



Construction Contracts Administration, Procurement, Contracts, & Materials Management (PCMM)  
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May 8, 2017

Oregon State University  
Construction Contract Administration  
Campus Roof Replacement 2017  
Solicitation # 187847

### ADDENDUM NO. 1

THIS ADDENDUM IS BEING ISSUED for clarification and/or revisions of the Request for Qualifications as noted. This document is hereby made a part of the Contract Documents to the extent as though it was originally included herein.

### TECHNICAL SPECIFICATIONS:

Item 1           REPLACE in their entirety the following “REVISED 3/15/2017” specifications for the *Agriculture & Life Sciences* building:

02 41 00 – Selective Demolition  
06 10 10 – Rough Carpentry  
06 05 73 – Fire Treated Wood  
07 52 15 – SBS Modified Bitumen Roofing (Cold)  
07 51 35 – Adhered Fleeceback EPDM  
07 62 00 – Flashing and Sheet Metal  
07 92 00 – Joint Sealers  
09 91 00 – Painting  
22 14 26 – Roof Drains  
23 00 00 – Basic Mechanical Requirements  
26 00 00 – Basic Electrical

### DRAWINGS:

Item 2           REPLACE in their entirety the following drawings (DATED 3/15/2017) for *Cordley Hall*:

G0.1 – Cover Sheet, Project Information  
A1.1 – Site Plan  
A2.1 – Roof Plan  
A2.2 – Enlarged Roof Plan East  
A2.3 – Enlarged Roof Plan West



A2.4 – Warning Line & Fall Anchor Roof Plan East  
A2.5 – Warning Line & Fall Anchor Roof Plan West  
A8.1 – Details  
A8.2 – Details

Item 3           ADD attached Sheet A1.2 – Tree Protection Site Plan, dated 3/15/2017 for *Cordley Hall*.

Item 4           ADD attached Sheet A2.6 – Proposed New Drain Pipe Routing Roof Plan West, dated 5/2/2017 for *Cordley Hall*.

QUESTIONS/CLARIFICATIONS:

Item 5           **Q:** *Cordley Hall*: Does Keyed Note 1 on A2.2 noted as Typical for existing OF Drains on sheet A2.2 also apply to sheet A2.3? Please provide wall cross section detail for this scope and specification for brick, if available.  
**A:** Yes, Cross section is indicated on the parapet details, brick veneer and concrete walls. Match existing brick and tooth in full bricks.

Item 6           The attached substitution request for CertainTeed Corporation is approved for *ALS* only.

Item 7           **Q:** Please provide plumbing as-builts.  
**A:** As-Builts for the 4<sup>th</sup> (west) floor of *Cordley Hall* are attached and provided *for reference* only.

Item 8           **Q:** *Cordley Hall*: Per Keyed Note 1 on A2.3 to “Relocate wall mounted mechanical equipment to new curbs on the roof”, please indicate the make/model of the equipment and the associated utility connections that will require modifications.  
**A:** Bidders are encouraged to verify this in the field. A non-mandatory secondary site visit is scheduled for 8:30 am on Wednesday, May 10, 2017. Interested bidders shall meet at the Northeast corner of the loading dock of *Cordley Hall*.

Item 9           **Q:** *Cordley Hall*: Please provide electrical documents indicating circuits for roof equipment in coordination with disconnecting (during roof repair below equipment).  
**A:** Bidders are encouraged to verify this in the field. A non-mandatory secondary site visit is scheduled for 8:30 am on Wednesday, May 10, 2017. Interested bidders shall meet at the Northeast corner of the loading dock of *Cordley Hall*.



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END OF ADDENDUM NO. 1



# **PROJECT MANUAL**

## **OREGON STATE UNIVERSITY ALS REROOFING PROJECT**

### **ARCHITECT:**

MCBRIDE ARCHITECTURE, P.C.  
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PORTLAND, OREGON 97214  
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### **OWNER:**

OREGON STATE UNIVERSITY  
CAPITAL PLANNING & DEVELOPMENT  
3015 SW WESTERN BLVD.  
130 OAK CREEK BUILDING  
CORVALLIS, OREGON 97331-2001  
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DATE: Feb, 2017

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McBRIDE ARCHITECTURE, P.C.

Project Number: 15049.05

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## **PART 1 GENERAL**

### 1.01 SECTION INCLUDES

- A. Removal of existing roofing & insulation systems, existing vapor retarder to remain in Roof Area "B". Selective demolition, as indicated.

### 1.02 REFERENCES

- A. 29 CFR 1926.1101. OSHA Occupational Exposure to Asbestos, Construction Industry Standard.
- B. U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAPS). (Code of Federal Regulations Title 40, Part 61, Subparts A and M.).
- C. AA guide for Meeting DEQ Requirements: Handling Asbestos-Containing Roofing Materials (December 1994).
- D. DOT Regulations 49 CFR 171 & 172.

### 1.03 SUBMITTAL

- A. Schedule: Detailed schedule of demolition and removal Work.
- B. Shop Drawings: Demolition procedures and removal sequence, locations and construction of barricade, fences and temporary Work.

### 1.04 SUBSTRATE

- A. Accurately record actual substrate make-up and condition after elements are removed.
- B. Document with drawings and photographs.

### 1.05 QUALIFICATIONS

- A. Demolition Firm: A company with commercial experience in performing the Work of this section with minimum three years experience.

### 1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, and disposal.

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- B. Obtain required permits from authorities.
- C. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

## **PART 2 PRODUCTS (Not Used)**

## **PART 3 EXECUTION**

### **3.01 PROTECTION**

- A. Conduct Work with minimum interference to thoroughfares; maintain protected egress and access at all times; maintain disabled access.
- B. Do not close or obstruct sidewalks without authorization from the Owner's Authorized Representative.
- C. Protect adjacent building surfaces and property from damage during demolition operations.
- D. Provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of the Work.
- E. If necessary, protect existing sidewalks and curbs with planking.
- F. Close pipe openings with caps or plugs.
- G. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- H. Make determination of the existence, location and condition of related utility services.
- I. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.

### **3.02 PREPARATION**

- A. Protect existing landscaping and structures.
- B. Owner will trim trees and shrubbery if required. Coordinate with Owner's Authorized Representative.

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### 3.03 REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent occupancies.
- B. Dangerous Condition:
  - 1. Cease operations immediately if any structures appear to be in danger.
  - 2. Notify Owner's Authorized Representative.
  - 3. Do not resume operations until directed.

### 3.04 DEMOLITION

- A. Demolish indicated structures and appurtenances in an orderly and careful manner.
- B. Except where noted otherwise, immediately remove demolished material from site.
- C. Pollution Controls:
  - 1. Use temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level.
  - 2. Comply with governing regulations pertaining to environmental protection.
  - 3. Do not use water when it may create hazardous or objectionable conditions.
- D. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition operations.

### 3.05 REMOVAL

- A. Transport demolished materials and dispose of off-site in a legal manner and location.
- B. Cover vehicles used for removal of demolished materials, so as to prevent debris from littering along the disposal route. Retrieve any fallen debris.

### 3.06 ROOFING SYSTEMS REMOVAL

- A. Completely remove all existing roofing materials down to existing decks.
- B. Ensure that substrate is clean and dry, smooth, free of protruding or loose fasteners and free of foreign material.

### 3.07 SALVAGE SCHEDULE

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- A. General: Demolished material and equipment not designated for salvage becomes Contractor's property; remove promptly from the project site.
- B. Remove, store, and protect the following materials and equipment to be reused:
  - 1. Door hardware

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

- A Section Includes: Fire retardant treatment for wood, including framing, blocking, sheathing and other wood construction, not exposed to weather.
- B Related Sections:
  - 1. Section 06 10 10 - Rough Carpentry.

### 1.02 REFERENCES

- A ASTM D5516 - Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
- B ASTM D5664 - Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
- C ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- D AWPA (American Wood-Preservers' Association) Standard C20 - Structural Lumber, Fire Retardant Treatment by Pressure Processes.
- E AWPA Standard C27 - Plywood, Fire Retardant Treatment by Pressure Processes.
- F AWPA Standard P25 - Waterborne Preservatives.
- G AWPA Standard P49 - Fire Retardant Formulations.
- H AWPA Use Category UC1.
- I MS (Military Specification) L-19140E - Lumber and Plywood, Fire-Retardant Treated.
- J NFPA (National Fire Protection Association) 255 - Test Method for Surface Burning Characteristics of Building Materials.
- K UL (Underwriters Laboratories) 723 - Test for Surface Burning Characteristics of Building Materials.

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L UL Building Materials Directory.

### 1.03 SYSTEM DESCRIPTION

A Performance Requirements: Provide fire retardant treatment that will perform in accordance with manufacturer's stated performance criteria without defects, damage or failure.

### 1.04 SUBMITTALS

A Submit in accordance with Section 01 33 00.

B Product Data: Include manufacturer's product sheets.

C Quality Assurance Submittals:

1. Certified test report showing compliance with specified performance characteristics and physical properties. Include in test report certification that fire retardant solution does not contain ammonium phosphate.
2. NER-303 or ICBO ER-5755 indicating flamespread, strength, corrosion and hygroscopic properties.
3. Certification from treatment plant certifying wood treatment applied complies with Dricon treatment.

D Closeout Submittals:

1. Warranty documents specified herein.

### 1.05 QUALITY ASSURANCE

A Source Quality: Obtain fire retardant treatment from a single manufacturer.

B Wood Treatment Plant Qualifications: Experienced in performing work of this section which has specialized in the treatment of wood similar to that required for this project. When requested, submit certificate indicating qualifications.

C Regulatory Requirements:

1. FHA Minimum Property Standard #2600.
2. HUD Materials Release 1261.

D Testing: Testing on fire performance, strength and corrosion properties of fire retardant treated wood; recognized by issuance of a National Evaluation Services Report.

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- E Lumber Treatment Standard: Comply with AWPA Standard C20, current edition and Commodity Specification H of AWPA Use Category System.
- F Plywood Treatment Standard: Comply with AWPA Standard C27, current edition and Commodity Specification H of AWPA Use Category System.

#### 1.06 DELIVERY, STORAGE & HANDLING

- A Storage: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

#### 1.07 WARRANTY

- A Manufacturer's Warranty:
  1. Manufacturer's standard warranty document executed by authorized company official.
  2. Roof warranty against heat degradation.
  3. Warranty Period: 40 years, commencing on Date of Substantial Completion.

### **PART 2 PRODUCTS**

#### 2.01 MANUFACTURER[S]

- A Arch Wood Protection , or approved equal.

#### 2.02 FIRE RETARDANT TREATMENT

- A Product Treatment:
  1. Dricon fire retardant treatment, produced by licensed treatment plant.
  2. Provide protection against termites and fungal decay, registered for use as wood preservative by EPA.
  3. Comply with formulation AWPA P17 FR-1
  4. Free of halogens, sulfates and ammonium phosphate.
  5. Treated Wood: Flamespread of less than 25 in accordance with ASTM E84.
  6. Corrosion Properties: Wood in contact with carbon steel, galvanized steel, aluminum, copper and red brass shall exhibit corrosion rates less than 1 mil per year, when tested in accordance with FS MIL-L-19140, paragraph 4.6.5.2.

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2.03 RELATED WOOD MATERIALS

- A Wood Materials: Specified under Section 06 10 10 .
- B Moisture Content:
  - 1. Lumber: Kiln dried, maximum 19% after treatment.
  - 2. Plywood: Kiln dried, maximum 15% after treatment.

**PART 3 EXECUTION**

3.01 APPLICATION

- A Fire Retardant Treatment: Apply fire retardant treatment in accordance with applicable code requirements.
- B Compliance: Comply with manufacturer's product data, including product technical bulletins, for fire retardant treatment installation.

3.02 PROTECTION

- A Protect fire retardant treated wood from damage during construction.

**END OF SECTION**

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## GENERAL

### 1.01 SUMMARY

#### A. Section Includes:

1. Fire Treated wood, see Section 060573.
2. P.T. Blocking.
3. P.T. Plywood.
4. Curb extensions.

#### B. Related Sections:

- 1.
2. Section 060573 – Fire Treated Wood
3. Section 075215 – SBS Modified Bitumen Roofing (Cold).
4. Section 076200 – Flashing and Sheet Metal.

### 1.02 REFERENCES

- A. APA (American Plywood Association) - Product Standard PS-1.
- B. WCLIB (West Coast Lumber Inspection Bureau) - Standard Grading Rules No. 17.
- C. WWPA (Western Wood Products Association) - Lumber Standard PS-20.
- D. AWPA (American Wood Preservers' Association):- Book of Standards.

### 1.03 SYSTEM DESCRIPTION

#### A. Design Requirements:

1. PT Plywood at perimeters.
2. Revised equipment curbs.
3. Blocking.

- #### B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

### 1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Regulatory Requirements: Comply with applicable Building Code requirements.

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- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
  - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products with identification labels intact.
  - 2. Protect wood from moisture absorption during transportation and storage.
- B. Storage:
  - 1. Store products protected from exposure to harmful weather.
  - 2. Store wood above grade, permit ventilation.
  - 3. Cover with secure, breathable, weather resistant covers.
- C. Handling: Avoid damage to products.

