: ROOF EDGE AT ROOF A
3" = 1'-0"



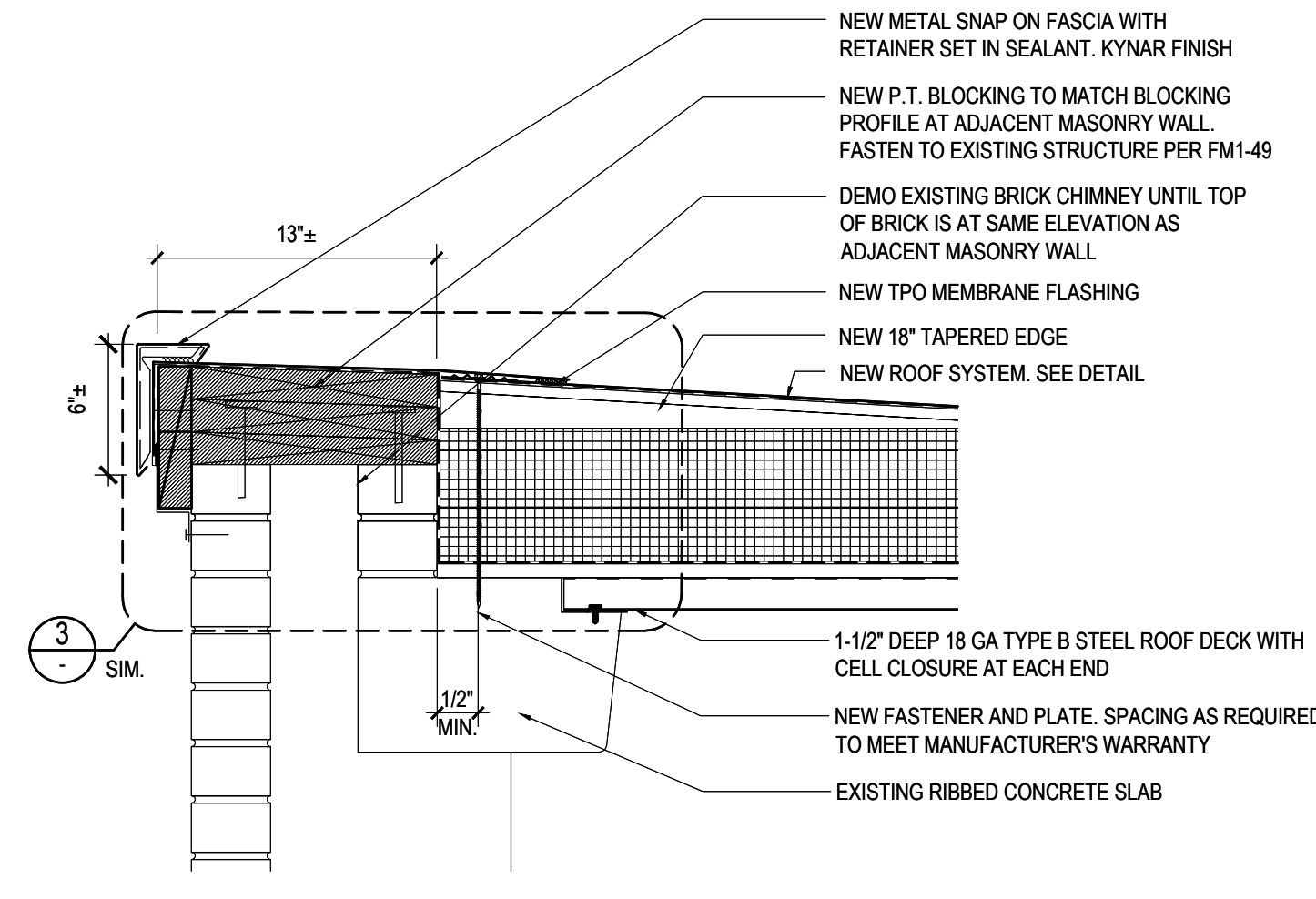
12 RENOVATION ENLARGED DETAIL: EMERGENCY SCUPPER AT ROOF A
3" = 1'-0"



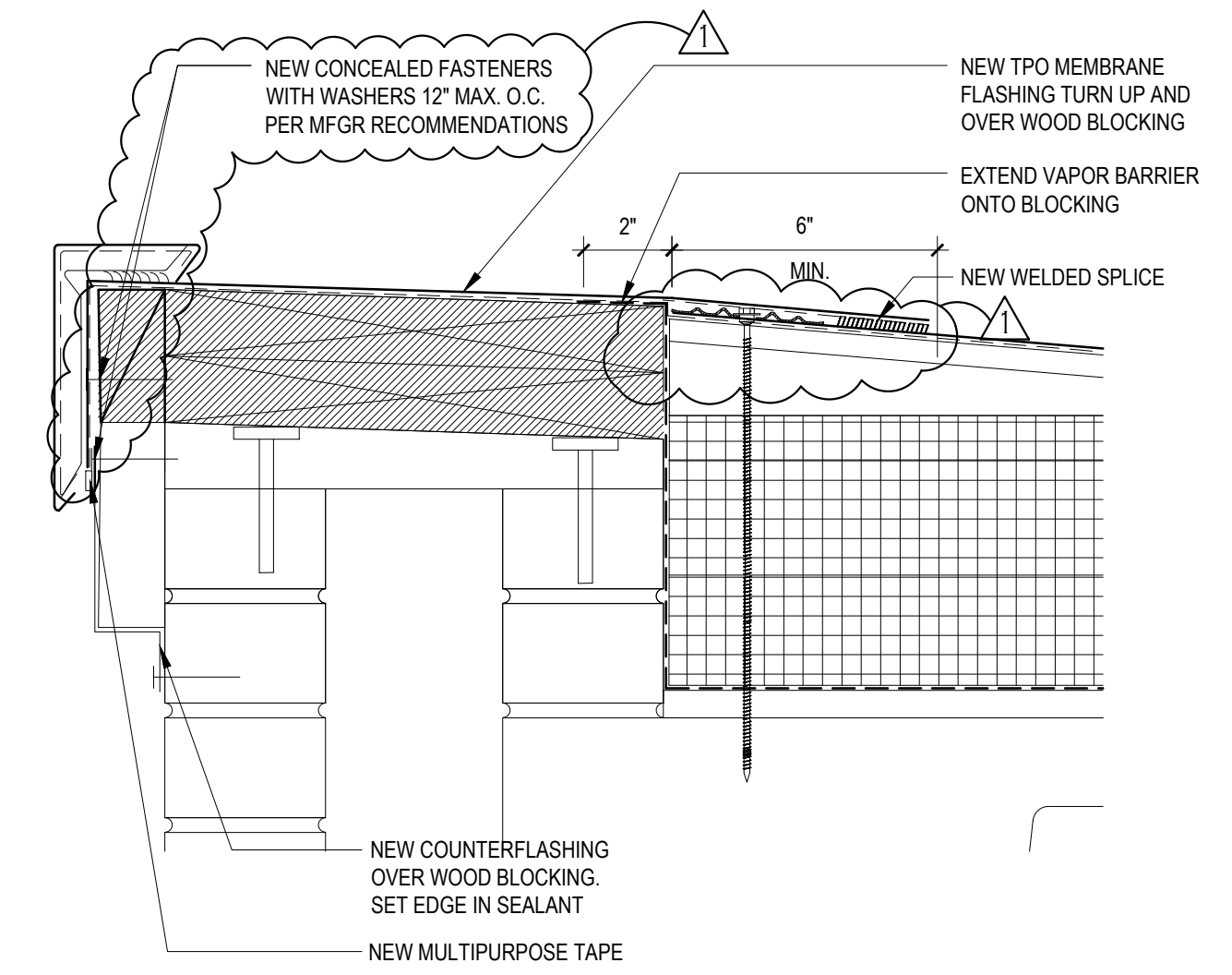
1 DEMOLITION
DETAIL: ROOF EDGE AT ROOF B
1-1/2" = 1'-0"



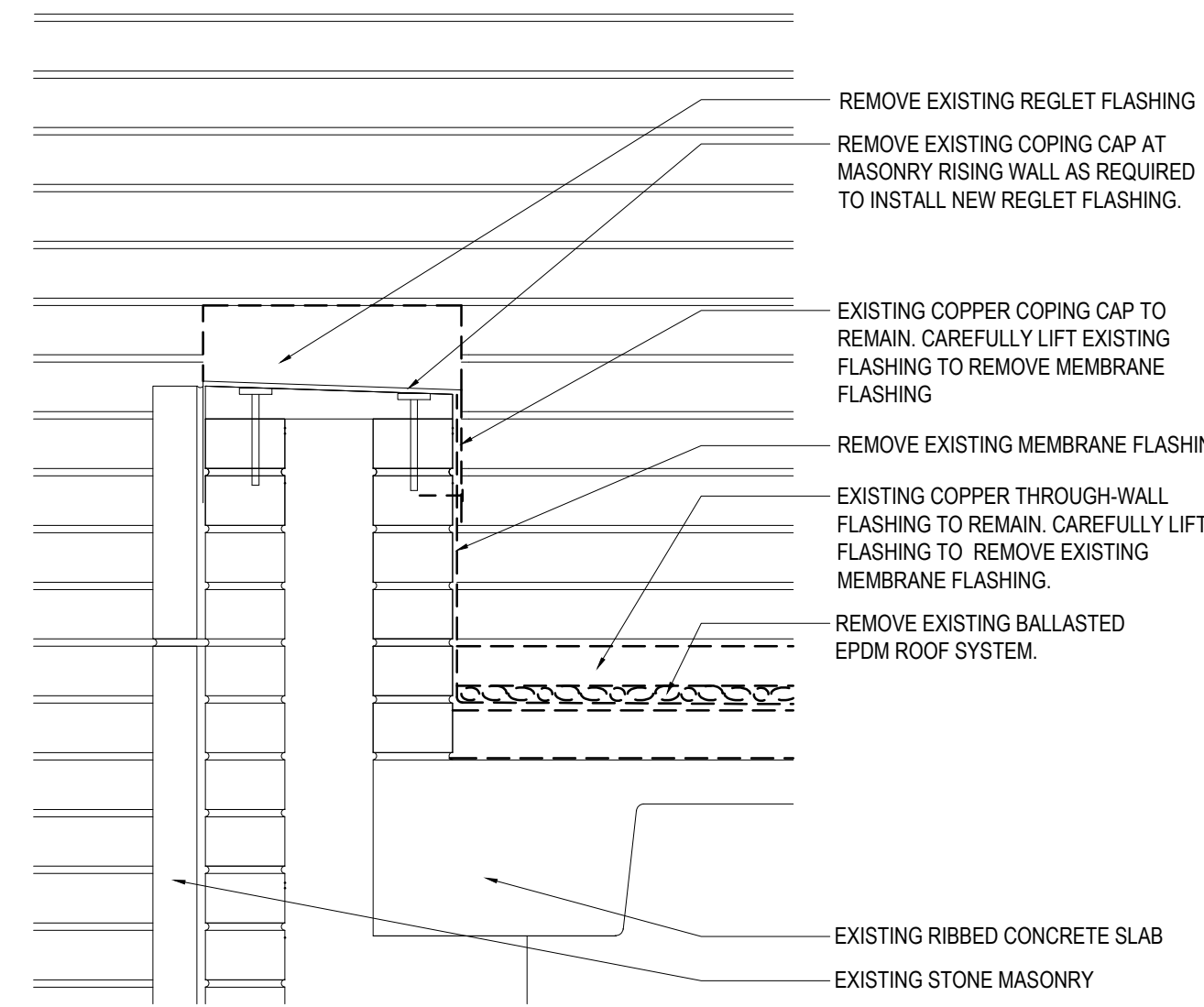
2 RENOVATION
DETAIL: ROOF EDGE AT ROOF B
1-1/2" = 1'-0"