### **PART 2 PRODUCTS**

#### 2.01 LUMBER MATERIALS

- A. Blocking, Insulation Stops and Nailers: Coast Region Douglas Fir, WCLIB construction or No. 2, S4S, Moisture content maximum 19 percent. Pressure Treated.
- B. Framing: Coast Region Douglas Fir, WCLIB construction or No. 2, S4S, Moisture content maximum 19 percent. Pressure Treated where in contact with concrete or masonry.

#### 2.02 SHEATHING MATERIALS

- A. Plywood Wall Sheathing: APA Rated, ¾ inch, Pressure Treated.

#### 2.03 ACCESSORIES

- A. Fasteners: Galvanized steel for exterior, high humidity, and treated wood locations, plain finish elsewhere.
- B. Die Stamped Connectors: galvanized steel.
- C. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

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## 2.04 WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment): AWPA Treatment C1 using water borne preservative with 0.25 percent retainage.

## **PART 3 EXECUTION**

### 3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

### 3.02 ADJUSTING

- A. Repair or replace damaged installed products.

### 3.03 CLEANING

- A. Remove construction debris from project site and legally dispose thereof.

### 3.04 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

#### A. Section Includes:

1. Deck preparation.
2. Tapered Insulation & Crickets @ Areas "B".
3. Cold adhesive applied SBS modified bitumen roofing.
4. Granule surface cap sheet.

#### B. Related Sections:

1. Section 024110 - Selective Demolition.
2. Section 061010 - Rough Carpentry.
3. Section 076200 - Flashing and Sheet Metal.
4. Section 221426 - Roof Drains.
5. Section 230000 - Basic Mechanical.
6. Section 260000 - Basic Electrical.

### 1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- D. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- E. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- F. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- G. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
- I. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
- J. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace

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at 750 degrees C.

- K. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
- L. FM (Factory Mutual) 1-90 for wind uplift and fastening.
- M. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
- N. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.

#### 1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Fully Warranted Class A.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

#### 1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
  - 1. Manufacturer's product sheets and installation instructions.
  - 2. Manufacturer's published specifications.
  - 3. Manufacturer's product data sheets for related components.
  - 4. FM approved fastening pattern.
- C. Shop Drawings:
  - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
  - 2. Insulation and cricket system.
- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
  - 1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
  - 2. Evidence of UL and FM approvals.
  - 3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
  - 4. Product certificates, signed by manufacturer, certifying products comply with

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- specified performance characteristics and physical requirements.
- 5. Manufacturer's field reports.
- 6. Copy of warranty.

F. Closeout:

- 1. Project Record Documents:
- 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
- 3. Warranty documents specified herein.
- 4. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.

B. Installer Qualifications:

- 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
- 2. Approved by and certified in writing by roofing Manufacturer.
- 3. Been in continuous business for past 3 years.
- 4. Completed at least three successful installations of specified materials and systems on projects of similar scope.
- 5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
- 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
- 7. When requested, submit certificate indicating qualification.

- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.

- D. Regulatory Requirements: Comply with applicable Building Code requirements.

- E. Insulation Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction:

- 1. Surface Burning Characteristics: ASTM E84.
- 2. Fire Resistance Ratings: ASTM E119.
- 3. Combustibility Characteristics: ASTM E136.

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- F. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on incombustible decks for roof slopes and application shown.
- G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
  - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - 2. Store materials in dry, protected areas.
  - 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
  - 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

#### 1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
  - 1. Do not apply materials during precipitation of any form (rain, dew, ice, frost, snow), or if such precipitation is imminent.
  - 2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
  - 3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

#### 1.08 WARRANTIES

- A. Manufacturer's Warranty:
  - 1. Manufacturer's standard warranty document executed by authorized company official.
  - 2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems. Include all roof related items and installations. Warranty to commence on the Date of Substantial Completion.

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- B. Installer:
1. Two (2) years material and labor, from date of Substantial Completion.
  2. Warrant all roofing, flashing and roof insulation against defects.
  3. Maintain roofed areas in watertight condition during this period.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Siplast:
1. Siplast Paradiene 2030 FR CBA & 2030 FR IA.
  2. Or FM Global approved equals.

### 2.02 INSULATION MATERIALS

- A. Area "B": Tapered Insulation Assembly.
1. Base Layer: Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; 3" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer
  2. Insulation Units: Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ¼ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer
  3. Submit Manufacturer approved fastener and fastening pattern.
  4. Overlay: See Overlay Board, below.
- B. Overlay Board:
1. Dens Deck Prime, ¼ inch thick. Supplied or approved by Roofing Materials Manufacturer.
- C. Fiber Crickets: Tapered Perlite.
- D. Fiber Cants: Rigid perlite board, 2 or 3 inch minimum, as shown.

### 2.03 ROOF MEMBRANE MATERIALS

- A. Membrane Properties:
1. Passes cyclic fatigue resistance for new material per ASTM D5849 (minimum 500 cycles @ 14 deg. F).

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2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
  3. Passes ASTM E108, for class A fire rating.
- B. Roof Membrane Materials:
1. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 87 mils, smooth surface; Siplast Paradiene 20.
  2. Top Ply Sheet: Random glass mat reinforced SBS modified bitumen, minimum thickness 94 mils., granule surfaced, Color #71 Armor Gray, fire rated; Siplast Paradiene 30 FR.
- C. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 62 pounds per 100 square feet; Siplast Paradiene 20 SA.
- D. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.
- E. Cold Adhesive: Asphaltic adhesive with quick-drying solvents, ASTM D4479 Type II PA-311 R Adhesive.
- F. Flashing Cement: ASTM D 4586, Type II PA-828 Flashing Cement.

#### 2.04 ACCESSORIES

- A. Fasteners:
1. Corrosion resistant and cut resistant.
  2. Approved by Roofing Materials Manufacturer.
- B. Insulation & Overlay Board Adhesive: Para-Stik.
- C. Walkway Pads: Modified bitumen coated polyester fabric with contrasting color granule surface. Siplast Paratread.
- D. Pipe Flashings: Four pound de-silverized lead.
- E. Plastic Cement: ASTM D 4586, Type II.
- F. Asphalt Primer: Comply with ASTM D41.
- G. Sealant: In contact with roof membrane materials, neoprene as approved by membrane Manufacturer.
- H. Pitch Pan Grout: Non-metallic type; Upson. Target acceptable.
- I. Pitch Pan Sealant: Two part chemical curing polyurethane base, black pitch

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pocket sealant.

- J. Liquid Applied Flashing System: ParaPro 123 Flashing System.
- K. Mineral Granules: Armor Gray to match top ply sheet granules.
- L. Pipe Supports: Miro; RAH Series Supports.
- M. Cleaning Agent: TSP (trisodium phosphate).
- N. Metal Flashings: Specified under Section 076200.
- O. General: Provide all accessory products required for a complete and proper roofing system.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Make investigations as to conditions that will be encountered in performing Work.
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
  - 1. Provide temporary coverings and protection of adjacent work areas.
  - 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
  - 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.
  - 4. Ensure that bitumen will not enter the building interior.

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C. Surface Preparation:

1. Existing Roofing Removal: Specified under Section 024110 - Selective Demolition.
2. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
3. Prepare surfaces and details in accordance with manufacturer's instructions.
4. Replace existing sheet metal counter flashings as shown. Prepare substrates as required to receive new material.
5. Install Temporary Roof.

3.03 INSULATION INSTALLATION

A. AREA "B":

1. Adhere base layer of insulation to the concrete deck per FM 1-90 pattern and requirements.
2. Adhere tapered polyiso insulation to the base layer per FM 1-90 pattern and requirements.

B. Adhere overlay board to polyiso.

3.04 MEMBRANE INSTALLATION

A. Roofing Membrane Plies:

1. Adhere base ply sheet to overlay board.
2. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation where applicable.
3. Install membrane immediately following insulation assembly, as a continuous operation.
4. At low slope roofs, lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
5. Lay sheets directly into adhesive, behind applicator. Exert sufficient pressure during application to eliminate air pockets.
6. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
7. Do not stack lap seams.
8. All plies nominal 1½ gallons per 100 square feet of adhesive; total coverage, leaving no voids.
9. Set each ply sheet in solid uniform coating of adhesive. Laps: totally sealed, avoid buck water laps.
10. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

B. Roofing Membrane Details:

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1. Prime all metal flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
  2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
  3. Pay particular attention to manufacturer's seam sealing instructions.
  4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
  5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.
- C. Granule Surface Cap: Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.
- D. Flashings:
1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant strips.
  2. Install reinforcing sheet and flashing sheets as shown.
  3. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
  4. Provide corner patches or folded corners at base flashing corners. Blind cut corners are not acceptable.
  5. Apply granules at all laps to cover and protect all exposed adhesive.
- E. ParaPro 123 Flashings:
1. Prepare surface for application.
  2. Mask area.
  3. Apply catalyzed resin at a rate of 0.19 kg.sf.
  4. Embed fleece before resin sets up, no air pockets.
  5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
  6. Remove masking.
- F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.
- G. Install new primed lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.
- 3.05 FIELD QUALITY CONTROL
- A. Inspection:
1. Technical representative of roofing manufacturer: Periodically observe Work; observe deck preparation, general installation procedures.

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2. Technical representative: Perform a punch list inspection of completed roofing, indicating items in need of attention, including conformance to manufacturer's instructions and Contract Documents; provide documentation.
3. Work shall not proceed until such observations have been made and conditions have been approved in writing by technical representative.

3.06 ADJUSTING

- A. Repair or replace damaged installed products.

3.07 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
  1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion. Remove excess asphalt and adhesives from finished surfaces.
  2. Remove equipment from site.
  3. Remove construction debris from site and legally dispose thereof.
  4. Leave job site in clean condition.

3.08 PROTECTION

1. Protect installed product and finish surfaces from damage during subsequent construction.

**APPENDIX ON FOLLOWING PAGE**

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**SIPLAST  
 CERTIFICATE OF ANALYSIS**

DATE: 06/05/2000      LOT NUMBER :      Q-2 157      1001-5012  
 MATERIAL TYPE: Paradiene 30 FR      White

**DIMENSIONS & MASS**

	<u>MINIMUM SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>	<u>ACTUAL MINIMUM</u>
LENGTH (ft.):	33.5	33.6 ± .0	33.5
WIDTH (in.):	39.0	39.4 ± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100 ± 2.8	96
TOTAL THICKNESS (mils):	N/A	133 ± 4.0	126
WEIGHT (lbs/roll):	90	95.9 ± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5 ± .1	2.4

**PHYSICAL & MECHANICAL PROPERTIES<sup>1</sup>**

	<u>SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>
LOW TEMP. FLEXIBILITY (°F):	-13	-13 ± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6 ± .2
BREAKING LOAD (lb/in.):	30avg	36 ± 2.9
ULTIMATE ELONGATION <sup>2</sup> (%):	55avg	61 ± 2.5
COMPOUND STABILITY (°F):	248	248 ± 0.0
DIMENSIONAL STABILITY (%):	n/a	
RESISTANCE TO THERMAL SHOCK <sup>3</sup> (%):	n/a	

<sup>1</sup>Tested in Accordance with ASTM D-5147  
<sup>2</sup>Defined as the point on the load-elongation curve where the load value has decreased to 3% of the maximum value obtained.  
<sup>3</sup>Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

## **PART 1 GENERAL**

### 1.01 SUMMARY

- A. Section Includes:
  - 1. Surface preparation.
  - 2. Fully adhered EPDM roofing system.
  
- B. Related Sections:
  - 1. Section 076200 - Flashing and Sheet Metal.
  - 2. Section 221426 - Roof Drains.

### 1.02 REFERENCES

- A. American Society of Civil Engineers (ASCE) - ASCE 7 - Minimum Design Loads for Buildings and Other Structures, Current Revision.
  
- B. ANSI/SPRI RP-4 "Wind Design Standard For Ballasted Single-ply Roofing Systems".
  
- C. ANSI/SPRI WD-1 "Wind Design Standard for Roofing Assemblies".
  
- D. ASTM International (ASTM):
  - 1. ASTM C 208 - Standard Specification for Cellulosic Fiber Insulating Board.
  - 2. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
  - 3. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  - 4. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
  - 5. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
  - 6. ASTM D 816 - Standard Test Methods for Rubber Cements.
  - 7. ASTM D 4637 - Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane.
  - 8. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
  
- E. Factory Mutual (FM Global):
  - 1. Approval Guide.
    - a. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
    - b. Loss Prevention Data Sheets 1-28, 1-29.

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- F. International Code Council (ICC):
  - 1. International Building Code (IBC).
- G. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- H. National Roofing Contractors Association (NRCA) - Low Slope Roofing and Waterproofing Manual, Current Edition.
- I. FM (Factory Mutual) 1-90 for wind uplift and fastening.
- J. ANSI/ASHRAE/IESNA Standard 90.1 (2007): Energy Standard for Buildings Except Low-Rise Residential Buildings.
- K. UL (Underwriters Laboratories)
  - 1. TGFU R1306 - "Roofing Systems and Materials Guide".
  - 2. UL-790 - Standard Test Method for Fire Tests of Roof Coverings.