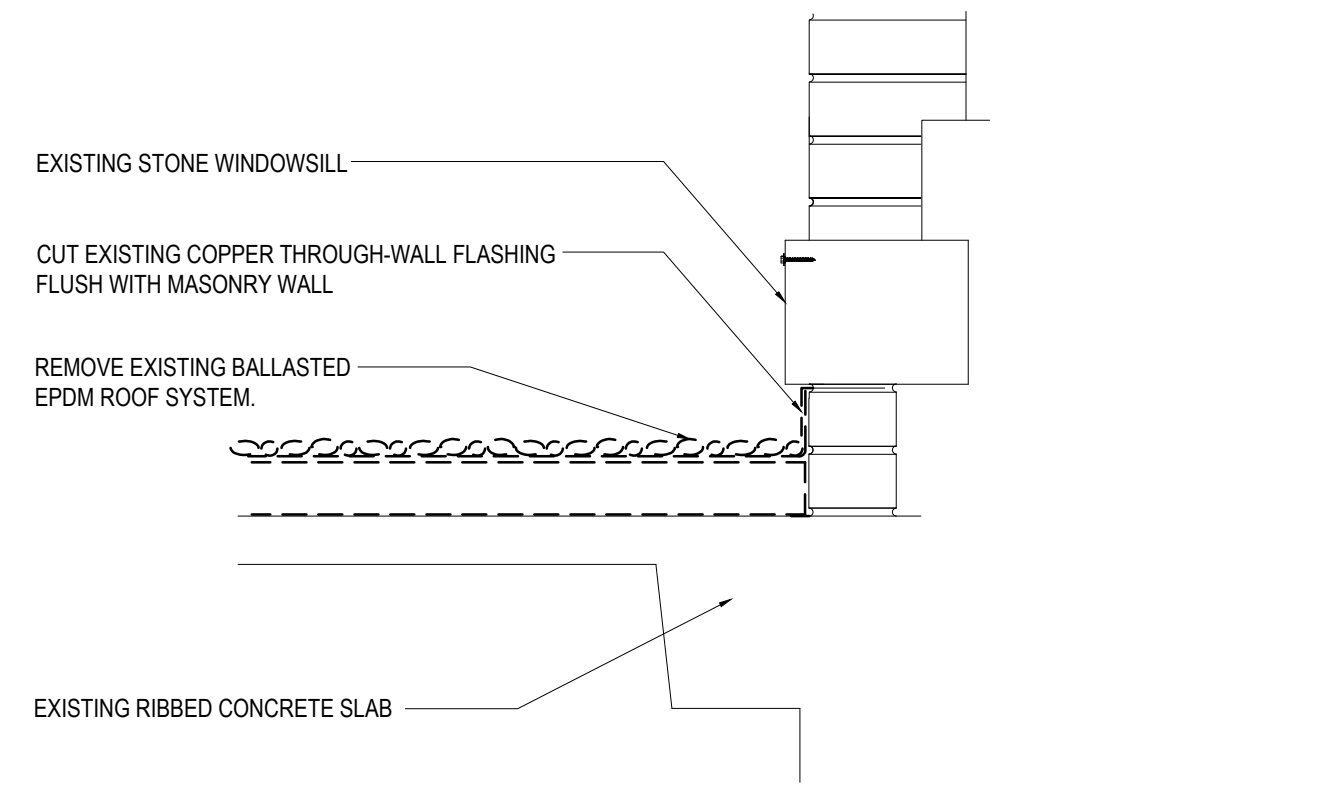
3 RENOVATION
DETAIL: ROOF EDGE AT FORMER CHIMNEY AT ROOF B
1-1/2" = 1'-0"



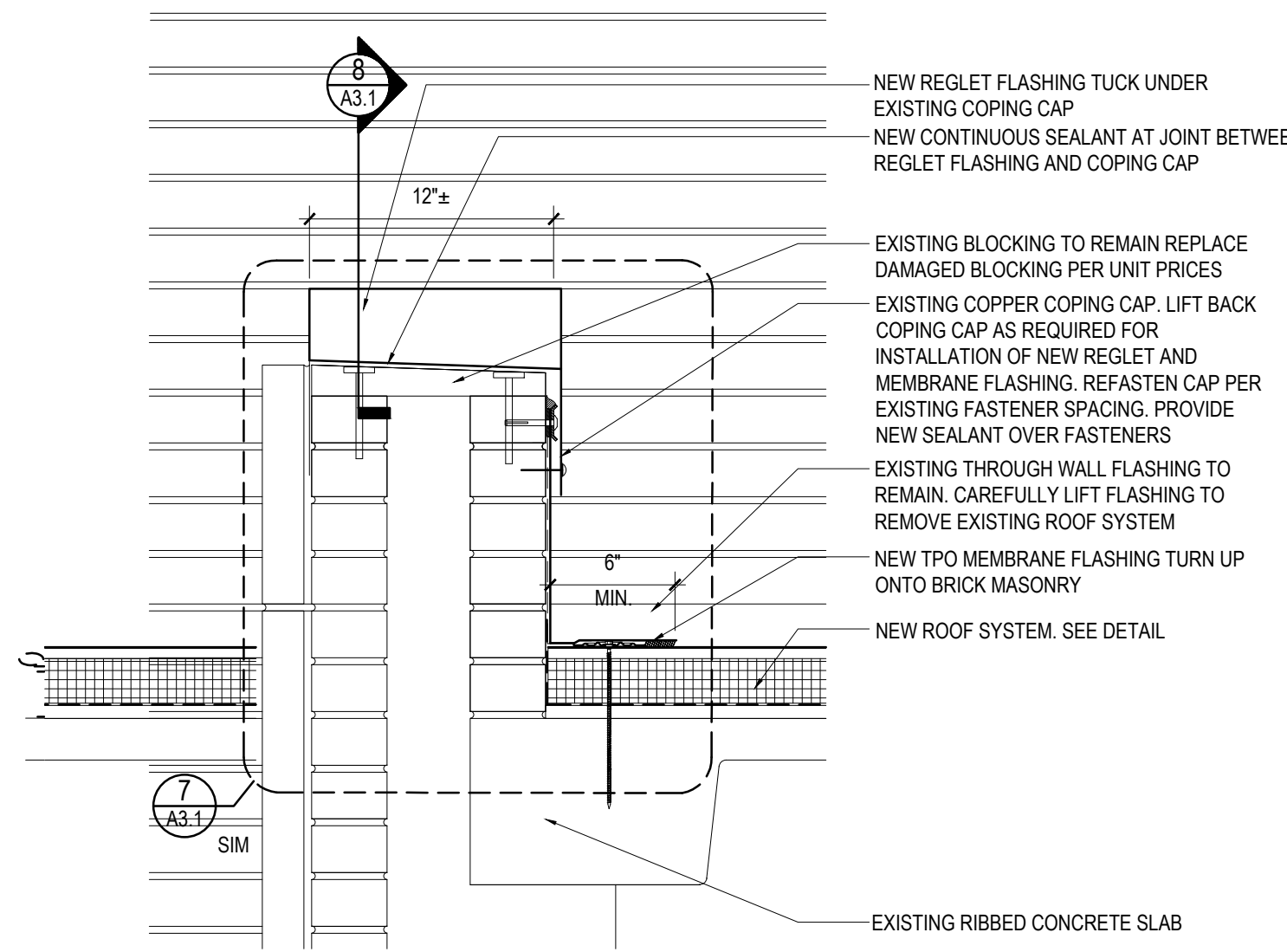
4 RENOVATION
ENLARGED DETAIL: ROOF EDGE AT ROOF B
3" = 1'-0"



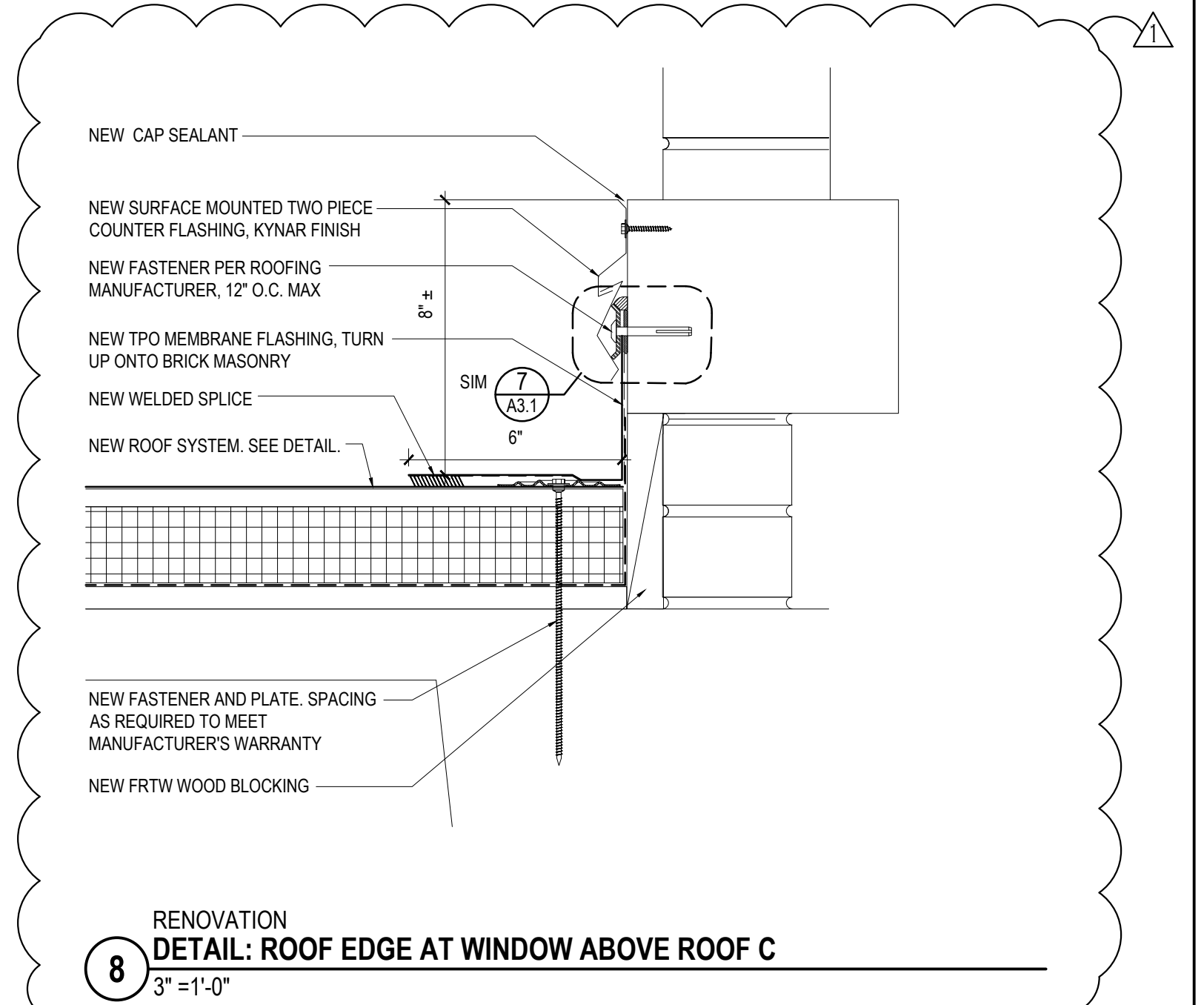
5 DEMOLITION
DETAIL: ROOF EDGE AT ROOF C
1-1/2" = 1'-0"



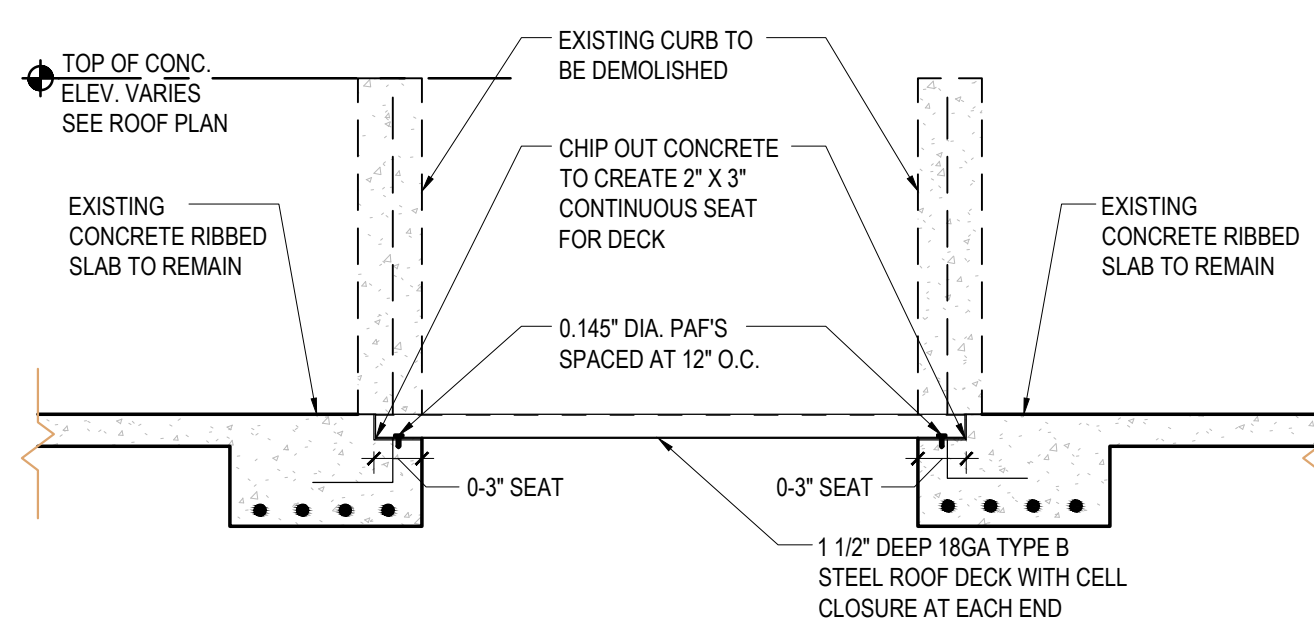
6 DEMOLITION
DETAIL: ROOF EDGE AT ROOF C RISING WALL
1-1/2" = 1'-0"



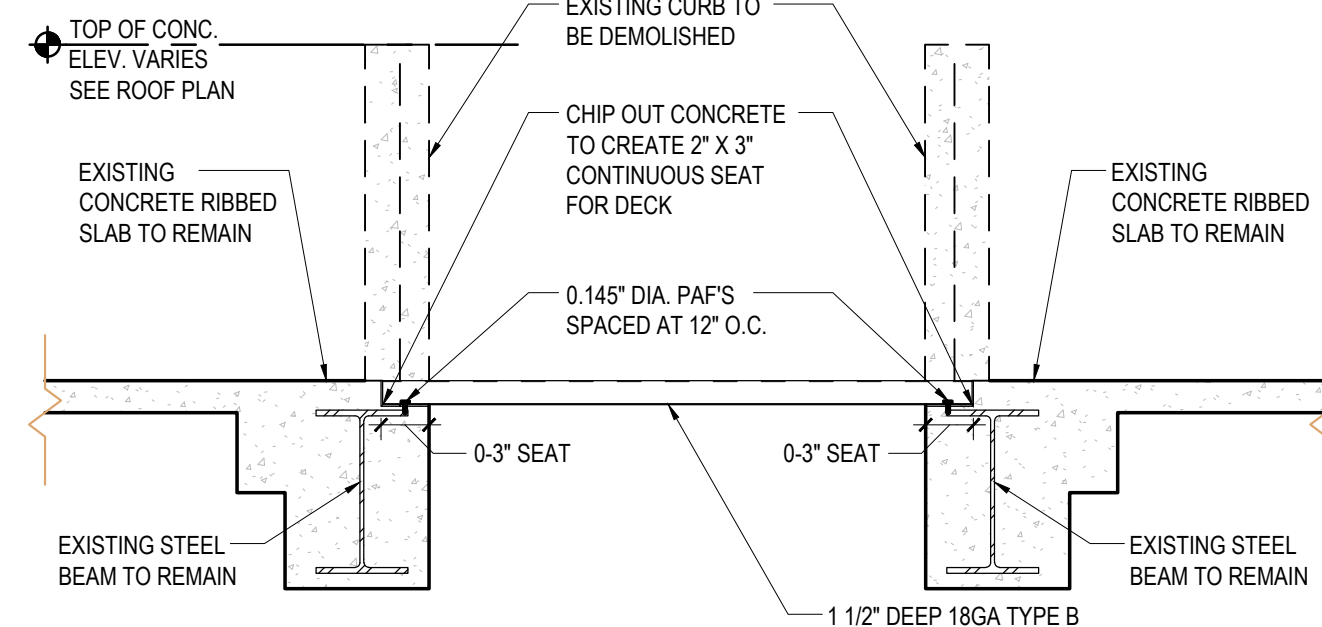
7 RENOVATION
DETAIL: ROOF EDGE AT ROOF C
1-1/2" = 1'-0"



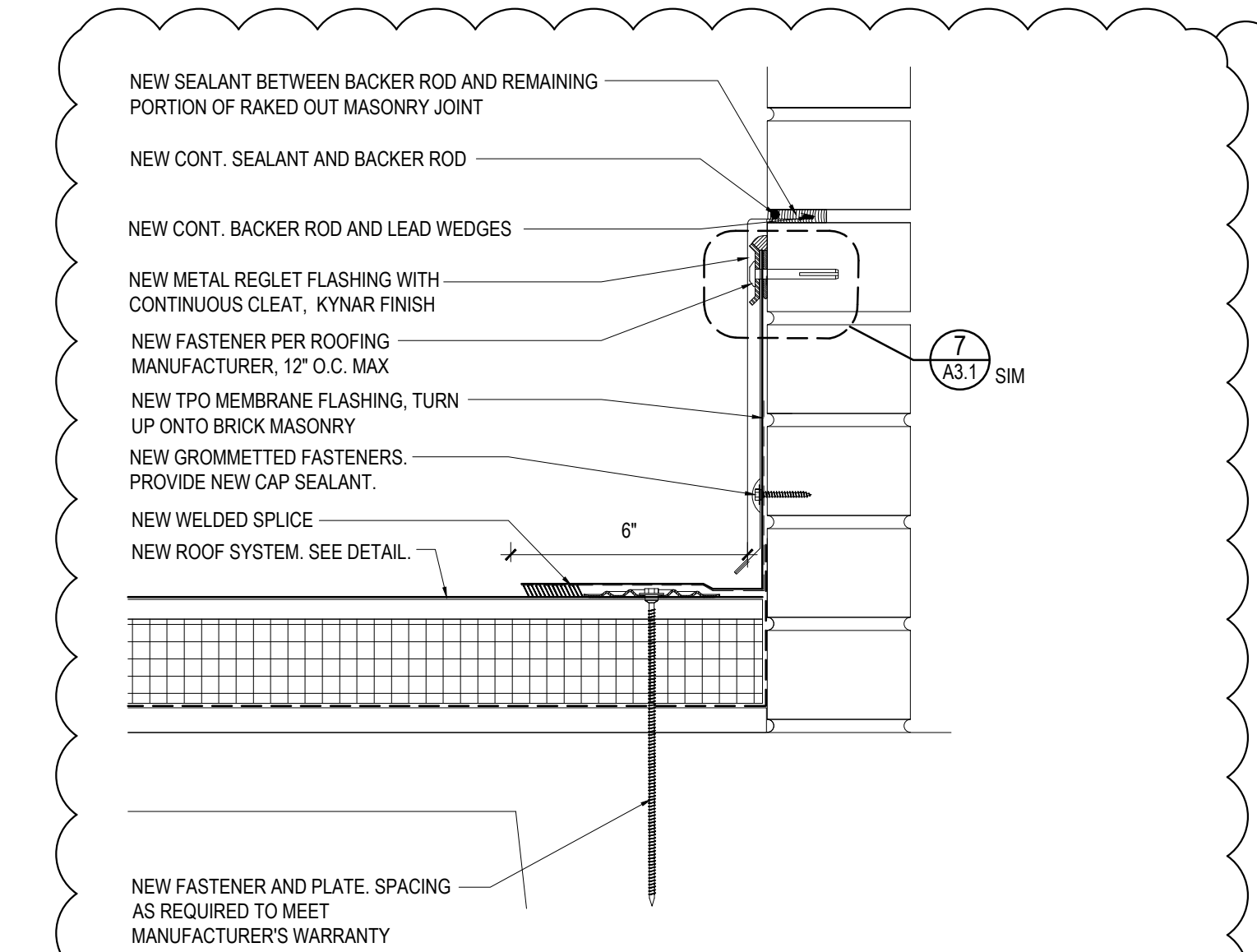
8 RENOVATION
DETAIL: ROOF EDGE AT WINDOW ABOVE ROOF C
3" = 1'-0"