#### 1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Fully Warranted Class A.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.
- C. Standard 55 MPH wind speed warranty.
- D. Fire Resistance Performance:
  - 1. Roof system will achieve a UL Class A rating when tested in accordance with UL-790.
  - 2. Roof system will achieve a UL Class B rating when tested in accordance with UL-790.
  - 3. Roof system will achieve a UL Class C rating when tested in accordance with UL-790.
- E. Building Codes:
  - 1. Roof system will meet the requirements of all federal, state and local code bodies having jurisdiction.

#### 1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's data sheets on each product to be used, including.

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1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Installation methods.
  4. Submit Manufacturers certificate indicating qualification.
- C. Detail Drawings:
1. Submit approved plan, section, elevation or isometric drawings which detail the appropriate methods for all flashing conditions found on the project.
  2. Coordinate approved drawings with locations found on the Contract Drawings.
- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
  2. Evidence of UL and FM approvals.
  3. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
  4. Manufacturer's field reports.
  5. Copy of warranty.
- F. Closeout:
1. Project Record Documents:
  2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
  3. Warranty documents specified herein.
  4. Per Section 017700, Contract Closeout.
- 1.05 QUALITY ASSURANCE
- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
  2. Approved by and certified in writing by roofing Manufacturer.
  3. Installer must be capable of extending the Manufacturer's Labor and Materials guarantee.
  4. Been in continuous business for past 3 years.
  5. Provide all personnel trained in application of materials and systems and maintain supervision as required.

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- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on incombustible decks for roof slopes and application shown.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
  - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - 2. Store materials in dry, protected areas.
  - 3. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

#### 1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
  - 1. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction .
- B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.
- C. When loading materials onto the roof, the Applicator must comply with the requirements of the building owner and prevent overloading and possible disturbance to the building structure.

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- D. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.
- E. The surface on which the roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.
- F. New roofing shall be complete and weathertight at the end of the work day.

#### 1.08 WARRANTIES

- A. Manufacturer's Warranty:
  - 1. Manufacturer's standard warranty document executed by authorized company official.
  - 2. Single source 20 year warranty signed by a corporate officer covering roofing materials and installation of the materials, and related systems. Include all roof related items and installations. Warranty to commence on the Date of Substantial Completion.
- B. Installer:
  - 1. Two (2) years material and labor, from date of Substantial Completion.
  - 2. Warrant all roofing, flashing and roof insulation against defects.
  - 3. Maintain roofed areas in watertight condition during this period.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Carlisle SynTec:
- B. Or FM Global approved equals.
- C. Area "C" Five (5) Outer Roof Areas.

#### 2.02 ROOF MEMBRANE MATERIALS

- A. Membrane Properties:
  - 1. Tensile Strength: 1550 psi (10.7 MPa) minimum.
  - 2. Tear Resistance: 200 lbf/in (35 kN/m) minimum.
  - 3. Elongation: 480 percent.

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## 2.03 ACCESSORIES

- A. Sure-Seal Pressure-Sensitive Pipe Seals with Factory-Applied TAPE on the deck flange.
- B. Sure-Seal Pressure-Sensitive (PS) Inside/Outside Corner: A 7 inch by 9 inch precut 60-mil thick Elastoform Flashing with a 35-mil Factory-Applied TAPE.
- C. Sure-Seal Pressure-Sensitive "T" Joint Covers: A factory cut uncured 60-mil thick EPDM flashing laminated to a nominal 35-mil Factory-Applied TAPE, used to overlay field splice intersections and to cover field splices at angle changes.
- D. Sure-Seal Uncured EPDM Elastoform Flashing: Formable 60-mil thick.
- E. Sure-Seal Pressure-Sensitive Elastoform Flashing: 60-mil thick uncured EPDM Flashing laminated to a 35-mil Factory-Applied TAPE used in conjunction with Sure-Seal Primer as an option to Sure-Seal Elastoform Flashing.
- F. Sure-Seal Fully Pressure Sensitive Curb Flashing: 60 mil Sure-Seal cured EPDM Membrane laminated to a 35 mil 6 inch (152mm) and 12 inch (305mm) SecurTape..
- G. Sure-Seal Pressure-Sensitive RUSS (Reinforced Universal Securement Strip):
  - 1. 6 inch (152 mm) RUSS: A nominal 6 inch (152 mm) wide, 45-mil thick reinforced EPDM membrane with a nominal 3 inch (76mm) wide 30-mil thick cured synthetic rubber pressure-sensitive adhesive laminated to one edge. This product provides perimeter securement, and additional membrane securement at angle changes for Adhered Roofing Systems.
- H. Sure-Seal SecurTAPE: 3 inch (76mm) or 6 inch (152mm) wide by 100 foot (30.5 M) long splice tape used for splicing adjoining sections of EPDM membrane.
- I. Carlisle Weathered Membrane Cleaner: Clear, solvent-based cleaner used to loosen and remove contaminants from the surface of exposed EPDM membrane prior to applying EPDM Primer.
- J. Sure-Seal HP-250 Primer: A solvent-based primer used to prepare the surface of EPDM membrane for application of Splice Tape or Pressure-Sensitive products.

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- K. Sure-Seal Splicing Cement: A high-strength, butyl-based contact cement which is used for splicing adjoining sections of EPDM membrane (cured or uncured).
  - 1. Sure-Seal EP-95 Splicing Cement: Black splicing cement for use with Sure-Seal (black) Roofing Systems.
  
- L. Sure-Seal Lap Sealant: A heavy-bodied material (trowel or gun-consistency) used to seal the exposed edges of a membrane splice. A pre-formed Lap Sealant tool is included in each carton of Lap Sealant.
  - 1. Sure-Seal Lap Sealant: Black sealant for use with Sure-Seal (black) Roofing Systems.
  
- M. FAST 100 or 100-LV Adhesive: A spray or extruded applied, two-component, polyurethane, low-rise expanding foam adhesive used to securely bond FleeceBACK membrane.
  
- N. Water Cut-Off Mastic: A one-component, low viscosity, self wetting, Butyl blend mastic used as a compression sealing agent between EPDM membranes and applicable substrates.
  
- O. HP Fastener: Threaded, black epoxy electro-deposition coated (E-Coat) fastener for use with steel decks.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Make investigations as to conditions that will be encountered in performing Work.
  
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
  
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
  
- D. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
  
- B. Clean surfaces thoroughly prior to installation.

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C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

D. Protection:

1. Provide temporary coverings and protection of adjacent work areas.
2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.

### 3.03 MEMBRANE PLACEMENT AND ATTACHMENT (FleeceBACK Fully Adhered)

- A. Position and unroll successive sheets and align to provide for a minimum 3 inch (76 mm) wide splice.
- B. Fold adjacent sheets in half lengthwise to expose an approximate 10 foot (3046 mm) wide substrate area.
- C. Membrane which will have the adjacent sheet spliced over it should be adhered to the substrate first. In this fashion, selvage edge splice area will not be contaminated by setting splice edge into the FAST Adhesive.
- D. Spray or extrude FAST Adhesive onto the substrate and allow to foam up approximately 1/8 inch (3mm). Wait for the adhesive to achieve "string" when a small object is lifted out of the adhesive.
- E. Place the membrane into adhesive after adhesive develops strings when touched, typically 1-1/2 to 2 minutes after adhesive was applied, and roll with a weighted roller.
- F. Apply FAST Adhesive to the substrate and continue process described above until all sheets are fully bonded, allowing for necessary splice overlaps at selvage edges. At end laps (along the width of the sheet) membrane shall be butted together which will be overlaid with 6 inch wide Pressure-Sensitive Cured Cover Strip or Pressure-Sensitive Overlayment Strip.

### 3.04 MEMBRANE SPLICING (Tape Splice)

- A. Overlap adjacent sheets and mark a line 1/2 inch out from the top sheet.
- B. Fold the top sheet back and clean the dry splice area (minimum 2 1/2 inches (64 mm wide) of both membrane sheets with Sure-Seal Primer as required by the membrane manufacturer.

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- C. Where Splice Tape is not Factory-Applied, apply Splice Tape to bottom sheet with the edge of the release film along the marked line. Press tape onto the sheet using hand pressure. Overlap tape roll ends a minimum of 1 inch (13mm).
- D. Remove the release film and press the top sheet onto the tape using hand pressure.
- E. Roll the seam toward the splice edge with a 2 inch (51 mm) wide steel roller.
- F. Install Pressure-Sensitive "T" Joint Cover, a 6 inch wide (152 mm) section of Pressure-Sensitive Flashing or Elastoform Flashing over all field splice intersections.
- G. When using non-Pressure-Sensitive Elastoform Flashing, seal edges of flashing with Lap Sealant.
- H. The use of Lap Sealant with tape splices is optional except at tape overlaps and cut edges of reinforced membrane where Lap Sealant is required.

### 3.05 FLASHING

- A. Wall and curb flashing shall be cured EPDM membrane. Continue the deck membrane as wall flashing where practicable.
- B. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications

### 3.06 WALKWAYS

- A. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, etc.) and all locations as identified on the Contract Drawings.
- B. Adhere walkways pads to the EPDM membrane in accordance with the manufacturer's current application guidelines.

### 3.07 FIELD QUALITY CONTROL

- A. Inspection:
  - 1. Technical representative of roofing manufacturer: Periodically observe Work; observe deck preparation, general installation procedures.
  - 2. Technical representative: Perform a punch list inspection of completed roofing, indicating items in need of attention, including conformance to manufacturer's instructions and Contract Documents; provide documentation.
  - 3. Work shall not proceed until such observations have been made and

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conditions have been approved in writing by technical representative.

3.08 ADJUSTING

- A. Repair or replace damaged installed products.

3.09 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
  - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion. Remove excess adhesives from finished surfaces.
  - 2. Remove equipment from site.
  - 3. Remove construction debris from site and legally dispose thereof.
  - 4. Leave job site in clean condition.

3.010 PROTECTION

- 1. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

- A. Section Includes:
  - 1. Copings and Cap Flashings.
  - 2. Metal Counter Flashings.
  - 3. Metal Flashings.
  
- B. Related Sections:
  - 1. Section 061010 - Rough Carpentry.
  - 2. Section 075215 - SBS Modified Bitumen Roofing (Cold).
  - 3. Section 079200 - Joint Sealers.
  - 4. Section 099100 - Painting.

### 1.02 REFERENCES

- A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- B. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- C. ASTM A792/A792M - Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- D. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- E. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- F. ANSI/ASTM B32 - Solder Metal.
- G. ASTM B749 - Lead and Lead Alloy Strip, Sheet, and Plate Products.
- H. ASTM D41 - Asphalt Primer.
- I. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- J. ASTM D1970 - Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam.
- K. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- L. AISI (American Iron and Steel Institute) - Stainless Steel: Uses in Architecture.

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M. NAAMM (National Association of Architectural Metal Manufacturers) - Metal Finishes Handbook.

N. NRCA (National Roofing Contractors Association) - Roofing Manual.

O. SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) - Architectural Sheet Metal Manual.

P. FS (Federal Specification) O-F-506 - Flux, Soldering, Paste and Liquid.

### 1.03 SYSTEM DESCRIPTION

A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

### 1.04 SUBMITTALS

A. Submit in accordance with Section 013323.

B. Product Data: Manufacturer's product sheets and installation instructions.

C. Shop Drawings:

1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
2. Include jointing patterns, jointing details, fastening methods, and installation details.

D. Samples:

1. Selection and verification samples for finishes, colors and textures.
2. Three (3) sets metal samples, illustrating full color range.

E. Quality Control:

1. Certified test reports, showing compliance with specified performance characteristics and physical properties.
2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.

F. Closeout:

1. Project Record Documents:
2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
3. Warranty documents specified herein.

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4. Per Section 017700, Contract Closeout.

#### 1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing Manual, and SMACNA Architectural Sheet Metal Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
  1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  2. Stack preformed and Pre-coated material to prevent twisting, bending, or abrasion, and to provide ventilation.
  3. Prevent contact with materials during storage which may cause discoloration, staining, or damage.
- C. Handling: Handle products according to manufacturer' recommendations and so as not to damage them prior to installation.

#### 1.07 WARRANTIES

- A. Manufacturer: Manufacturer's standard Kynar Finish warranty, document executed by authorized company official, 25 years commencing on Date of Substantial Completion.
- B. Installer: Provide 2 years, commencing on Date of Substantial Completion,

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including coverage of materials and installation and resulting damage to building resulting from failure to resist penetration of moisture.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Pre-Coated Galvanized Steel: ASTM A525, G90; 24 gauge core steel, pre-coated with "Kynar 500" or "Hylar 5000" coating of selected color. The color selected from manufacturer's full range of standard colors.
- B. Aluminum: ASTM B209, 0.03 inch thick; "Kynar 500" or "Hylar 5000" coating color to match existing finish.
- C. Lead: ASTM B749, 4 pounds per square foot minimum.
- D. Zinc-Aluminum Coated Steel Sheet: ASTM A792, Zincolume, Coating class AZ55, 24 gauge.