9 DETAIL: ROOF DECK DETAIL AT FORMER FAN OPENING
1" = 1'-0"



10 DETAIL: ROOF DECK DETAIL AT FORMER VENT OPENING
1" = 1'-0"

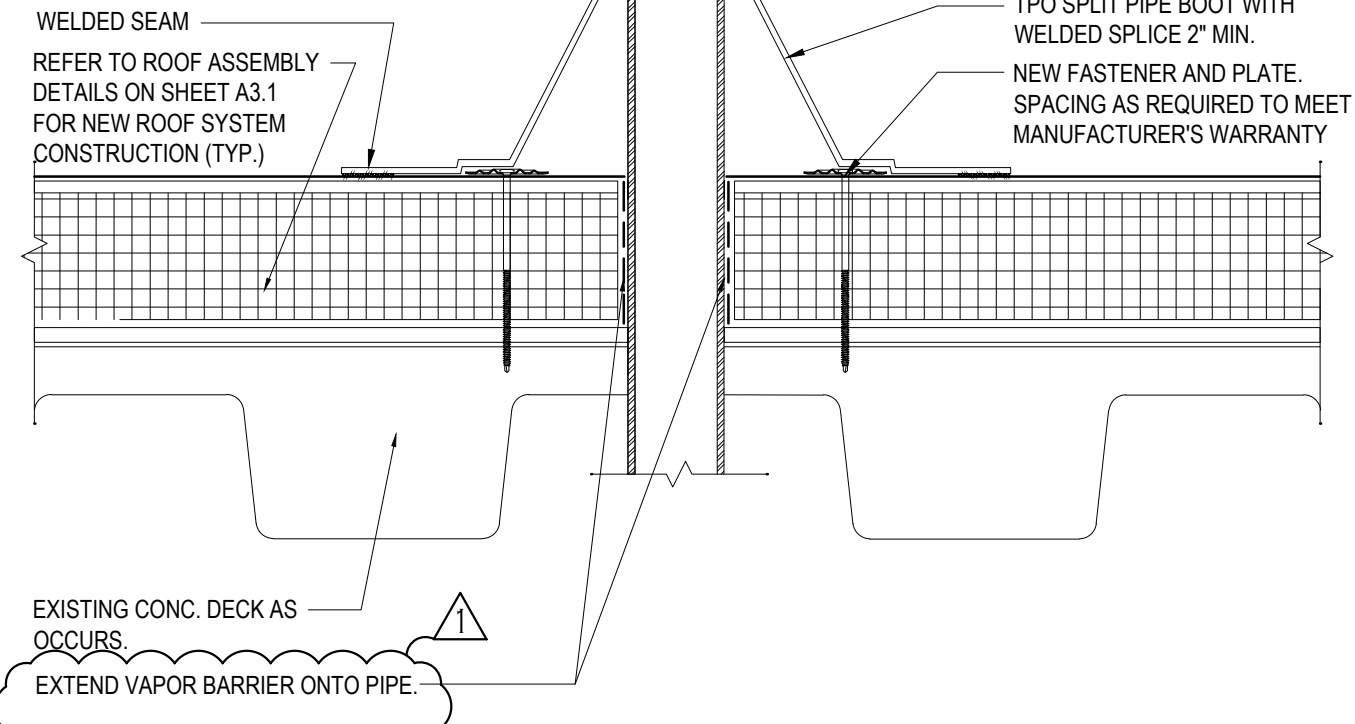


11 DEMOLITION
DETAIL: ROOF EDGE AT ROOF C RISING WALL
3" = 1'-0"

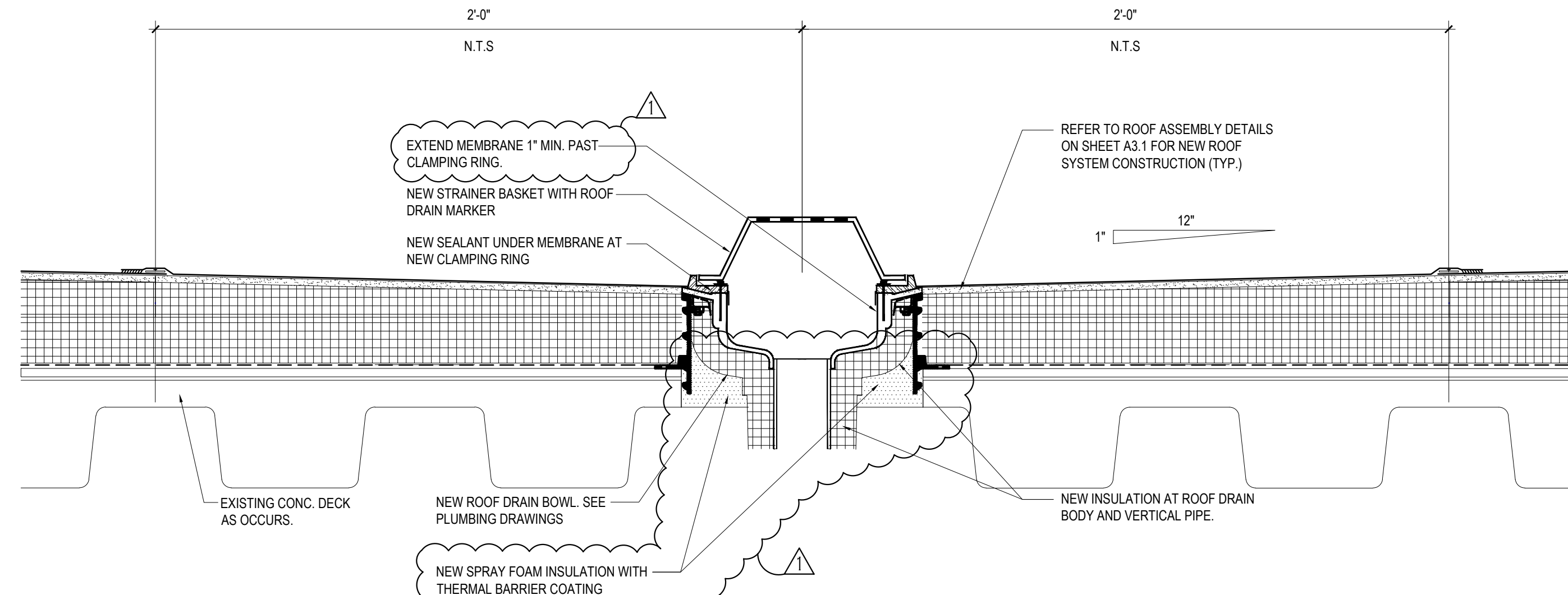
NOTE: REMOVE EXISTING WOOD CANT STRIP AT PERIMETER OF EXISTING CURB.

NOTE: REMOVE EXISTING WOOD CANT STRIP AT PERIMETER OF EXISTING CURB.

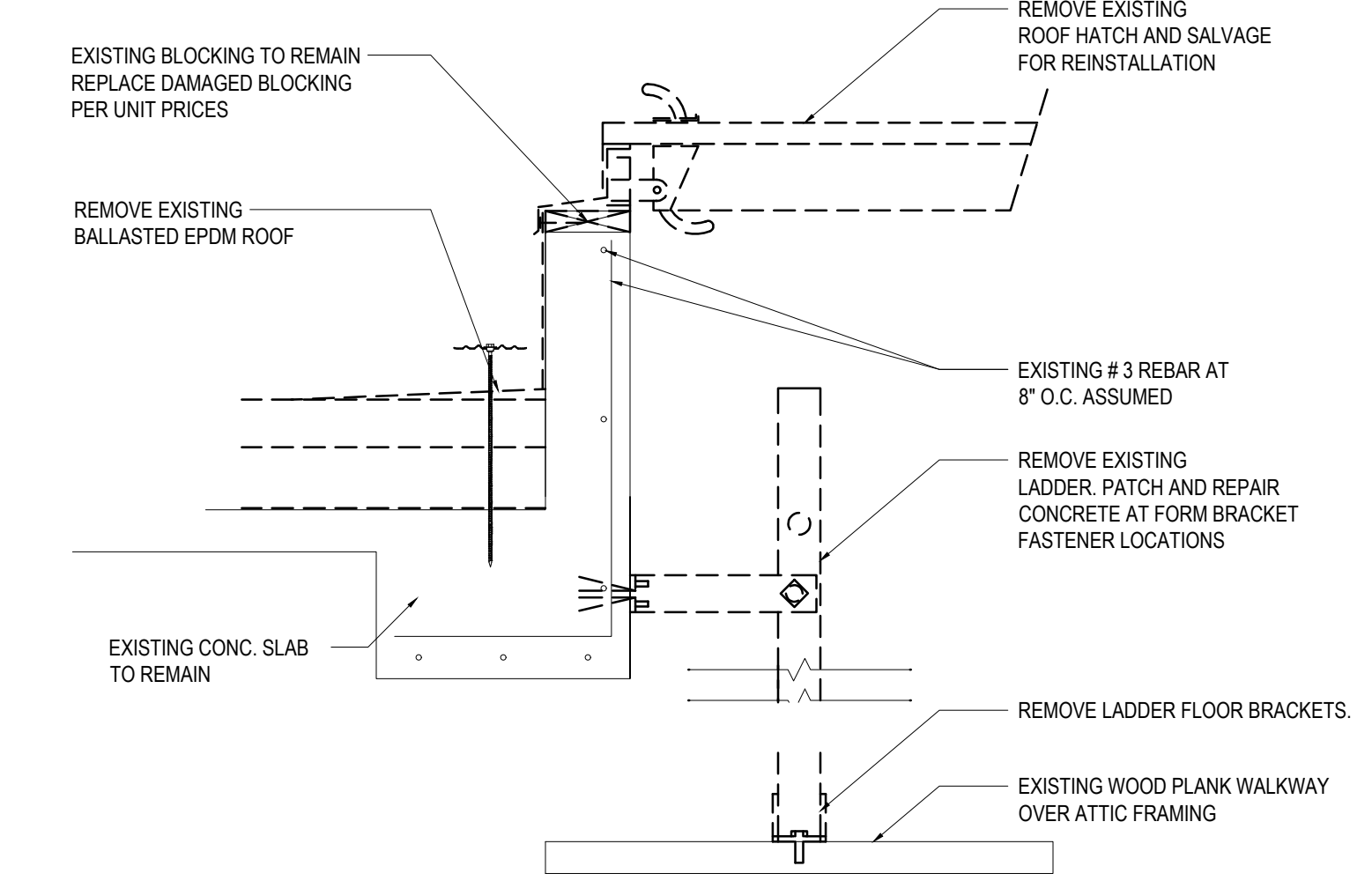
NOTE:
 1. REMOVE ALL EXISTING FLASHING AT EXISTING PIPE PENETRATION. PIPE SURFACE TO BE FREE OF ALL RUST, GREASE AND INSULATION PRIOR TO INSTALLATION OF NEW PIPE FLASHING. PAINT EXISTING VENT STACK WITH RUST INHIBITING PAINT PRIOR TO INSTALLATION OF NEW VENT STACK EXTENSION AND BOOT.
 2. EXTEND EXISTING PIPES TO 24" ABOVE ROOF. SEE PLUMBING DWGS.



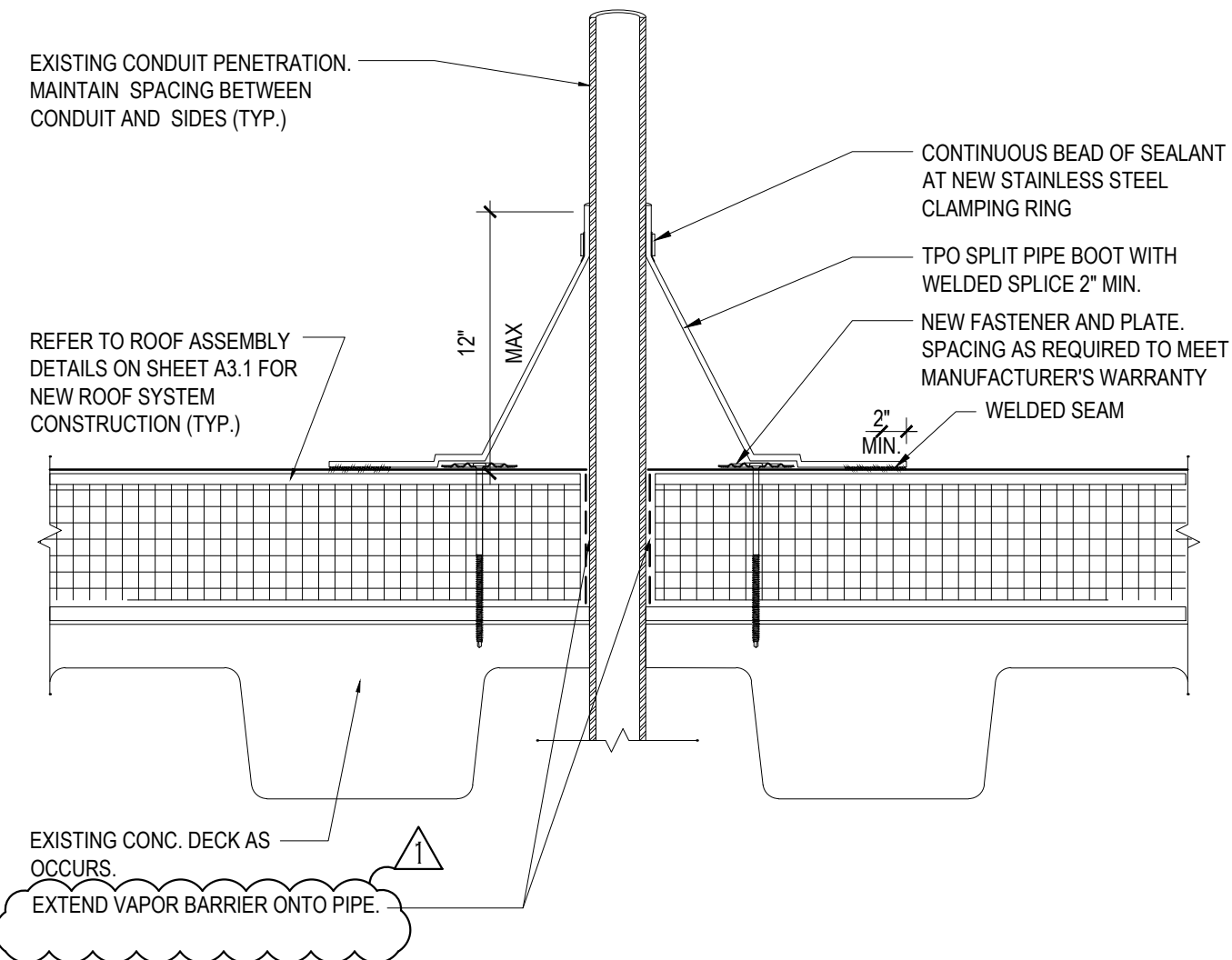
1 RENOVATION TYPICAL DETAIL: VENT STACK
 1-1/2" = 1'-0"



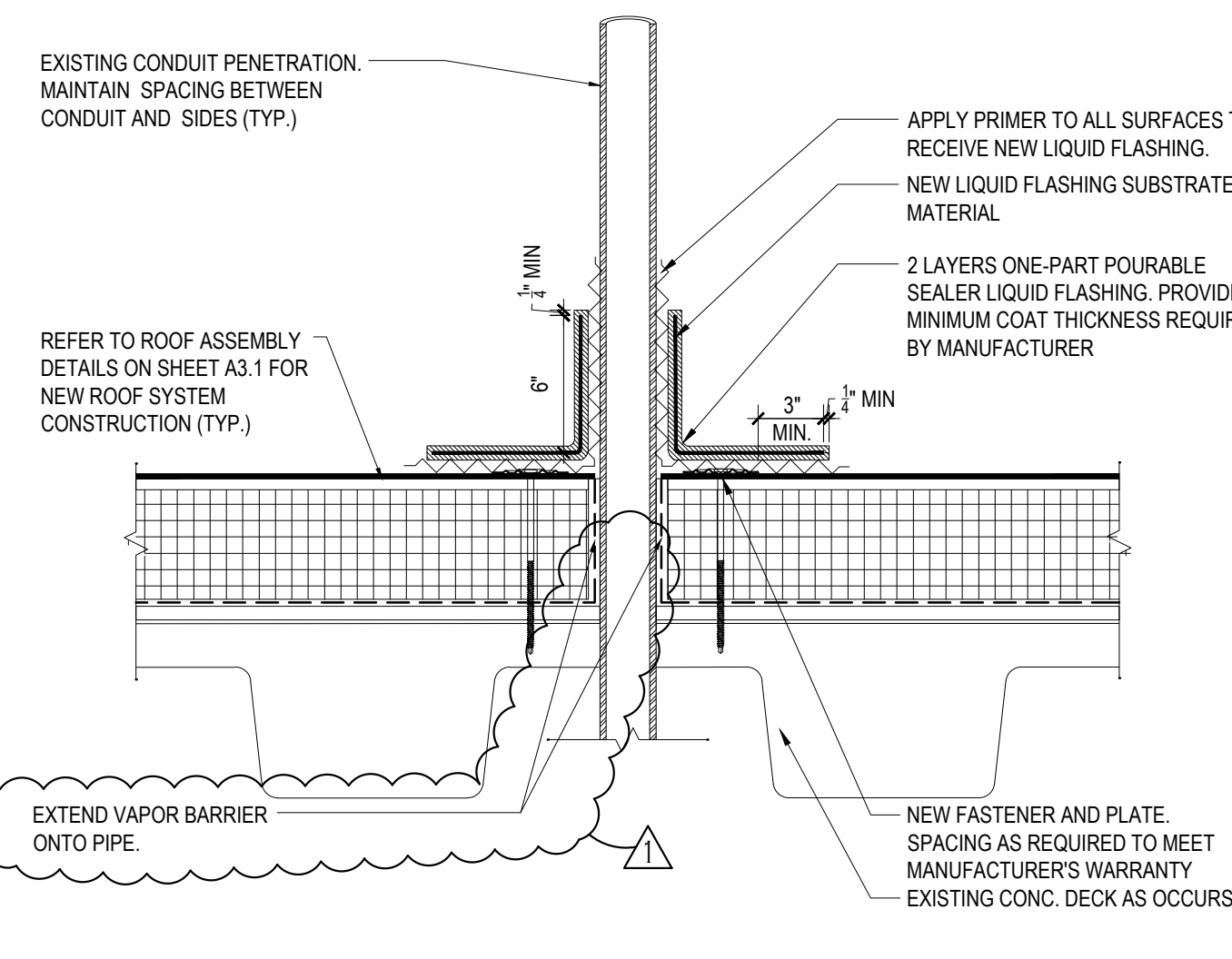
2 RENOVATION TYPICAL DETAIL: ROOF DRAIN
 1-1/2" = 1'-0"



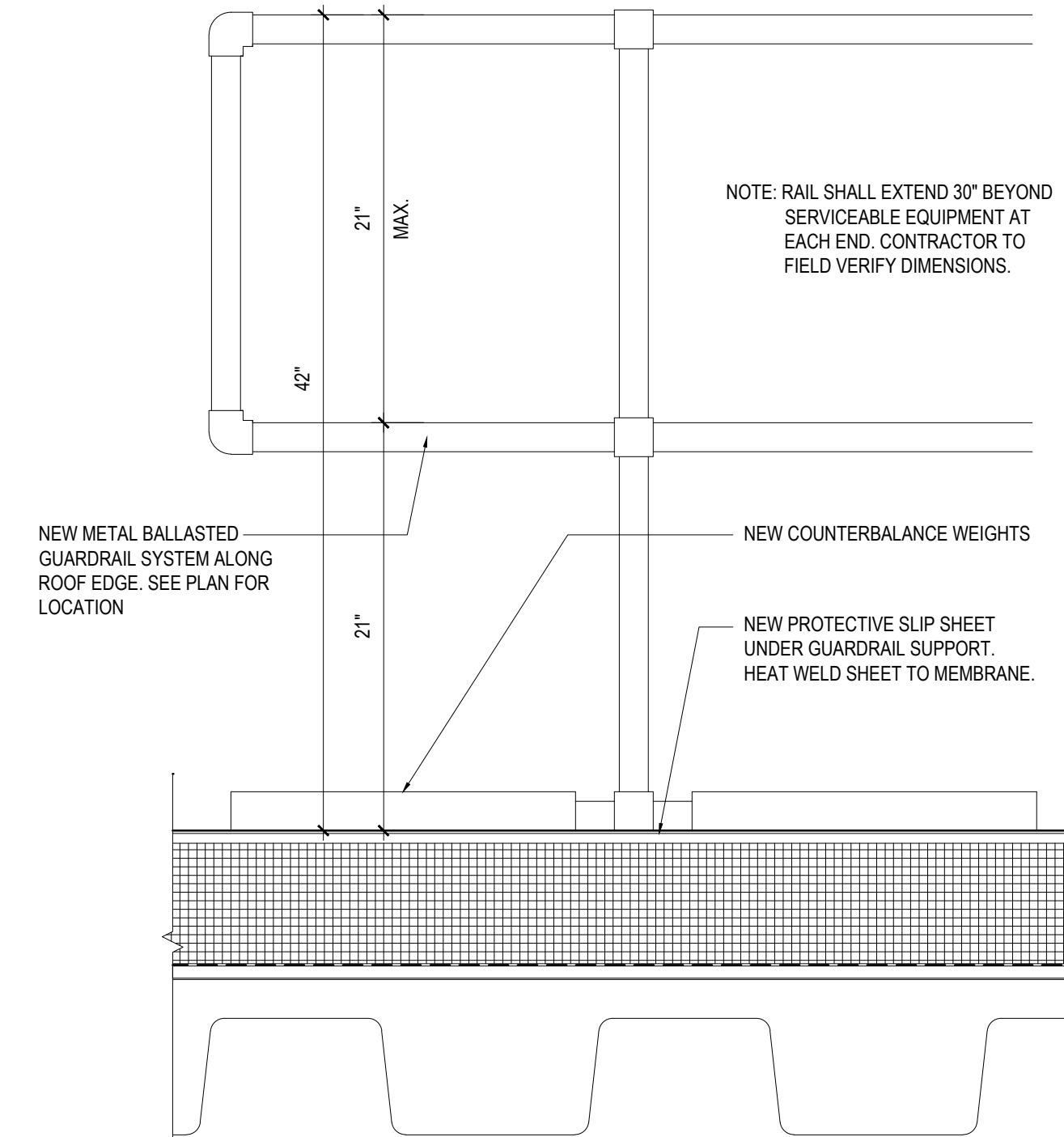
3 DEMOLITION DETAIL: ROOF HATCH
 1-1/2" = 1'-0"



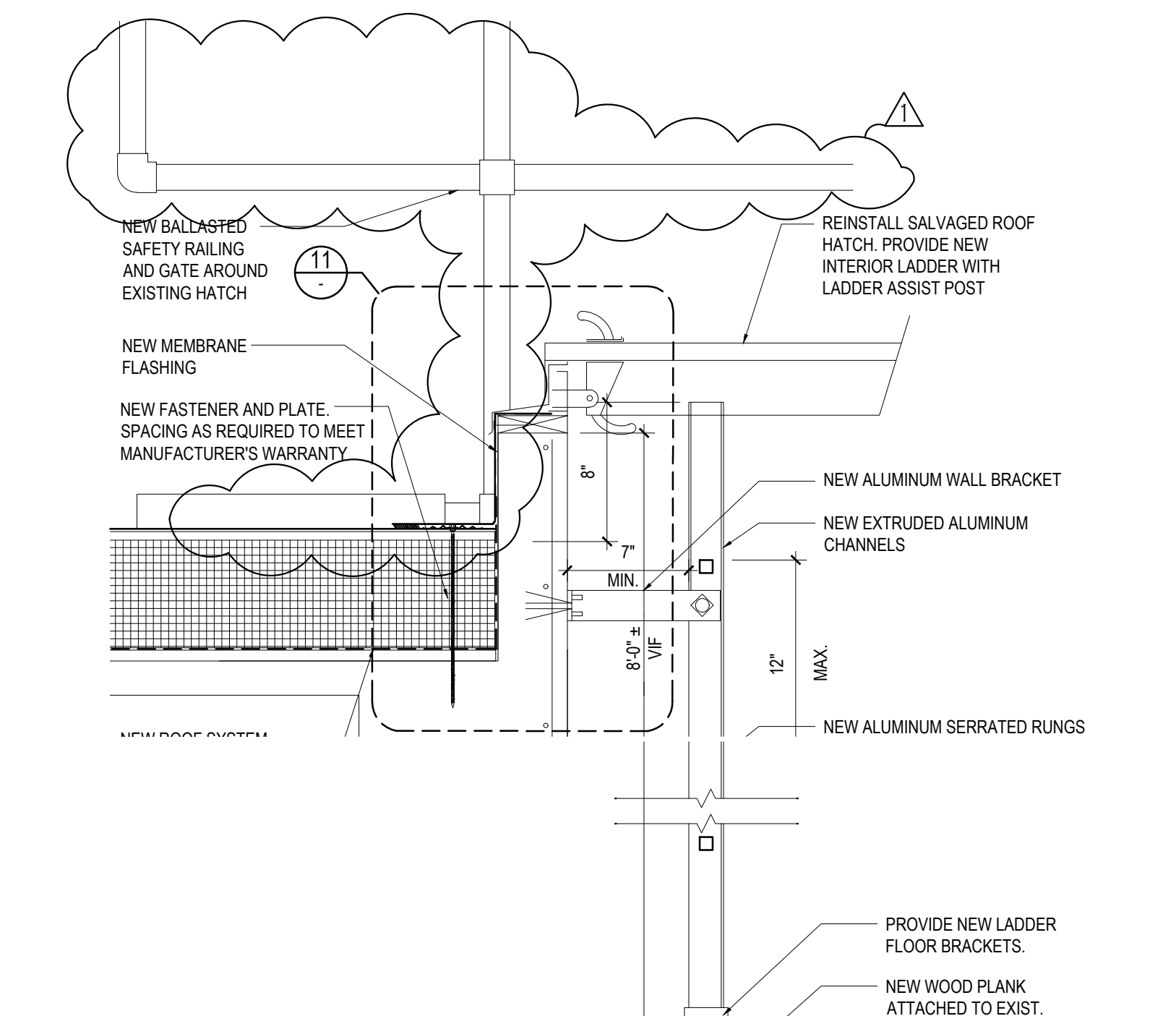
4 RENOVATION TYPICAL DETAIL: PENETRATION W/ BOOT
 1-1/2" = 1'-0"