### **2.02 ACCESSORIES**

- A. Fasteners:
  - 1. #8 Galvanized steel or Stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.
  - 2. 3/16" Ø Hilti Kwik-Con II+ fasteners at concrete.
- B. Underlayment: ASTM D226; No. 15 asphalt saturated roofing felt.
- C. Self Adhering Underlayment: Rubberized asphalt self-adhering sheet, with high strength polyethylene film on one side, minimum 40 mils thick; Carlisle WIP 300 High Temp, or approved equal.
- D. Plastic Cement: ASTM D4586, asbestos free, asphaltic.
- E. Provide various additional items as required for a complete and weatherproof installation.
- F. Sealant and Joint Filler: Specified under Section 079200.
- G. Reglets: Recessed stainless steel, spring lock design.
- H. Solder: FS QQ-S-571; ANSI/ASTM B32; 50/50 type.
- I. Flux: FS O-F-506. Special stainless steel flux.

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- J. Provide various additional items as required for a complete and weatherproof installation.

## 2.03 FABRICATION

- A. Field measure site conditions prior to fabrication.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Fabricate cleats and starter strips of same material as sheet, 22 gauge, minimum 3 inches wide, inter-lockable with sheet, unless shown otherwise.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside ½-inch; miter and seam corners.
- F. Form flashing material with flat seam.
- G. Form copings with standing seams.
- H. Form counter flashings with lapped seams.
- I. Seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.
- J. Fabricate vertical faces with bottom edge formed outward ¼-inch and hemmed to form drip.
- K. Scuppers: Stainless steel, with soldered lead flanges.

## 2.04 FINISHES

- A. Field Painted Where Indicated:
  - 1. Metal Paint Primer: Phosphoric acid etch followed by zinc oxide alkyd, flat finish.
  - 2. Shop prepare and paint prime all exposed ferrous and galvanized metal surfaces.
- B. Metal Roof Primer: Asphaltic to comply with ASTM D41.
- C. Protective Back Paint: Zinc Chromate Alkyd.
- D. Protective Coating: FS-TT-C-494 Bituminous coating compound.

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- E. Touch-up Paint: To match Pre-coated metal, from coating manufacturer.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Inspection:
  - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
  - 2. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
  - 3. Verify membrane termination and base flashings are in place, sealed, and secure.
  - 4. Verify field measurements, site conditions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Surface Preparation:
  - 1. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
  - 2. Prepare surfaces and details in accordance with manufacturer's instructions.

#### **3.03 INSTALLATION**

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Install Work in accordance with reviewed submittals.
- C. Install starter and edge strips, and cleats.
- D. Install reglets true to lines and levels. Seal top of reglets with sealant. Surface mounted reglets not acceptable unless indicated in the drawings.
- E. Provide self adhering underlayment and slip sheet behind all finish metal such as copings, and wall metal.

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- F. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations indicated.
- G. Seam and seal all joints.
- H. Protective coat dissimilar metals and isolate from each other.
- I. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

#### 3.04 ADJUSTING

- A. Repair or replace damaged installed products.

#### 3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
  - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
  - 2. Promptly remove metal filings from sheet metal.
  - 3. Promptly remove metal scraps from roofing.
  - 4. Touch-up paint Pre-coated metal.
  - 5. Leave sheet metal in clean, finished condition.
  - 6. Remove construction debris from project site and legally dispose thereof.

#### 3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

- A. Section Includes:
  - 1. Substrate preparation.
  - 2. Sealant and backing.
- B. Related Sections:
  - 1. Section 076200 - Flashing and Sheet Metal.

### 1.02 REFERENCES

- A. ASTM C920 - Elastomeric Joint Sealants.
- B. ASTM C1193 - Guide for Use of Joint Sealants.
- C. ASTM C1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- D. ASTM D5893 - Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.
- E. ANSI/ASTM D1056 - Flexible Cellular Materials: Sponge or Expanded Rubber.
- F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.
- G. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.
- H. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.
- I. SWRI (Sealing, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.
- J. SWRI – Applying Liquid Sealants: Applicator Training Program, Section 10 – Testing Sealant Work.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

### 1.04 SUBMITTALS

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- A. Submit in accordance with Section 013323.
- B. Product Data:
  - 1. Manufacturer's product sheets and installation instructions.
  - 2. Indicate sealant chemical characteristics, performance criteria, limitations, color availability, manufacturer's installation instructions.
- C. Samples:
  - 1. Selection and verification samples for finishes, colors and textures.
- D. Quality Control:
  - 1. Certified test reports, showing compliance with specified performance characteristics and physical properties.
  - 2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
- E. Closeout:
  - 1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
  - 2. Warranty documents specified herein.
  - 3. Per Section 017700, Contract Closeout.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Capable of providing field service representation during construction, approving acceptable installer and approving application method; regularly engaged in manufacturing and marketing of specified products.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standard: Comply with applicable requirements of SWRI Guide Specification.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

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- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

#### 1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
  - 1. Do not install solvent curing sealants in enclosed building spaces.
  - 2. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.
  - 3. Install sealants during periods of mean temperature; avoid temperature extremes which would cause maximum or minimum joint widths.

#### 1.08 WARRANTIES

- A. Installer:
  - 1. Two (2) years commencing on Date of Substantial Completion.
  - 2. Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or fail to properly cure.

### **PART 2 PRODUCTS**

#### 2.01 MANUFACTURER

- A. Vulkem 116.
- B. Pecora, Sika, Sonneborn, or approved equal.

#### 2.02 MATERIALS

- A. Butyl Sealant: FS TT-S-001657 Single component, solvent release, non-skinning, non-sagging, black color.
- B. Polyurethane Sealant: FS TT-S-00230, Single component, chemical curing, non staining, non-bleeding, capable of continuous water immersion, non sagging type; color as selected.

#### 2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit

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application.

- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width; manufactured by sealant manufacturer.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Verify that surfaces and joint openings are ready to receive Work and field measurements are as shown, and as recommended by manufacturer.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A. Protection:
  - 1. Provide temporary coverings and protection of adjacent work areas.
  - 2. Mask surfaces as necessary.
- B. Surface Preparation:
  - 1. Clean, prime, and back no more area than can be sealed in the same day.
  - 2. Verify sealant and primer compatibility (non-reactive) and adhesion to all substrates. Notify Architect and Owner of any non-compatible materials.
  - 3. Remove loose materials and foreign matter which might impair adhesion of sealant.
  - 4. Clean joints in accordance with manufacturer's instructions.
  - 5. Prime joint surfaces where required to achieve bond.
  - 6. Verify that joint backing and release tapes are compatible with sealant.

#### **3.03 APPLICATION**

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- A. Comply with manufacturer's product data, technical bulletins, and catalog and container application instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension half the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Apply sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Unless otherwise shown, tool joints slightly concave and free draining.

#### 3.04 ADJUSTING

- A. Repair or replace damaged installed products.

#### 3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean adjacent soiled surfaces.
- D. Remove construction debris from project site and legally dispose thereof.

#### 3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.
- B. Protect sealants until cured.

#### 3.07 SCHEDULE

- A. Sealant S1: Butyl (concealed locations).

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- B. Sealant S2: Single-component polyurethane (exposed exterior locations).

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

- A. Section Includes:
  - 1. Surface preparation.
  - 2. Roof Hatches, Doors & frames.
  - 3. Exterior roof mounted equipment.
- B. Related Sections:
  - 1. Section 076200 - Flashing and Sheet Metal.

### 1.02 REFERENCES

- A. ASTM D523 - Test Method for Specular Gloss.
- B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- C. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.
- D. NACE (National Association of Corrosion Engineers International) - Industrial Maintenance Painting.
- E. PDCA (Painting and Decorating Contractors of America) - Architectural Specification Manual, published by the Washington Council.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

### 1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
  - 1. Manufacturer's product sheets for each type of paint.
  - 2. Include performance data, application instructions and methods, including mixing, surface preparation, compatible primers and top coats, recommended wet and dry film thickness.
- C. Samples:
  - 1. Selection and verification samples for finishes, colors and textures.

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2. Apply to 8 inch by 10 inch panels, opaque finishes on cardboard.
3. Submit three displays of each color, finish, texture, and type.

D. Closeout:

1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.

1. Provide materials for each general purpose of same manufacturer; except for shop prime coats.

B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

C. Standard: Comply with applicable requirements of PDCA Architectural Specification Manual.

D. Regulatory Requirements:

1. Comply with applicable Building Code requirements.
2. Comply with governing agency's regulations for paint materials, including State requirements for volatile organic compounds (VOC).
3. Comply with applicable requirements of USDA (U.S. Department of Agriculture).
4. Comply with applicable requirements of UL (Underwriters Laboratories, Inc.).

E. Each Product Container Bear Manufacturer's label, including:

1. Type of material.
2. Manufacturer's name.
3. Product number.
4. Batch number.
5. Color.
6. Instructions for reducing.

F. Field Samples:

1. Apply where directed.
2. Use this sample to determine acceptability of workmanship, color and texture.
3. Acceptable sample will be used as standard, and may be retained as part of finished Work.

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4. Remove and properly dispose of rejected samples.

G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' application instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.

B. Storage:

1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
2. Store in unopened containers, in designated storage space.
3. Keep storage space neat, clean and accessible.
4. Protect floor from spillage.

#### 1.07 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not paint when air is dust-laden or when weather or temperature conditions are unsuitable.
2. Maintain temperatures within building at minimum 60 degrees Fahrenheit during painting and drying periods.
3. Do not paint exterior surfaces in damp or rainy weather.
4. Do no exterior Work on unprotected surfaces if moisture from any source is present, or forecast before paints can attain proper cure.
5. Provide adequate ventilation for health, safety and drying requirements. Do not apply in areas where dust is being generated. Protect against damage from other areas and/or construction operations.
6. Apply coats to surfaces under environmental conditions and within the limitations recommended by material manufacturers. Minimum ambient air and surface temperature 40 degrees Fahrenheit for 24 hours before, during, and after application.

B. Fire Precaution: At the end of each Work day, place solvent soaked cloths, waste, and other materials which constitute fire hazard in metal containers and remove from premises.

#### 1.08 WARRANTIES

A. Installer: Installer's Standard Warranty document executed by authorized company official, 2 years commencing on Date of Substantial Completion.

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1.09 MAINTENANCE

A. Extra Materials:

1. Deliver to Project site the following items as directed. Store in unopened containers and in manner recommended by manufacturer.
2. One gallon each type and color used.

**PART 2 PRODUCTS**

2.01 MANUFACTURERS

A. Exterior Paint:

1. Miller.
2. Sherwin Williams.
3. Benjamin Moore.
4. Or approved equal.

2.02 MATERIALS

- A. All Materials: Manufacturer's "top-of-the-line," best quality of generic type specified.
- B. Paint Types:
1. Alkyd enamel (AE), oil based, exterior.
  2. Latex enamel (LE) interior.

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- C. Specular Gloss: Ranges determined per ASTM D523. Sheen is specified to establish required gloss range.

<u>Sheen</u>	<u>Designation</u>	<u>Geometry/Deg.</u>	<u>Gloss Range</u>
Flat	FL	85	Below 15
Eggshell	EG	60	5 to 20
Satin	SA	60	15 to 35
Semi-Gloss	SG	60	30 to 65
Gloss	GL	60	Over 65

- D. Final Coat Colors: Factory mix; no jobsite color matching permitted.
- E. Mildew Resistance: Add fungicidal agent to exterior paint at factory. Clearly indicate on labels that paint is mildew resistant.

### 2.03 Paint Systems

- A. Semi-gloss finish to match existing painted metal such as flashing and similar items.
- First Coat: Rust inhibitive metal primer at bare metal.
- Second Coat: Exterior alkyd.
- Third Coat: Exterior alkyd.

## **PART 3 EXECUTION**

### 3.01 EXAMINATION

- A. Inspection:
1. Examine substrates, adjoining construction and conditions under which Work is to be performed.
  2. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
  3. Examine substrate surfaces to assure that they are dry, clean, of uniform texture, free of bond inhibiting foreign substances or other conditions that would adversely affect adhesion, protective properties, or coating appearance.
- B. Measure moisture of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of interior and exterior surfaces is 12% or less.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.

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- D. Do not proceed until unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

#### A. Protection:

1. Provide temporary coverings and protection of adjacent work areas.
2. Provide drop cloths, barricades, other forms of protection necessary to safeguard adjacent Work, and to preserve painted Work free from damages of every nature. Post signs promptly following application.

- B. Fixtures: Remove and store, or protect hardware, accessories, plates, lighting fixtures and similar items installed prior to painting. Reinstall or remove protection upon completion.

#### C. Surface Preparation:

1. Ensure that all surfaces designated to be coated are properly prepared in accordance with Specifications, referenced standards, and manufacturers' recommendations.
2. Remove scale, dirt, dust, grit, rust, wax, grease, efflorescence, loose material, and other foreign matter detrimental to proper adhesion of paint.
3. Pressure wash south wall exterior.

- D. Shop Painted Items: Touch-up abraded surfaces prior to painting; use same type of paint as shop coat. Feather edge abraded surfaces prior to touch-up.

#### E. Ferrous Metal:

1. Use suitable solvents, tools, and methods to clean surfaces.
2. Un-coated Steel and Iron Surfaces: Remove grease, rust, scale, dirt and dust from steel and iron surfaces in accordance with SSPC-1. Where heavy coatings of scale are evident, remove by wire brushing (SSPC-SP2) or other SSPC-SP approved method.

#### F. Existing Painted Surfaces:

1. Sand, wire brush, or scrape painted surfaces to remove loose, scaling paint and to reduce gloss. Feather edge abraded surfaces. Thoroughly clean, remove rust, and prepare existing surfaces, insure proper adhesion.
2. Prime surface.

### 3.03 APPLICATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and container application instructions.

- B. Paint all surfaces exposed to view, unless otherwise indicated. Where not indicated, paint as directed.

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- C. Apply, as a minimum, specified number of coats; apply sufficient coats to produce specified mil dry film thickness.
- D. Apply paint and coating with suitable brushes, rollers, or spraying equipment as recommended by coating manufacturer and as specified. Do not exceed coating manufacturer's recommended drying time between succeeding coats.
- E. Apply finish coats smooth, free of brush marks, runs, drips, sags, streak laps, pile-up, and skipped or missed areas.
- F. Ensure that coating is so complete that additional coating will not change color or texture of painted surface. Apply additional coats as required to achieve this condition.

#### 3.04 FIELD QUALITY CONTROL

##### A. Site Tests:

1. Where materials are being applied over previously painted surfaces, apply samples and perform in-place test to check for compatibility, adhesion and film integrity of new materials to existing painted surfaces.
2. Painting may be tested, at the Owner's option, to determine materials quality and compliance with Contract Documents.
3. Upon completion, if requested by the Owner, manufacturer's representative shall measure paint thickness with Tooke Dry Film Thickness System. Recoat Work not conforming to specified dry mil thickness until thickness is that specified.

##### B. Inspection:

1. After paint and coating Work has been completed, make a detailed inspection of paint finish and touch-up or refinish non-complying Work.

#### 3.05 ADJUSTING

- A. Repair or replace damaged installed products.
- B. Carefully remove splatters of paint materials from adjoining Work. Repair all damages that may be caused by such cleaning operations and other painting activities.

#### 3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
  1. Clean installed products in accordance with manufacturers' instructions prior to Final Completion.

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2. Remove implements of service, and materials from premises and leave entire Project in clean condition.
3. Remove construction debris from project site and legally dispose thereof.

### 3.07 PROTECTION

- A. Protect finished product and surfaces from damage during subsequent construction.

### 3.08 EXTERIOR PAINTING SCHEDULE

- A. Roof Mounted Equipment & New Entry Door:  
Alkyd Enamel on Ferrous Metal:  
Prime Coat: Metal primer; provided under applicable Sections.  
Body Coat: Exterior alkyd.  
Finish Coat: Exterior alkyd.  
Thickness: 4 mils dry.  
Sheen/Color: Semi-gloss.
- B. Interior.  
Latex Enamel:  
Prime Coat: primer.  
Body Coat: Interior Latex.  
Finish Coat: Interior Latex.

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

- A. Section Includes:
  - 1. Refurbish existing roof drains where indicated.
  - 2. Replace broken components.
  - 3. Replace plastic domes with cast iron domes.
- B. Related Sections:
  - 1. Section 07 52 15 - SBS Modified Bitumen Roofing (Cold).
  - 2. Section 07 62 00 - Flashing and Sheet Metal.

### 1.02 REFERENCES

- A. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASHRAE Equipment Handbook for pipe hanging.
- D. CISPI for no-hub piping.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

### 1.04 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Product Data: Manufacturer's product sheets and installation instructions.

### 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Regulatory Requirements: Comply with applicable Plumbing and Building Code requirements.

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- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

#### 1.07 WARRANTIES

- A. Installer:
  - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

### **PART 2 PRODUCTS**

#### 2.01 MANUFACTURERS

- A. Refurbishing Material:
  - 1. Rust-Oleum or approved equal.

#### 2.02 MATERIALS

- A. Roof and Overflow Drains replace broken or missing components existing:
  - 1. Cast iron clamp.
  - 2. Cast iron 2" water dam clamp.
  - 3. Cast iron dome.

#### 2.03 REFURBISHING MATERIALS

- A. Cold Galvanizing Compound:
  - 1. Rust-Oleum 700 System Cold Galvanizing Compound, or approved equal

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### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A. Protection: Provide temporary coverings and protection of adjacent work areas.

#### **3.01 REFURBISH COMPONENTS**

- A. Remove all waterproofing materials from the components.
- B. Run a tap in all threaded holes to clean existing threads.
- C. Wire brush surface to remove corrosion and asphalt residue.
- D. Prepare surface for application of Cold Galvanizing Compound according to the coating manufacturer's requirements.
- E. Coat all components per manufacturer's instructions.

3.02 Reassemble with new hardware. Coordinate with waterproofing contractor.

#### **3.03 ADJUSTING**

- A. Repair or replace damaged installed products.

#### **3.04 CLEANING**

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion
- C. Remove construction debris from project site and legally dispose thereof.

#### **3.05 PROTECTION**

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- A. Protect installed products from damage during subsequent construction.

END OF SECTION

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## **PART 1 GENERAL**

### 1.01 SUMMARY

A. Section Includes:

1. Disconnect, store and reconnect existing rooftop equipment as required to install new roof and insulation system.

B. Related Sections:

1. Section 07 62 00 - Flashing and Sheet Metal.
2. Section 26 00 00 - Basic Electrical.

### 1.02 REFERENCES

- A. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASTM A653/A653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) - Fundamentals Handbook.
- E. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) - Manual of HVAC Duct Construction Standards - Metal & Flexible.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

### 1.04 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Closeout:
  1. Project Record Documents: As-Built Drawings and Specifications - maintain

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at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.

2. Copies of certificates of Code Authority acceptance.
3. Per Section 01 77 00, Contract Closeout.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of the following:
  1. ASHRAE Handbook.
  2. NFPA 13.
  3. NFPA 90A.
  4. SMACNA Manual.
  5. Gauges, hanging, supporting and bracing per MSS and SMACNA.
- D. Regulatory Requirements: Comply with applicable requirements of the following:
  1. Building Code.
  2. Plumbing Code.
  3. HVAC: Oregon Mechanical Specialty Code.
- E. Obtain applicable permits, Owner reimburses for permits and fees.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
  1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  2. Store inside, protected from dirt and construction dust.
- C. Handling: Exercise care in handling, loading, unloading and storing products to

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avoid damage.

#### 1.07 PROJECT CONDITIONS

- A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify the Owner's Authorized Representative of the condition. The Owner will, after consultation, determine a further course of action.

#### 1.08 WARRANTIES

- A. Installer:
  - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

### **PART 2 PRODUCTS**

#### 2.01 MATERIALS

- A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.

### **PART 3 EXECUTION**

#### 3.01 EXAMINATION

- A. Inspection:
  - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
  - 2. Before starting Work, carefully examine site and Contract Documents. Become thoroughly familiar with conditions governing Work.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

#### 3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect and store existing roof mounted equipment as necessary to complete work as specified.

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- C. Notify Owner's Authorized Representative of any conditions of non-compliance with current applicable codes.
- D. Close pipe openings with caps or plugs.
- E. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner's Authorized Representative and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions and obtain approval thereof.

### 3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Comply with reviewed submittals.
- C. Install equipment with minimum clearances indicated by manufacturer as required for proper maintenance, repair and service.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

### 3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a period of at least five consecutive eight hour days.

### 3.05 ADJUSTING

- A. Repair or replace damaged installed products.

### 3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.

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- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

REVISED 3/15/2017

## **PART 1 GENERAL**

### 1.01 SUMMARY

- A. Section Includes:
  - 1. Disconnect and reconnect existing roof mounted equipment as necessary to complete work specified.
  - 2. Materials and methods.
- B. Related Sections:
  - 1. Section 23 00 00 - Basic Mechanical.

### 1.02 REFERENCES

- A. NFPA (National Fire Protection Association) 70 - National Electrical Code.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.
- B. Closeout:
  - 1. Project Record Documents: As-built Drawings and Specifications.
  - 2. Copies of certificates of Code Authority acceptance.

### 1.04 QUALITY ASSURANCE

- A. Installer Qualifications:
  - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
  - 2. Provide journeyman electricians, equipped with required tools, meters, and instruments.
- B. Regulatory Requirements:
  - 1. Comply with applicable Building Code requirements.
  - 2. Comply with Rules, Regulations and Codes of the State and local Authorities Having Jurisdiction.
  - 3. Obtain applicable permits, Owner reimburses for permits and fees.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

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1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
2. Transport products in manner to avoid distortion or damage.

B. Storage:

1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
2. Store products off ground and under cover.

C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.06 WARRANTIES

1. Installer: Standard Contractor's Warranty for Workmanship - One (1) year commencing on Date of Substantial Completion.

**PART 2 PRODUCTS**

2.01 MATERIALS

- A. New, listed by the Underwriter's Laboratories, bearing their label.
- B. Conductors: Soft drawn copper, number 12 minimum size, with 600 volt type THAN insulation.
- C. Splices: Scotchlok, Ideal wire nut or similar type connector.
- D. Above Grade Conduit: Zinc coated steel EMT in dry, protected locations. Flexible steel conduit only where flexibility is necessary.
- E. Outlet Boxes: Weatherproof of code required size to accommodate wire, fittings and devices.

**PART 3 EXECUTION**

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation

REVISED 3/15/2017

in accordance with manufacturer's instructions.

- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Coordinate electrical wiring and equipment with conditions of construction.

### 3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and carton installation instructions.
- B. Install products in conformance with applicable codes and reviewed submittals.
- C. Locate all raceways, conduit, outlet boxes and wiring concealed from view, unless otherwise shown.

### 3.04 FIELD QUALITY CONTROL

- A. Inspection: Ensure that Work is not covered until reviewed and accepted by Code Authority.

### 3.05 ADJUSTING

- A. Repair or replace damaged installed products.

### 3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Remove electrical waste and debris from job site as Work progresses.
- D. Upon completion, remove all excess supplies, materials and tools.
- E. Leave the electrical Work clean, dust-free and in proper working order

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F. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

A. Protect installed products from damage during subsequent construction.

END OF SECTION

REVISED 3/15/2017



**M c B R I D E**

A R C H I T E C T U R E P C

P.O. Box 13705 Portland, OR 97213 – 0705

Ph. (503) 916-1808 Fax (503) 916-1816

**REVISED 3/15/2017**

# OREGON STATE UNIVERSITY CORDLEY HALL REROOFING PROJECT



OREGON STATE UNIVERSITY

CORDLEY HALL REROOFING PROJECT

SHEET TITLE:  
COVER SHEET PROJECT INFORMATION



Date: 03/15/2017

Revisions:

Drawn: TMO  
Check: RLM  
File: G0.1

Project: 15049.02

SHEET NUMBER:

**G0.1**

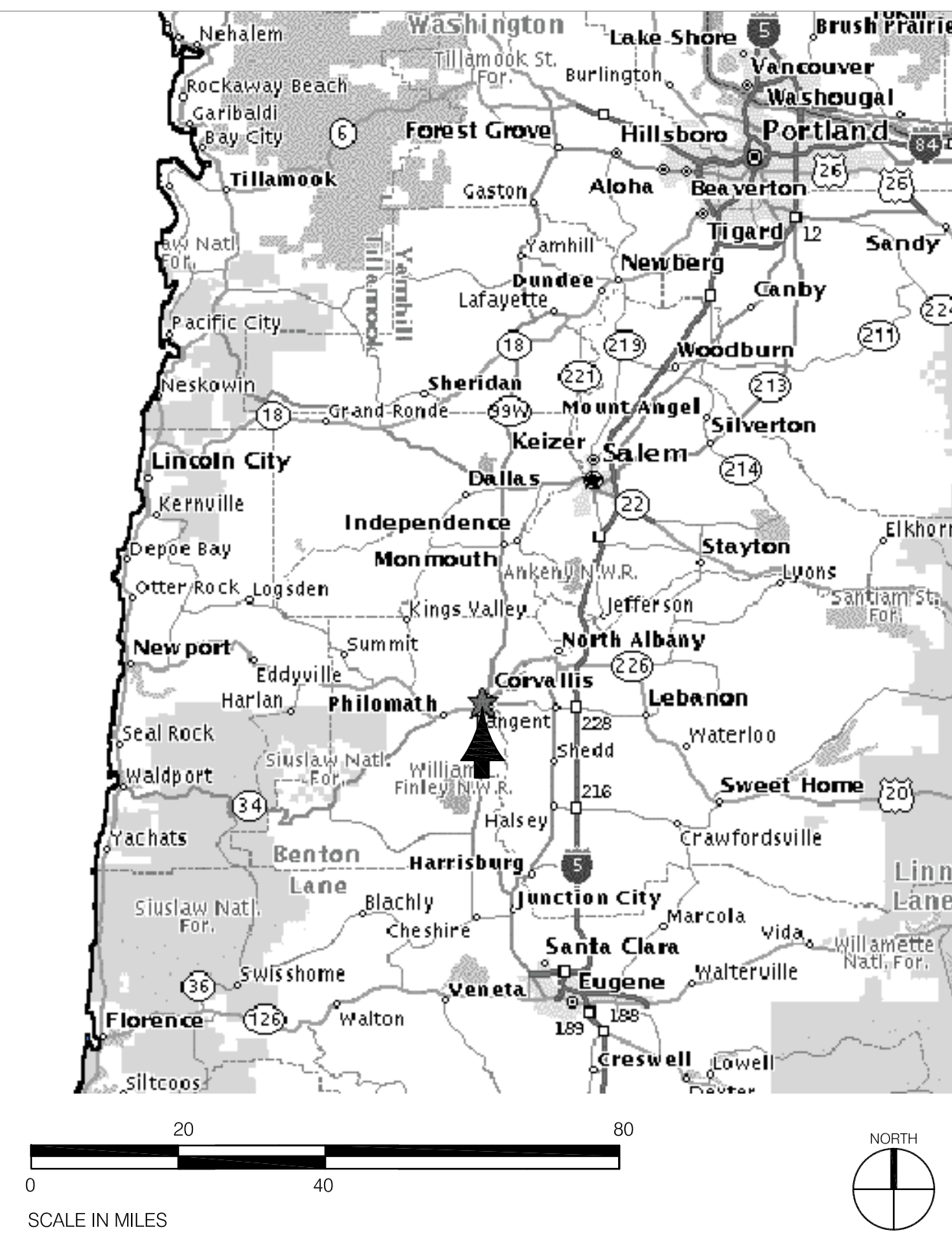
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## GENERAL NOTES

THIS FACILITY IS CURRENTLY OCCUPIED, AND IS TO REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL SEQUENCE ALL WORK TO MINIMIZE DISRUPTION OF EXISTING BUILDING AND UTILITIES, AND MAINTAIN SECURITY AND SAFE EGRESS AT ALL TIMES.