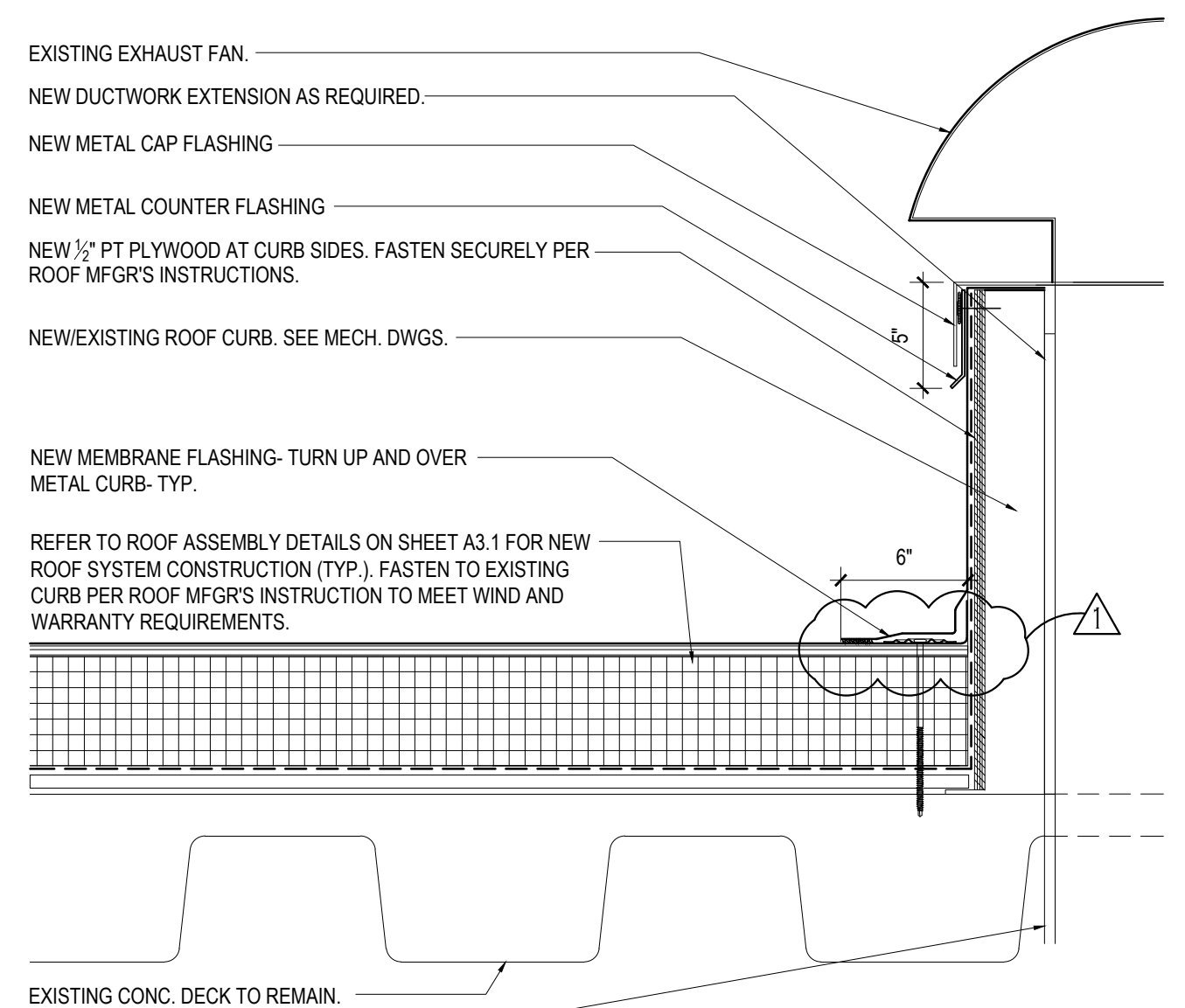
5 RENOVATION TYPICAL DETAIL: PENETRATION W/ LIQUID FLASHING
 1-1/2" = 1'-0"



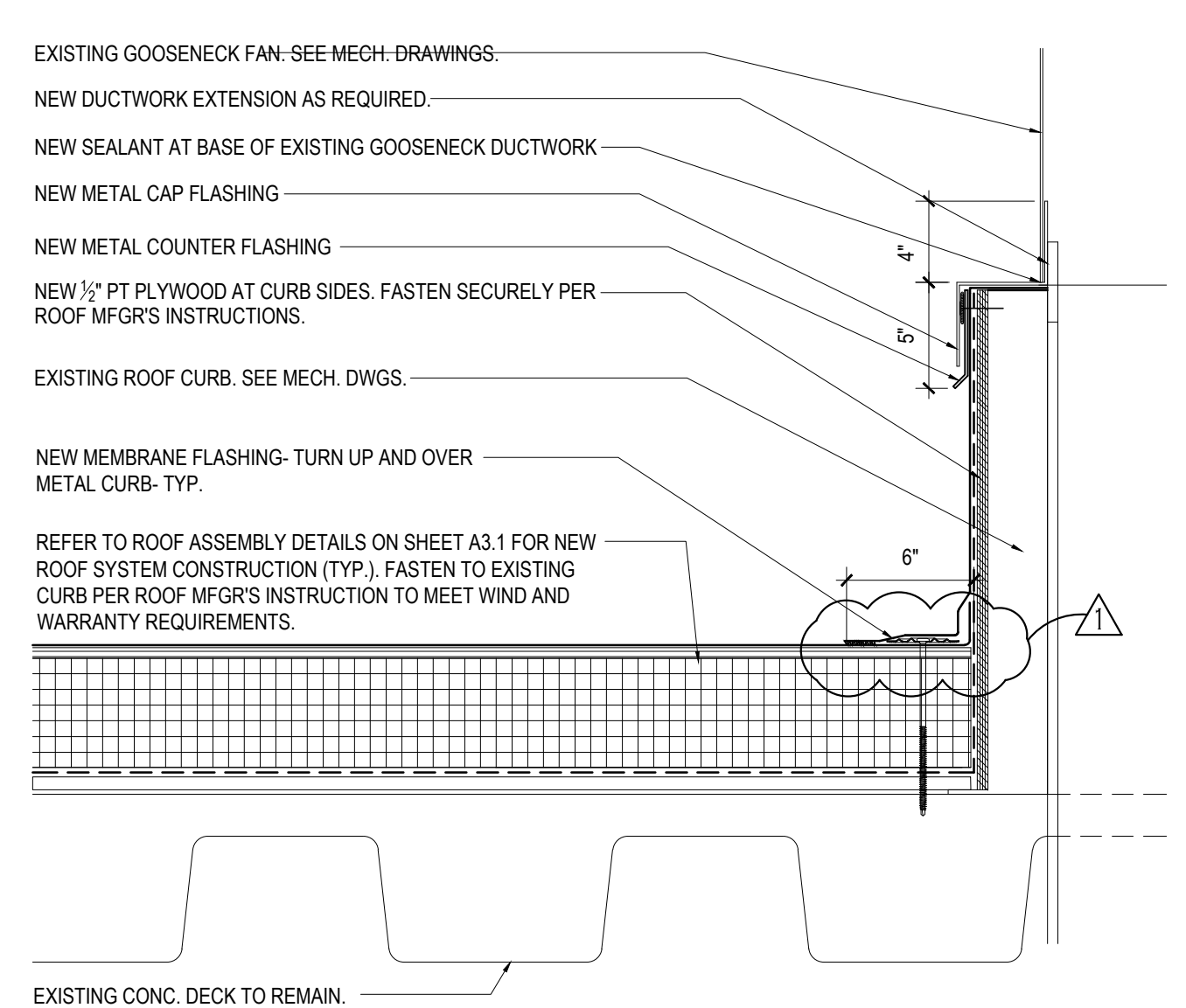
6 RENOVATION TYPICAL RENO DETAIL: BALLASTED SAFETY RAILING
 1-1/2" = 1'-0"



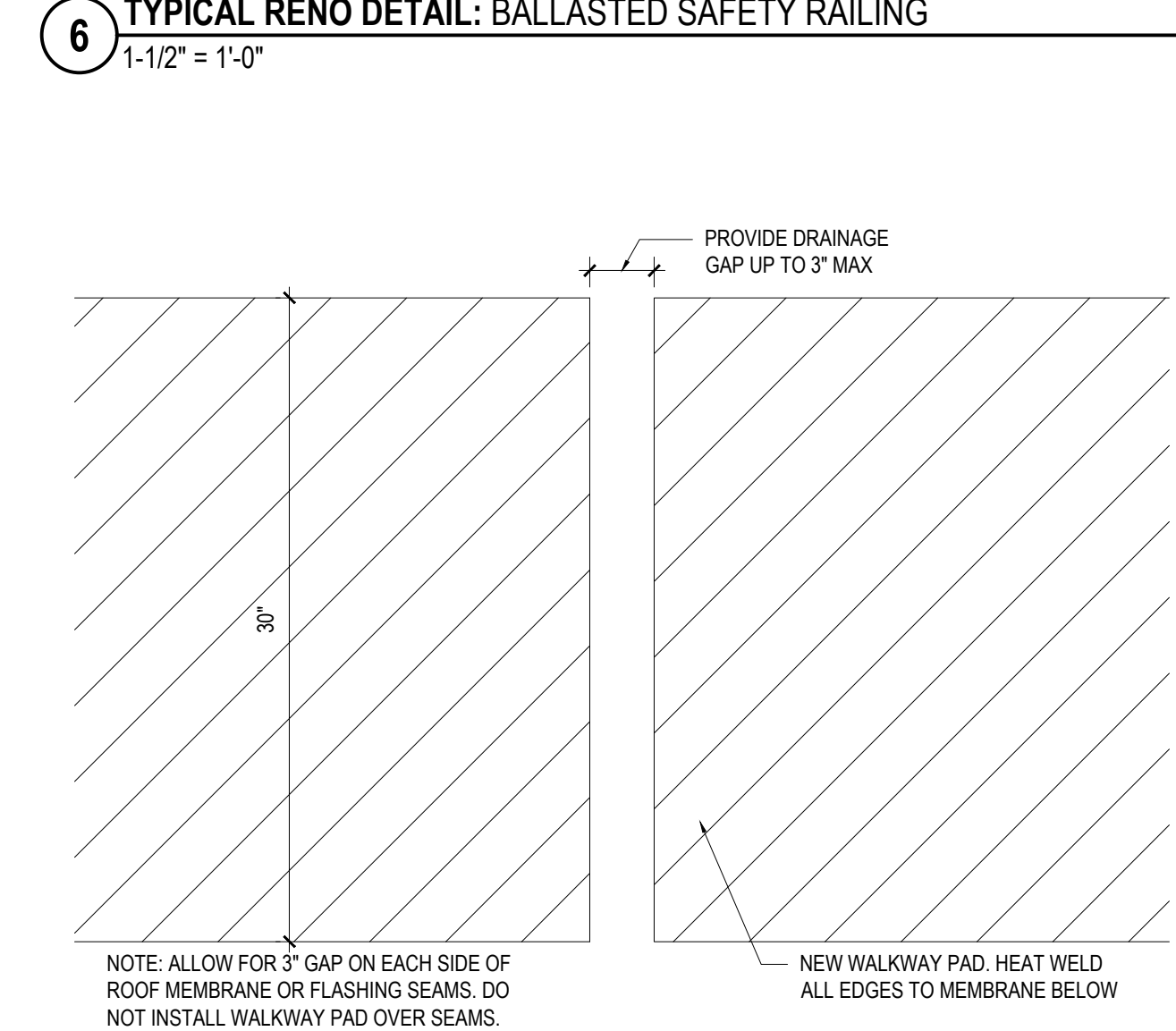
7 RENO DETAIL: ROOF HATCH
 1-1/2" = 1'-0"