- EXISTING MATERIALS AND CONSTRUCTION ARE NOTED ON THE DRAWINGS AS EXISTING (E) (EX). ALL OTHER NOTATIONS INDICATE NEW MATERIALS, PRODUCTS, AND CONSTRUCTION. THE WORD NEW IS USED ONLY FOR CLARIFICATION.
- VERIFY ALL DIMENSIONS AND CONDITIONS OF THE PROJECT, INCLUDING EXISTING CONSTRUCTION METHODS AND MATERIALS.
- PROTECT ALL EXISTING MEMBRANES DURING CONSTRUCTION. REPAIR AREAS OF DAMAGE BY CONSTRUCTION ACTIVITIES AT NO COST TO OWNER. MAINTAIN A WATER TIGHT MEMBRANE AT ALL TIMES.
- PAINT ALL EXISTING METALS AND FLASHINGS TO MATCH NEW WORK AS SPECIFIED.
- MAINTAIN PROTECTED ACCESS TO AND EGRESS FROM BUILDING AT ALL TIMES.
- KEEP STAGING, PARKING AND STORAGE AREAS IN AN ORDERLY AND CLEAN CONDITION. RETURN AREAS BACK TO ORIGINAL OR BETTER CONDITION BEFORE FINAL COMPLETION.
- COORDINATE ALL OPERATIONS, INCLUDING ACCESS TO ROOF AREAS, PARKING, STAGING, STORAGE, ETC. WITH OWNERS AUTHORIZED REPRESENTATIVE.
- UNLESS OTHERWISE INDICATED, ALL COLORS, TEXTURES AND FINISHES: MATCH EXISTING.
- ALL CONCRETE LIFT SLABS ARE POST-TENSIONED. VERIFY LOCATIONS OF REINFORCING TENDONS BY GROUND PENETRATING RADAR (MARK THE SLAB WITH LOCATIONS) PRIOR TO PENETRATING THE SLAB IN ANY WAY. NOTIFY OWNER BEFORE PROCEEDING WITH CORING.**
- ALL NEW WOOD COMPONENTS ADDED TO THE BUILDING MUST BE FIRE TREATED. SEE SECTION 060573.**

## AREA MAP



## SYMBOLS

- DETAIL KEY
- KEYNOTE
- NORTH ARROW
- SPOT ELEVATION KEY
- PARAPET ELEVATION KEY
- SECTION KEY
- ELEVATION KEY

## ABBREVIATIONS

- CONC. CONCRETE
- CU CUBIC
- DBL. DOUBLE
- DEMO DEMO
- DIA. DIAMETER
- EA. EACH
- EL. ELEVATION
- EX. EXISTING
- F. FAHRENHEIT
- FM. FACTORY MUTUAL
- FT. FOOT/FEET
- GA. GAUGE
- HT. HEIGHT
- KG. KILOGRAM
- LB. POUND
- MIN. MINIMUM
- NO. NUMBER
- N.I.C. NOT IN CONTRACT
- O.C. ON CENTER
- PSI. POUNDS PER SQUARE INCH
- P.T. PRESSURE TREATED
- SF. SQUARE FOOT
- SIM. SIMILAR
- T.O. TOP OF
- TYP. TYPICAL
- W/ WITH
- W/O WITHOUT
- & AND
- @ AT
- " INCH
- ' FEET
- / PER
- # STEEL PLATE
- Ø POUND NUMBER
- ∅ DIAMETER
- CENTER LINE

## MATERIALS\*

- DIMENSIONAL LUMBER
  - BLOCKING
  - NON-DIMENSIONAL LUMBER
  - RIGID INSULATION
  - CANT; CRICKET
  - STEEL
  - CONCRETE
  - PLYWOOD
- \* SEE INDIVIDUAL SHEETS FOR DRAWINGS SPECIFIC MATERIALS LEGENDS

## PROJECT DIRECTORY

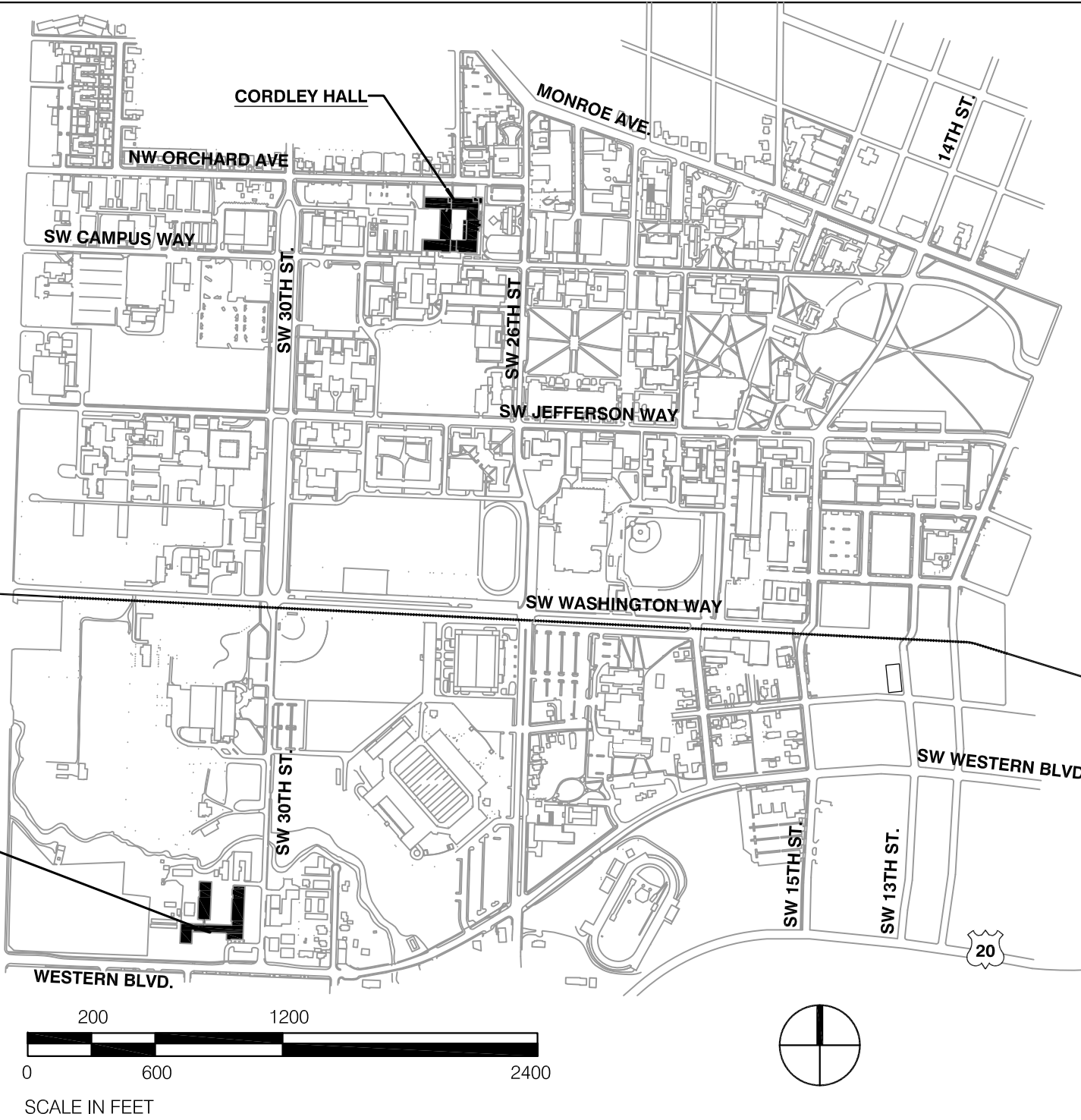
OWNER: OREGON STATE UNIVERSITY  
FACILITIES SERVICES  
130 OAK CREEK  
CORVALLIS, OREGON 97331-2001  
TEL: (541) 737-6956  
ATTN: NATHAN PATTERSON  
INFRASTRUCTURE CONSTRUCTION MANAGER  
EMAIL: Nathan.Patterson@oregonstate.edu  
ATTN: DUSTIN SIEVERS  
PROJECT MANAGER  
EMAIL: Dustin.Sievers@oregonstate.edu

ARCHITECT: MCBRIDE ARCHITECTURE, P.C.  
80 SE MADISON STREET, SUITE 120  
PORTLAND, OR 97214  
TEL: (503) 916-1808  
FAX: (503) 916-1816  
ATTN: PHIL STRAND  
EMAIL: phil@mcbridearchitecture.com

## PROJECT SUMMARY

- PROJECT DESCRIPTION:  
RE-ROOFING. SCOPE OF WORK INCLUDES THE FOLLOWING DIVISIONS:
- SELECTIVE DEMOLITION
  - TAPERED INSULATION
  - ROOF CARPENTRY
  - SBS MODIFIED BITUMEN ROOFING
  - JOINT SEALERS
  - PAINTING
  - BASIC MECHANICAL
  - BASIC ELECTRICAL
  - ROOF DRAINS

## CAMPUS MAP



PROJECT DESCRIPTION:  
CORDLEY HALL  
OREGON STATE UNIVERSITY  
CORVALLIS, OREGON 97331

## BUILDING CODE

PROJECT AREA DESCRIPTION	OCCUPANCY	TYPE OF CONSTRUCTION	NO. OF STORIES	HT (FT)	REMARKS
ROOF	GROUP B	TYPE I	5 STORIES	VARIES TO 64'	CLASS A ROOF TYPICAL

### APPLICABLE CODES:

- 2014 - OREGON STRUCTURAL SPECIALTY CODE
- 2014 - OREGON FIRE CODE
- 2014 - OREGON MECHANICAL SPECIALTY CODE
- 2014 - OREGON ELECTRICAL SPECIALTY CODE
- 2014 - OREGON PLUMBING SPECIALTY CODE

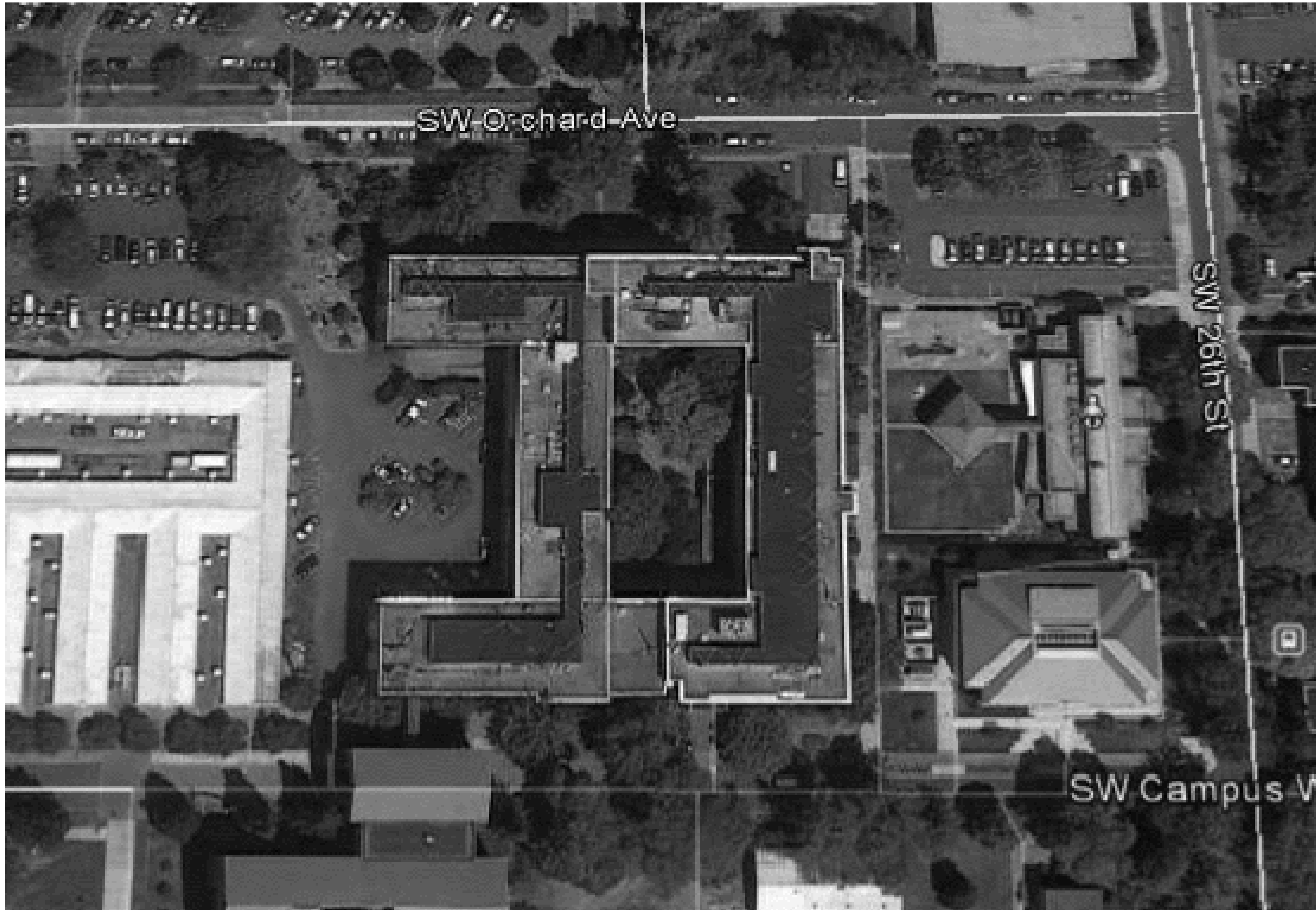
## INDEX

REVISION	DATE	DESCRIPTION
03/15/2017	03/15/2017	ISSUED FOR PERMIT / BID
03/15/2017	03/15/2017	OWNER REVIEW
03/15/2017	03/15/2017	PLAN CHECK REVISIONS
03/15/2017	03/15/2017	REVISION NUMBER
03/15/2017	03/15/2017	G0.1 COVER SHEET, PROJECT INFORMATION
03/15/2017	03/15/2017	A1.1 SITE PLAN
03/15/2017	03/15/2017	A1.2 TREE PROTECTION SITE PLAN
03/15/2017	03/15/2017	A2.1 ROOF PLAN
03/15/2017	03/15/2017	A2.2 ENLARGED ROOF PLAN EAST
03/15/2017	03/15/2017	A2.3 ENLARGED ROOF PLAN WEST
03/15/2017	03/15/2017	A2.4 WARNING LINE & FALL ANCHOR ROOF PLAN EAST
03/15/2017	03/15/2017	A2.5 WARNING LINE & FALL ANCHOR ROOF PLAN WEST
03/15/2017	03/15/2017	A8.1 DETAILS
03/15/2017	03/15/2017	A8.2 DETAILS

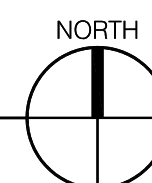
DRAWING FORMATTED FOR PRINTING AT 22" x 34"



DRAWING FORMATTED FOR PRINTING AT 22" x 34"



1 SITE PLAN  
NO SCALE



LINE IS 2 INCHES  
AT FULL SCALE  
(IF NOT 2" - SCALE ACCORDINGLY)



OREGON  
STATE  
UNIVERSITY

CORDLEY  
HALL  
REROOFING  
PROJECT

SHEET TITLE:

SITE PLAN



Date: 03/15/2017

Revisions:

Drawn: PAS

Check: RLM

File: 15049.02

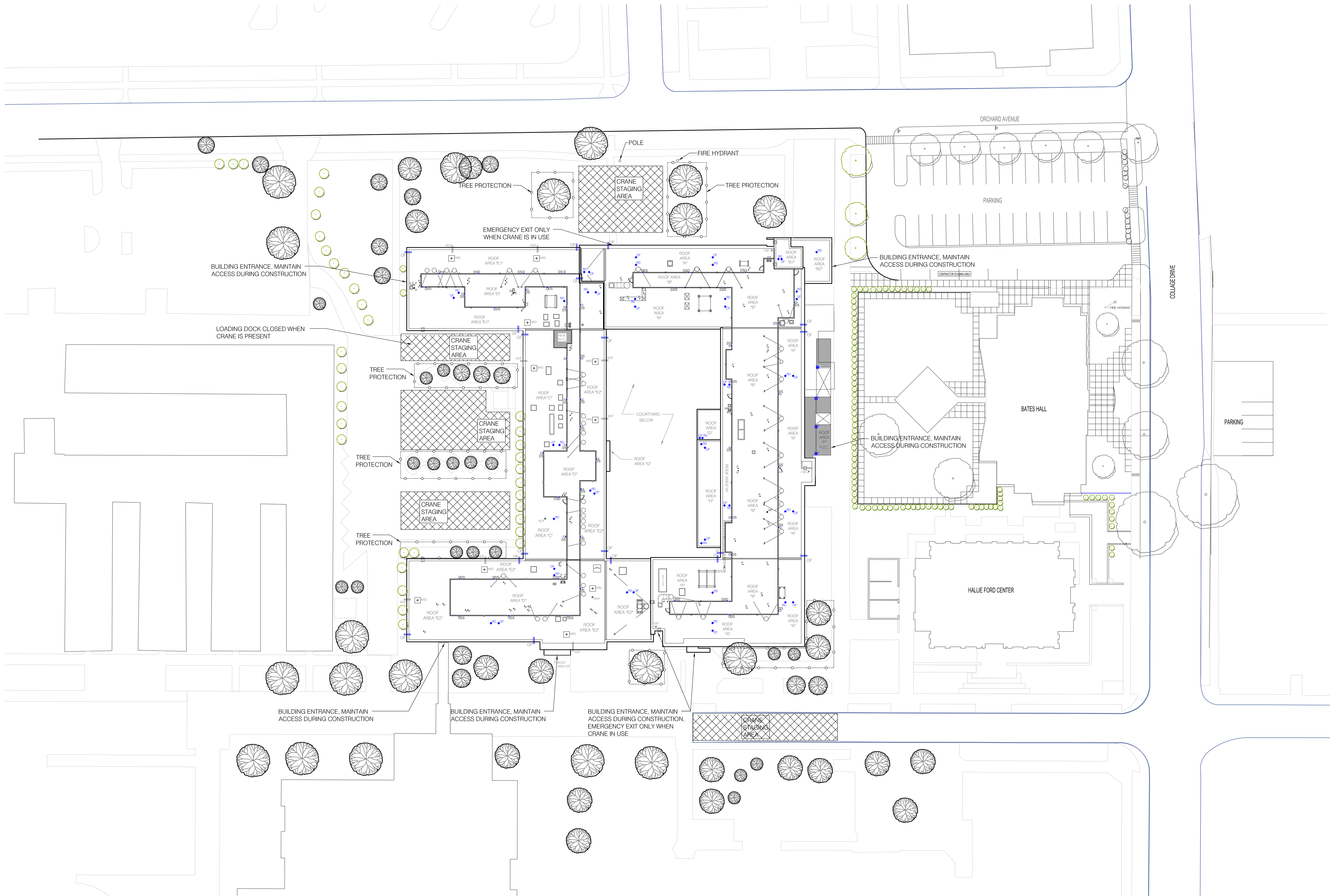
Project: 15049.02

SHEET NUMBER:

**A1.1**

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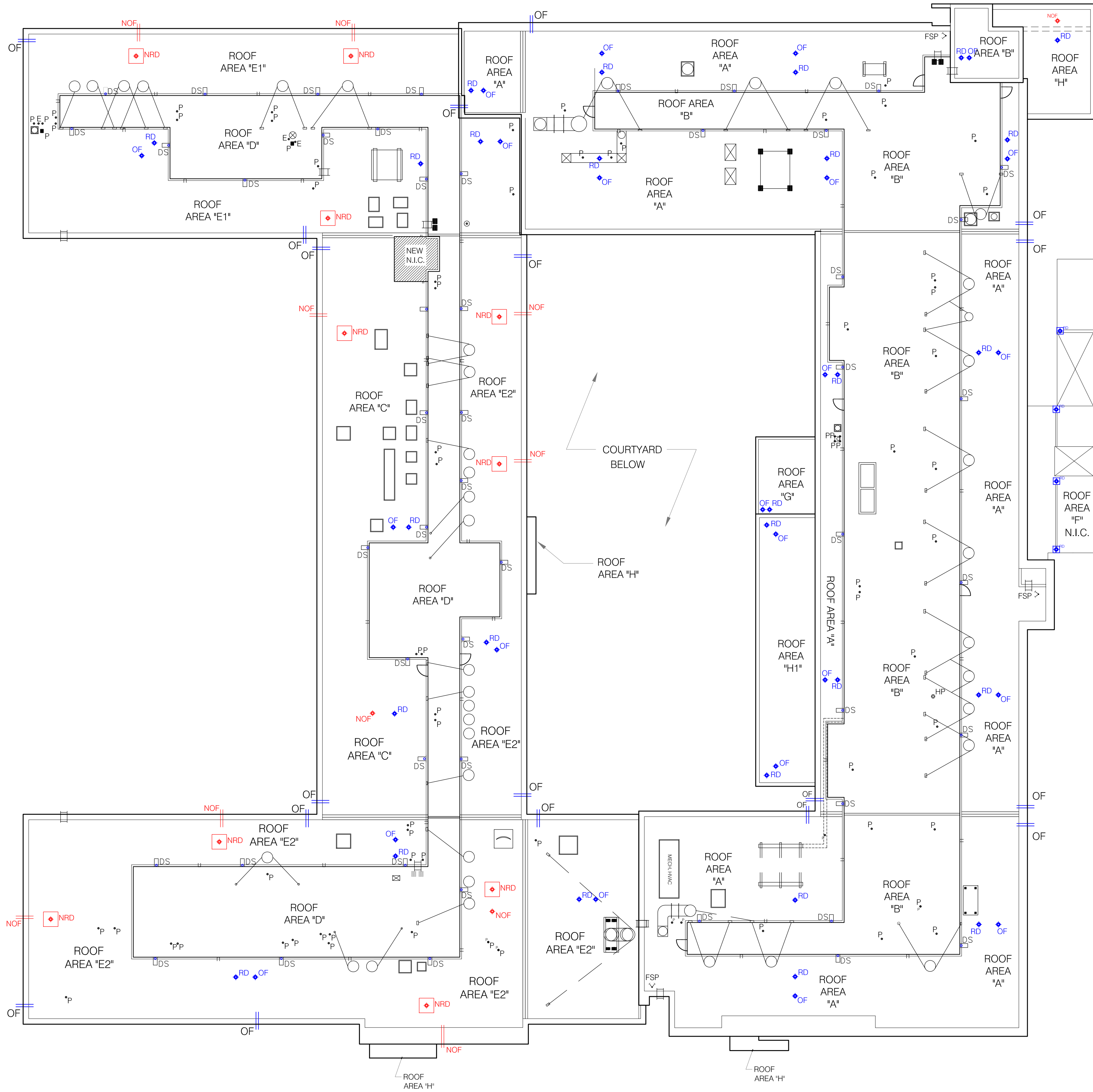


**1** TREE PROTECTION SITE PLAN  
1/32" = 1' - 0"

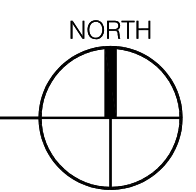
LINE IS 2 INCHES  
AT FULL SCALE  
(IF NOT 2" - SCALE ACCORDINGLY)

LEGEND OF SYMBOLS

	ROOF DRAIN & OVERFLOW DRAIN
	NEW ROOF DRAIN - NEW OVERFLOW DRAIN
	DOWNSPOUT W/ SPLASHBLOCK
	EXISTING THRU WALL OVERFLOW
	EQUIPMENT MOUNTED ON SLEEPERS
	CURB MOUNTED FAN
	EQUIPMENT MOUNTED ON CONCRETE CURB
	FIRE STAND PIPE
	COMBINATION CURB MOUNTED FAN AND FLANGE MOUNTED DUCT
	DUCT OVER ROOF DECK
	EXHAUST DUCTS PIPE SUPPORTED ON ROOF OR PENTHOUSE WALL
	DUCT PENETRATION
	CURB MOUNTED VENT OR DUCT
	WALL MOUNTED LADDER
	PIPE PENETRATION
	ELECTRICAL PENETRATION (CONDUIT)
	STAND MOUNTED EQUIPMENT
	CURB MOUNTED AIR INTAKE GRILLE
	EXPANSION JOINT
	GUTTER EXPANSION JOINT
	PITCH PAN
	HVAC UNIT
	SATELLITE DISH ON TOP OF PAVERS



1 ROOF PLAN ENTIRE BUILDING  
1/16" = 1' - 0"



LINE IS 2 INCHES  
AT FULL SCALE  
(IF NOT 2" - SCALE ACCORDINGLY)

DRAWING FORMATTED FOR PRINTING AT 22" x 34"

**HATCH PATTERN IDENTIFICATION**

- EXISTING LIGHTWEIGHT INSULATING CONCRETE. REVISE SLOPE TO PROVIDE 1/2" SLOPE TO DRAIN.
- EXISTING LIGHTWEIGHT INSULATING CONCRETE WITH 1/2" SLOPE TO DRAIN TO REMAIN.
- NEW LIGHTWEIGHT INSULATING CONCRETE. PROVIDE 1/2" SLOPE TO DRAIN.
- NEW TAPERED INSULATION. PROVIDE 1/2" SLOPE (OR AS INDICATED) TO DRAIN.