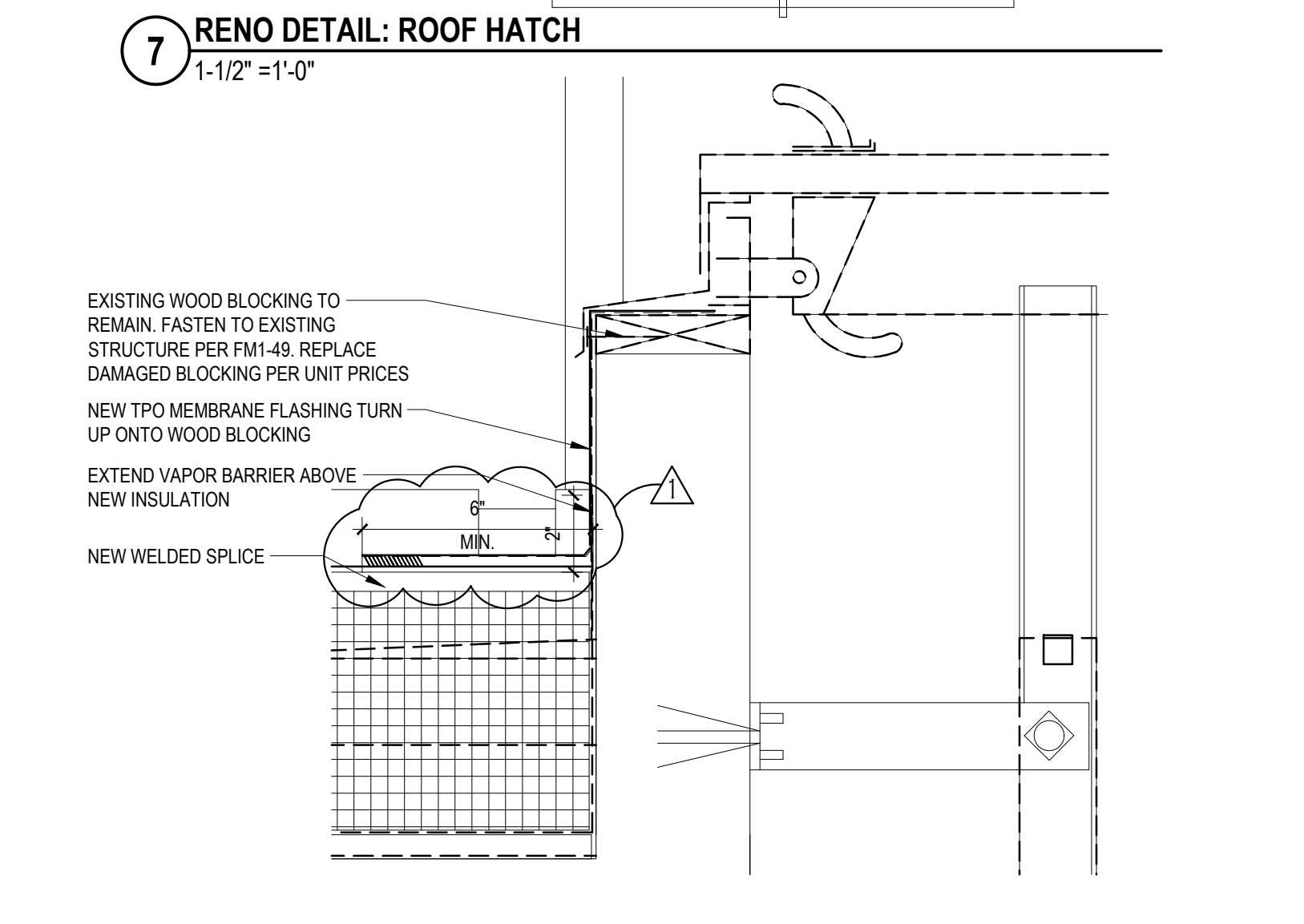
8 RENOVATION TYPICAL DETAIL: MECHANICAL CURB
 1-1/2" = 1'-0"



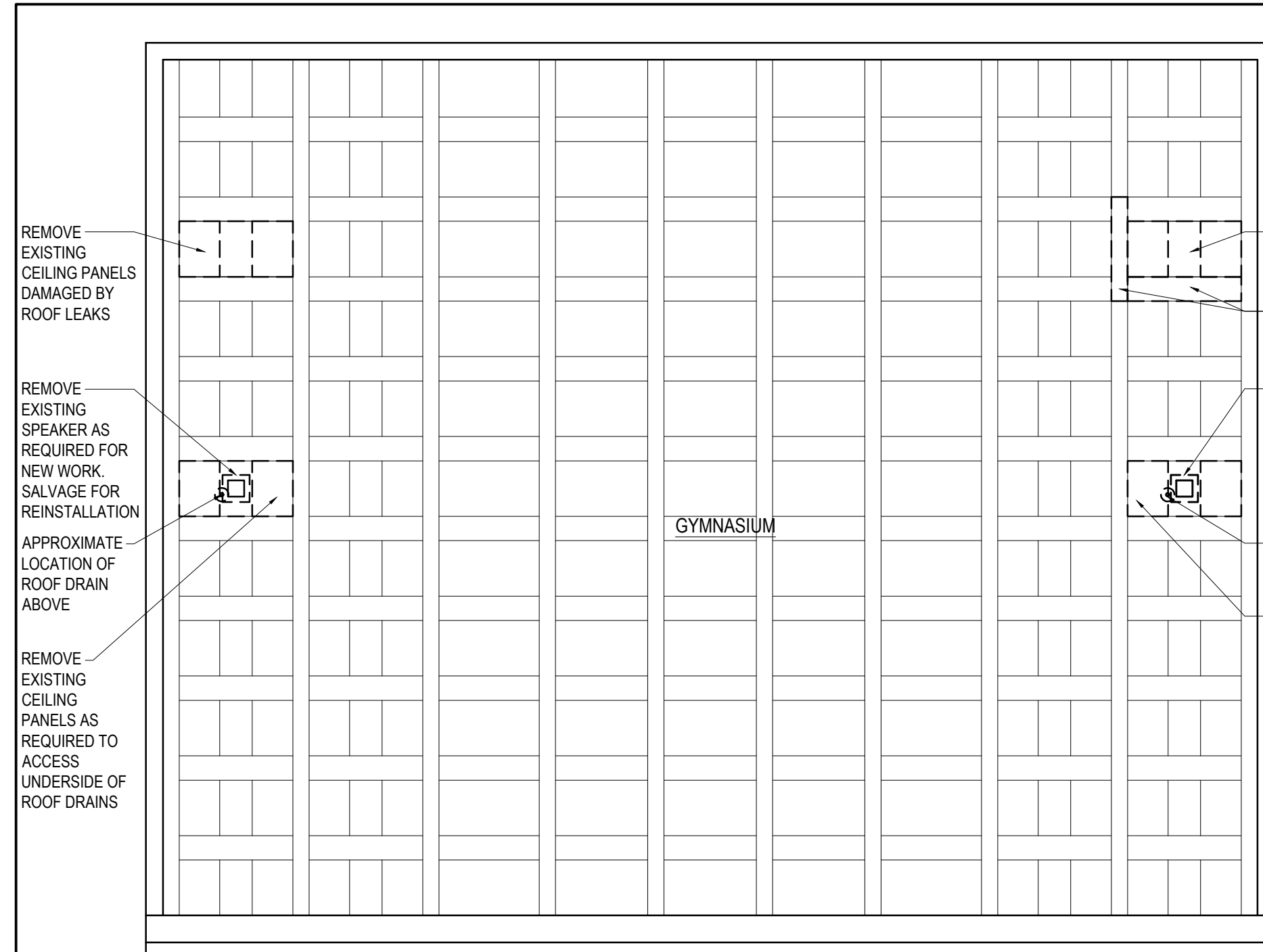
9 RENOVATION TYPICAL DETAIL: GOOSENECK
 1-1/2" = 1'-0"



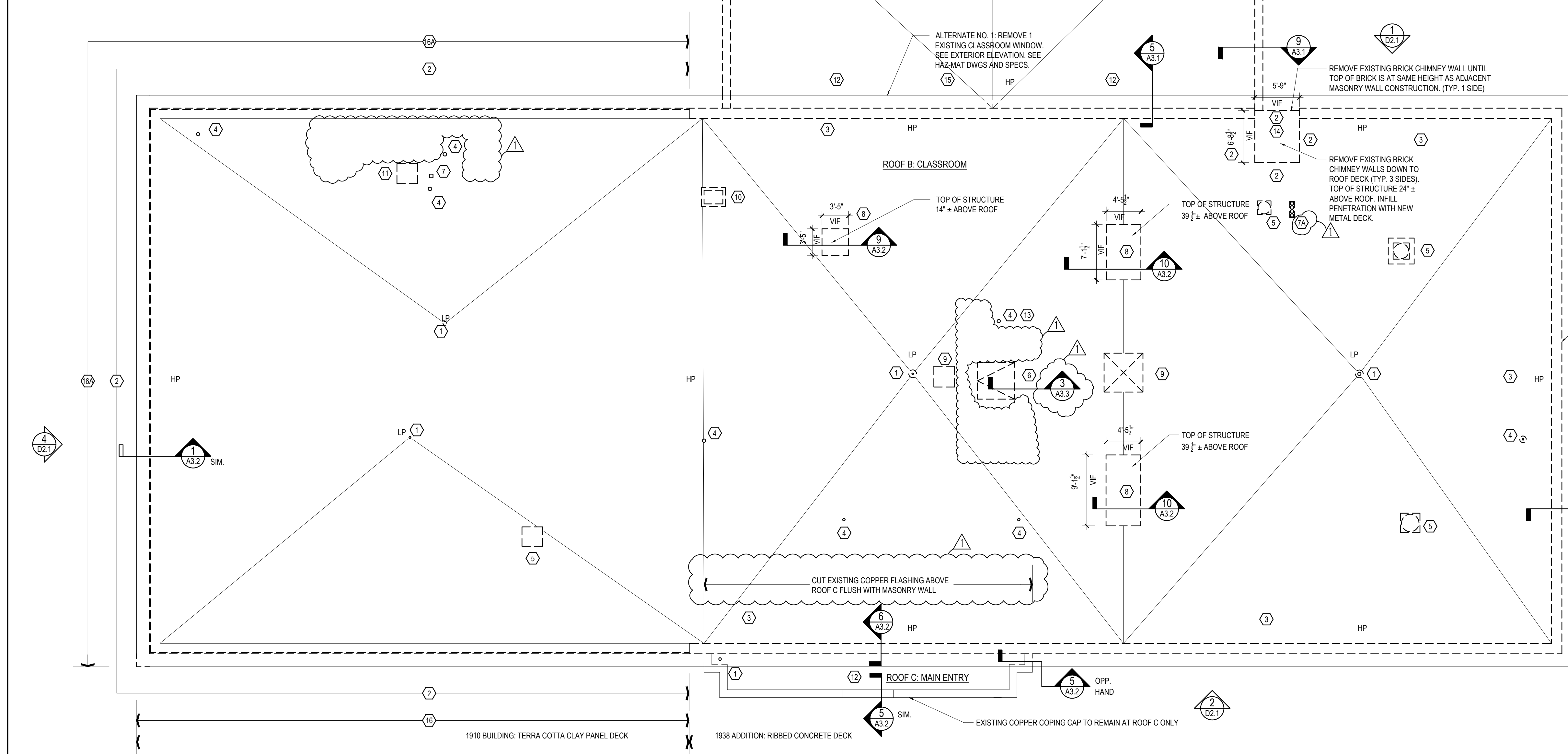
10 RENOVATION TYPICAL RENO DETAIL: WALKWAY PAD
 1-1/2" = 1'-0"



11 RENOVATION DETAIL: ROOF HATCH
 3" = 1'-0"



DEMOLITION
REFLECTED CEILING PLAN: GYMNASIUM (ROOF A)
1/8" = 1'-0"



DEMOLITION
ROOF PLAN
1/8" = 1'-0"

- KEY**
- 1 REMOVE EXISTING ROOF DRAIN, BASKET, CLAMPING RING, ETC. REFER TO HAZ-MAT REPORT
 - 2 REMOVE EXISTING METAL FASCIA AT ROOF B.
 - 3 REMOVE EXISTING METAL COPING CAP AT ROOFS A & B.
 - 4 EXISTING VENT STACK. REMOVE ALL BASE FLASHING, HOSE CLAMPS, SEALANTS AND THE LIKE DOWN TO THE EXISTING ROOF DECK. PREPARE EXISTING VENTS STACKS AS REQUIRED FOR VENT EXTENSIONS. REFER TO PLUMBING DRAWINGS.
 - 5 REMOVE EXISTING EXHAUST FAN AND SALVAGE FOR REINSTALLATION. EXISTING CURB TO REMAIN.
 - 6 REMOVE EXISTING ROOF HATCH AND SALVAGE FOR REINSTALLATION. REMOVE EXISTING INTERIOR LADDER.
 - 7 REMOVE EXISTING PITCH POCKET.
 - 7A REMOVE EXISTING PITCH POCKET AND TWO STEEL THREADED PIPES TO BELOW ROOF DECK. EXISTING COPPER VENT TO REMAIN.
 - 8 EXISTING CONC. MECHANICAL EQUIPMENT CURB TO BE REMOVED AND PENETRATION INFILLED. SEE DETAIL.
 - 9 EXISTING ANTENNA TO BE REMOVED AND SALVAGED FOR REINSTALLATION.
 - 10 EXISTING GOOSENECK DUCT TO BE REMOVED AND SALVAGED
 - 11 REMOVE AND SALVAGE EXISTING UPBLAST EXHAUST FAN. EXISTING CURB TO REMAIN.
 - 12 EXISTING MASONRY WALL THROUGH WALL FLASHING TO REMAIN.
 - 13 EXISTING CONDUIT ATTACHED TO VENT TO BE REMOVED AND SALVAGED.
 - 14 REMOVE EXISTING BRICK CHIMNEY DOWN TO ROOF DECK.
 - 15 REMOVE (1) EXISTING CLASSROOM WINDOW
 - 16 REMOVE EXISTING MORTAR JOINT AND LEAD WEDGES ABOVE VERTICAL COPPER PIECE AT CORNICE
 - 16 ALTERNATE NO. 2: REMOVE EXISTING MORTAR JOINT AND LEAD WEDGES ABOVE VERTICAL COPPER PIECE AT CORNICE
- HP: HIGH POINT, CONFIRM IN FIELD.
LP: LOW POINT, CONFIRM IN FIELD.

- DEMOLITION GENERAL NOTES**
1. REMOVE EXISTING GRAVEL BALLAST MEMBRANE, INSULATION, BLOCKING AND RELATED MATERIALS DOWN TO THE EXISTING ROOF DECK. EXISTING COAL TAR PITCH RESIDUE MAY REMAIN IF APPROVED BY ROOF MANUFACTURER. REFER TO HAZ-MAT DRAWINGS AND SPECS FOR HAZARDOUS MATERIAL REMOVAL.
 2. REMOVE EXISTING METAL FASCIA AND COPING CAP AT ALL ROOF EDGES INCLUDING FASTENERS, SEALANTS & RELATED MATERIALS.
 3. EXISTING CONC. ROOF DECK TO REMAIN. CONTRACTOR TO REVIEW IN THE FIELD WITH ARCHITECT AREAS OF DAMAGED DECKING. CONTRACTOR TO PATCH AND REPAIR AREAS OF DAMAGED DECKING PER UNIT PRICES.
 4. EXISTING TERRA COTTA PANEL DECK TO REMAIN. CONTRACTOR TO REVIEW IN THE FIELD WITH ARCHITECT AREAS OF DAMAGED DECKING. CONTRACTOR TO PATCH AND REPAIR AREAS OF DAMAGED DECKING PER UNIT PRICES.
 5. CONTRACTOR TO REVIEW CONDITION OF EXISTING SUBSTRATE WITH ROOFING MANUFACTURER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF NEW ROOF SYSTEM WORK.
 6. THIS DRAWING REPRESENTS THE EXISTING CONDITIONS AS OBSERVED BY THE ARCHITECT. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF WORK AND SHALL BE RESPONSIBLE FOR ANY OMISSIONS PER THE CONTRACT DOCUMENTS
 7. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING BUILDING WATER TIGHT AT ALL TIMES.
 8. RAKE OUT EXISTING MORTAR JOINT 1" DEEP AND REMOVE LEAD WEDGES ABOVE VERTICAL COPPER PIECE AT CORNICE.
 9. CONTRACTOR TO PROVIDE TEMPORARY WOOD PLANKING OVER ATTIC FRAMING TO REACH UNDERSIDE OF EXISTING ROOF DRAINS TO ALLOW FOR NEW WORK.

- EXISTING ROOF CONSTRUCTION**
- ROOF A: GYMNASIUM**
- PITCHED RIBBED CONCRETE SLAB ON CONCRETE ENCASED BEAMS AND STEEL COLUMNS
 - FORMER COAL TAR PITCH ROOF
 - TWO LAYERS OF 2-1/4" INSULATION
 - EPDM MEMBRANE
 - GRAVEL BALLAST
- ROOF B: CLASSROOMS**
- PITCHED RIBBED CONCRETE SLAB ON CONCRETE ENCASED BEAMS AND STEEL COLUMNS (1938 ADDITION)
 - TERRA COTTA PANELS SPANNING ON BULB TEES SPANNING BETWEEN INTERIOR STEEL BEAMS AND EXTERIOR MASONRY BEARING WALLS (1910 ORIGINAL BUILDING)
 - FORMER COAL TAR PITCH ROOF
 - TWO LAYERS OF 2-1/4" INSULATION
 - EPDM MEMBRANE
 - GRAVEL BALLAST
- ROOF C: MAIN ENTRY**
- PITCHED RIBBED CONCRETE SLAB ON CONCRETE ENCASED BEAMS AND STEEL COLUMNS (1938 ADDITION)
 - FORMER COAL TAR PITCH ROOF
 - ONE LAYER OF 2-1/4" INSULATION
 - EPDM MEMBRANE
 - GRAVEL BALLAST

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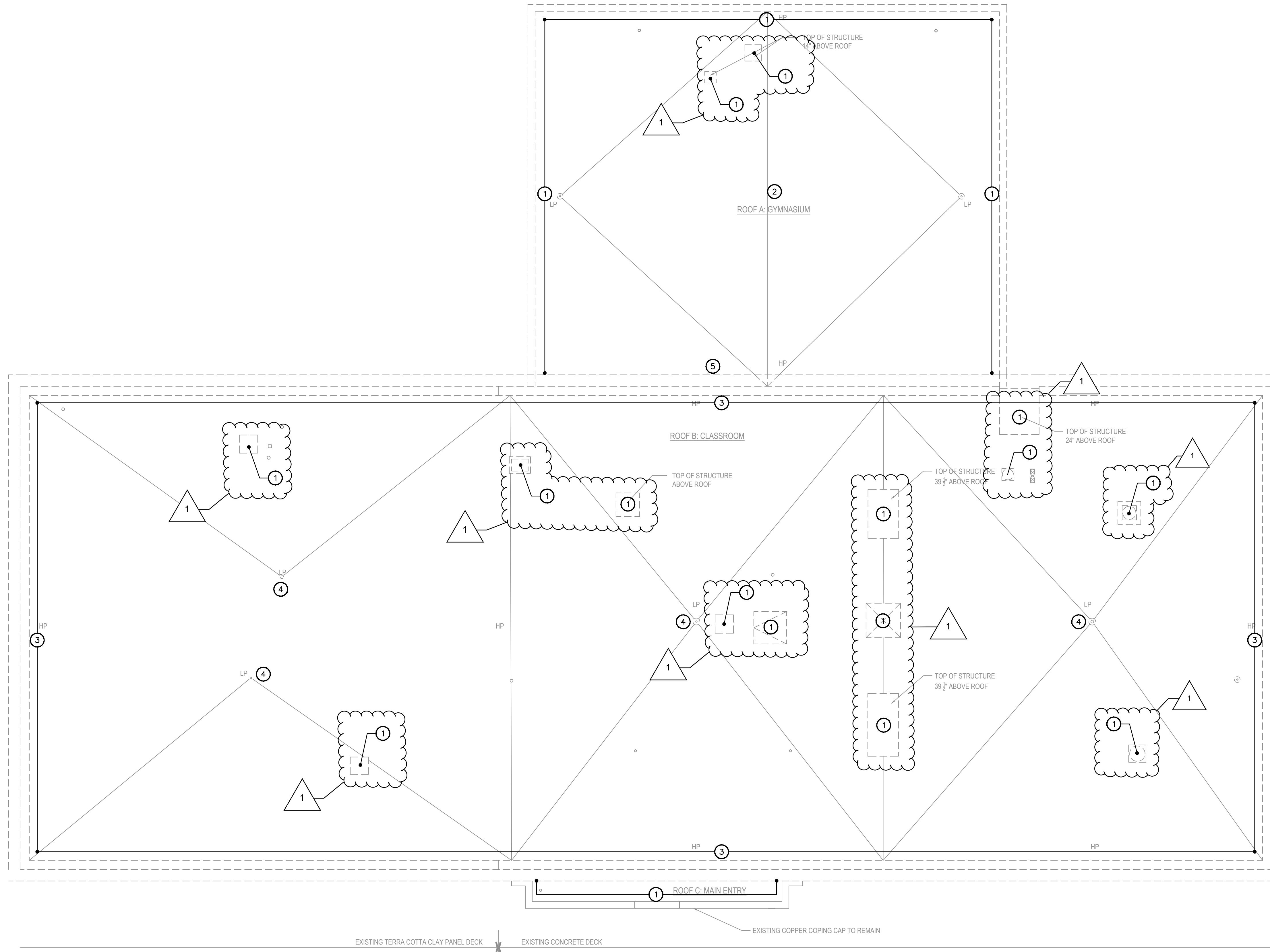
MSBA ACCELERATED REPAIR PROGRAM
AMIGOS ELEMENTARY SCHOOL
15 UPTON STREET
CAMBRIDGE, MA 02139

DEMOLITION
ROOF PLAN
PROJECT NO: 21101.03
SCALE: 1/8"=1'-0"
DATE: 7 FEBRUARY 2024
REVISIONS: 6 MARCH 2024

D1.1

File: J:\DWG\2023\0226A10\Environmental\Hazmat\20230226A10_HAZ01.dwg Layout: HM-01 Plotted: 2024-03-06 4:39 PM Saved: 2024-03-06 4:38 PM User: Slons
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HAZARDOUS MATERIALS ABATEMENT ROOF PLAN
 1/8" = 1'-0"



ASBESTOS ABATEMENT NOTES

- ① THE HAZARDOUS MATERIALS CONTRACTOR SHALL REMOVE AND DISPOSE OF FLASHING MASTICS AS ACM - INCLUDES REMOVAL OF ALL FLASHING, FELTS, ROOF CEMENTS, AND/OR MASTICS DOWN TO SUBSTRATE.
 - ② THE HAZARDOUS MATERIALS CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ROOF CEMENTS AND/OR MASTICS ASSOCIATED WITH THE ORIGINAL ROOF VENTS AS ACM.
 - ③ THE HAZARDOUS MATERIALS CONTRACTOR SHALL REMOVE AND DISPOSE OF ROOFING FELTS AS ACM - INCLUDES REMOVAL OF ALL FELTS, ROOFING CEMENTS, AND/OR MASTICS EXTENDING FROM THE PERIMETER EDGE OUT TO A MINIMUM OF 18 INCHES INTO THE ROOFING FIELD.
 - ④ THE HAZARDOUS MATERIALS CONTRACTOR SHALL REMOVE AND DISPOSE OF PRE-FORMED BLOCK INSULATION ASSOCIATED WITH THE DRAINAGE PIPE SYSTEMS AS ACM.
- ALTERNATE 1:**
- ⑤ THE HAZARDOUS MATERIALS CONTRACTOR SHALL REMOVE AND DISPOSE OF WINDOW CAULKING & GLAZING COMPOUNDS AS ASSUMED ACM AND PRESUMED PCB >50 PPB. APPROXIMATE WINDOW SIZE = 3'-10" WIDE BY 10'-9 1/2" HIGH.

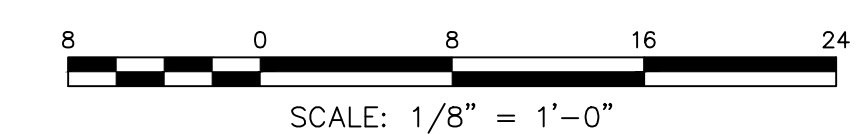
GENERAL NOTES

1. THE ASBESTOS CONTRACTOR SHALL REVIEW SECTIONS 028213 - ASBESTOS ABATEMENT FOR ADDITIONAL DETAILS IN REGARD TO REMOVAL.
2. RENOVATION/DEMOLITION AREAS REPRESENTED ON THIS DRAWING ARE TO BETTER AID IN THE IDENTIFICATION OF AREAS REQUIRING ABATEMENT. THE ASBESTOS ABATEMENT CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR RENOVATION/DEMOLITION INFORMATION.

MAP REFERENCE

1. EXISTING FEATURES PLAN BASED ON DRAWING D1.1 FROM THE PLAN SET ENTITLED "DEMOLITION ROOF PLAN MSCBA ACCELERATED REPAIR PROGRAM AMIGOS ELEMENTARY SCHOOL " PREPARED BY CIVITECTS PC

EDGE OF EXISTING ROOF
 EDGE OF EXISTING COPPER CORNICE BELOW



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HAZARDOUS MATERIALS ABATEMENT
 ROOF PLAN
 PROJECT NO.: 21101.03
 SCALE: 1/8" = 1'-0"
 DATE: 7 FEBRUARY 2024
 REVISIONS: 6 MARCH 2024

HM1.1