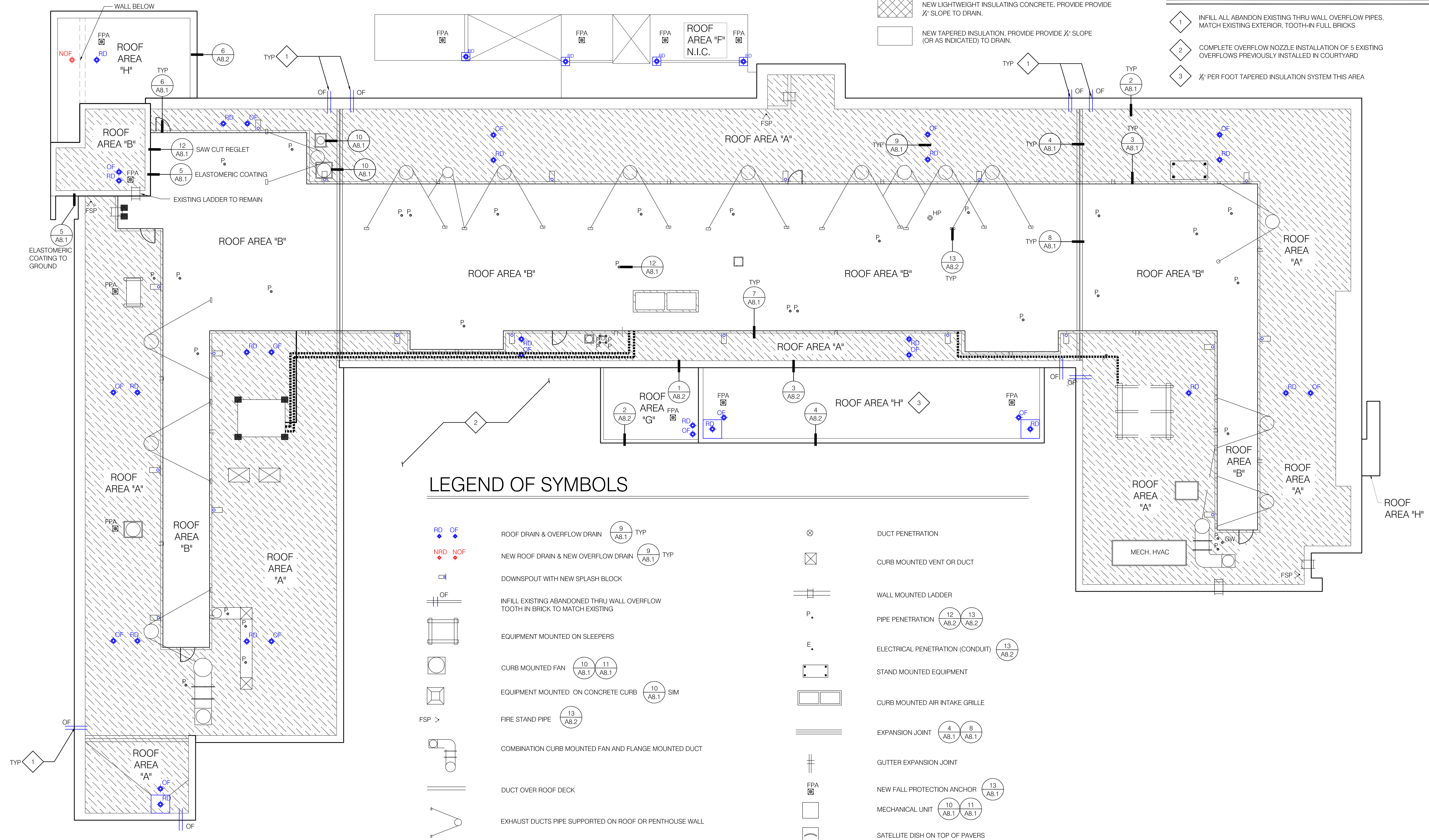
**SHEET NOTES**

1. ROOF AREA "A": EXISTING LIGHTWEIGHT INSULATING CONCRETE.
2. ROOF AREAS "B" & "G": NEW 1/2" PER FOOT TAPERED INSULATION SYSTEM
3. COURTYARD ROOF AREA "H": NEW 1/2" PER FOOT TAPERED INSULATION SYSTEM

**KEYED NOTES**

- 1 INFILL ALL ABANDON EXISTING THRU WALL OVERFLOW PIPES. MATCH EXISTING EXTERIOR, TOOTH-IN FULL BRICKS
- 2 COMPLETE OVERFLOW NOZZLE INSTALLATION OF 5 EXISTING OVERFLOWS PREVIOUSLY INSTALLED IN COURTYARD
- 3 1/2" PER FOOT TAPERED INSULATION SYSTEM THIS AREA

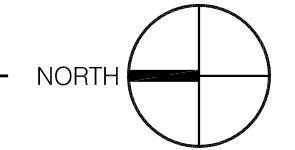
DRAWING FORMATTED FOR PRINTING AT 22" x 34"



**LEGEND OF SYMBOLS**

- |  |   |  |  |                                  |
|--|---|--|--|----------------------------------|
|  | ROOF DRAIN & OVERFLOW DRAIN   |  |  | DUCT PENETRATION                 |
|  | NEW ROOF DRAIN & NEW OVERFLOW DRAIN   |  |  | CURB MOUNTED VENT OR DUCT        |
|  | DOWNSPOUT WITH NEW SPLASH BLOCK   |  |  | WALL MOUNTED LADDER              |
|  | INFILL EXISTING ABANDONED THRU WALL OVERFLOW TOOTH IN BRICK TO MATCH EXISTING |  |  | PIPE PENETRATION                 |
|  | EQUIPMENT MOUNTED ON SLEEPERS   |  |  | ELECTRICAL PENETRATION (CONDUIT) |
|  | CURB MOUNTED FAN  |  |  | STAND MOUNTED EQUIPMENT          |
|  | EQUIPMENT MOUNTED ON CONCRETE CURB  |  |  | CURB MOUNTED AIR INTAKE GRILLE   |
|  | FIRE STAND PIPE   |  |  | EXPANSION JOINT                  |
|  | COMBINATION CURB MOUNTED FAN AND FLANGE MOUNTED DUCT                          |  |  | GUTTER EXPANSION JOINT           |
|  | DUCT OVER ROOF DECK   |  |  | NEW FALL PROTECTION ANCHOR       |
|  | EXHAUST DUCTS PIPE SUPPORTED ON ROOF OR PENTHOUSE WALL                        |  |  | MECHANICAL UNIT                  |
|  |   |  |  | SATELLITE DISH ON TOP OF PAVERS  |

1 ENLARGED ROOF PLAN EAST  
3/32" = 1' - 0"



LINE IS 2 INCHES  
AT FULL SCALE  
(IF NOT 2" - SCALE ACCORDINGLY)

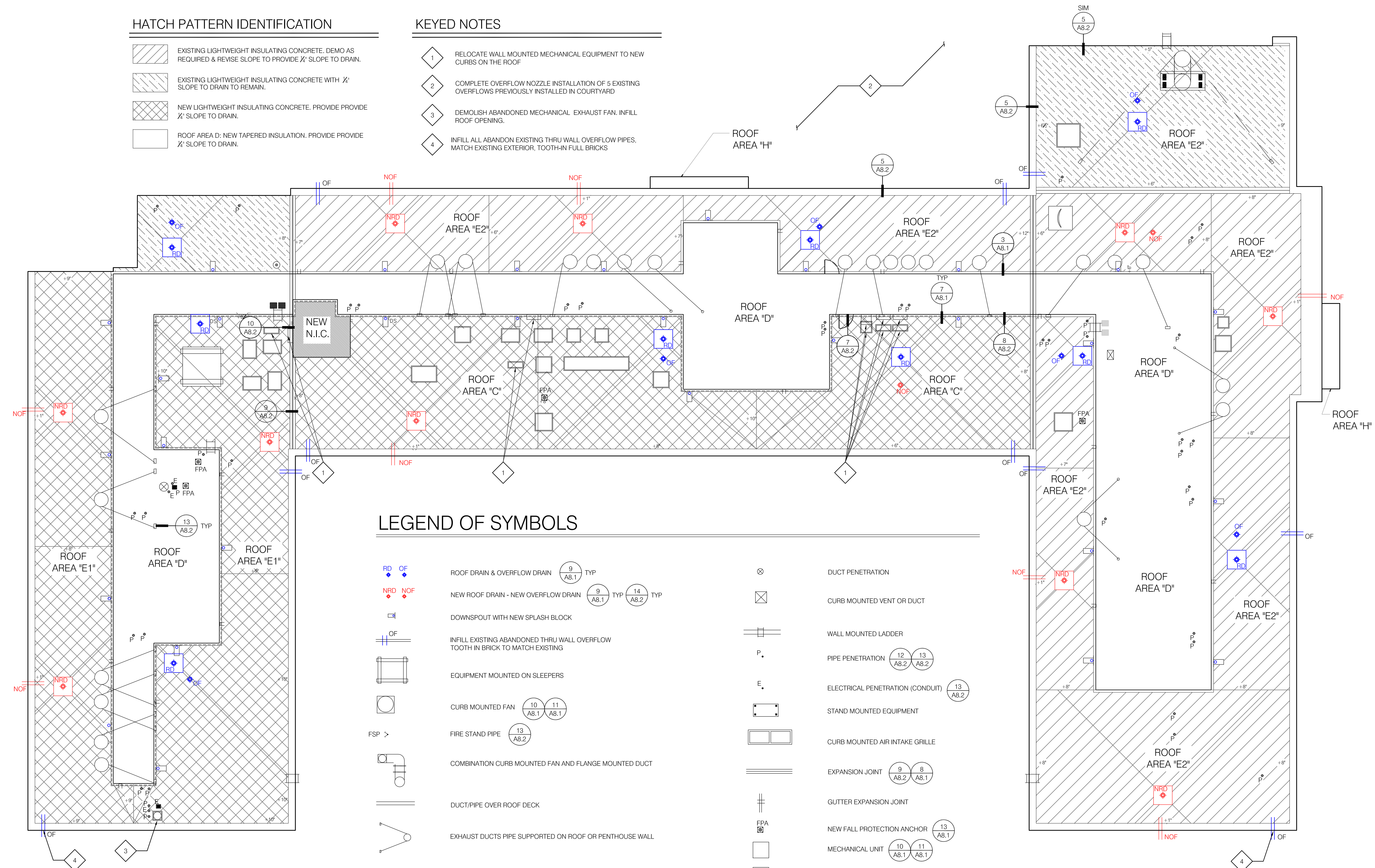
**HATCH PATTERN IDENTIFICATION**

- EXISTING LIGHTWEIGHT INSULATING CONCRETE. DEMO AS REQUIRED & REVISE SLOPE TO PROVIDE 1/4" SLOPE TO DRAIN.
- EXISTING LIGHTWEIGHT INSULATING CONCRETE WITH 1/4" SLOPE TO DRAIN TO REMAIN.
- NEW LIGHTWEIGHT INSULATING CONCRETE. PROVIDE 1/4" SLOPE TO DRAIN.
- ROOF AREA D: NEW TAPERED INSULATION. PROVIDE 1/4" SLOPE TO DRAIN.

**KEYED NOTES**

- RELOCATE WALL MOUNTED MECHANICAL EQUIPMENT TO NEW CURBS ON THE ROOF
- COMPLETE OVERFLOW NOZZLE INSTALLATION OF 5 EXISTING OVERFLOWS PREVIOUSLY INSTALLED IN COURTYARD
- DEMOLISH ABANDONED MECHANICAL EXHAUST FAN. INFILL ROOF OPENING.
- INFILL ALL ABANDON EXISTING THRU WALL OVERFLOW PIPES. MATCH EXISTING EXTERIOR, TOOTH-IN FULL BRICKS

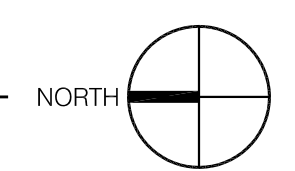
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**LEGEND OF SYMBOLS**

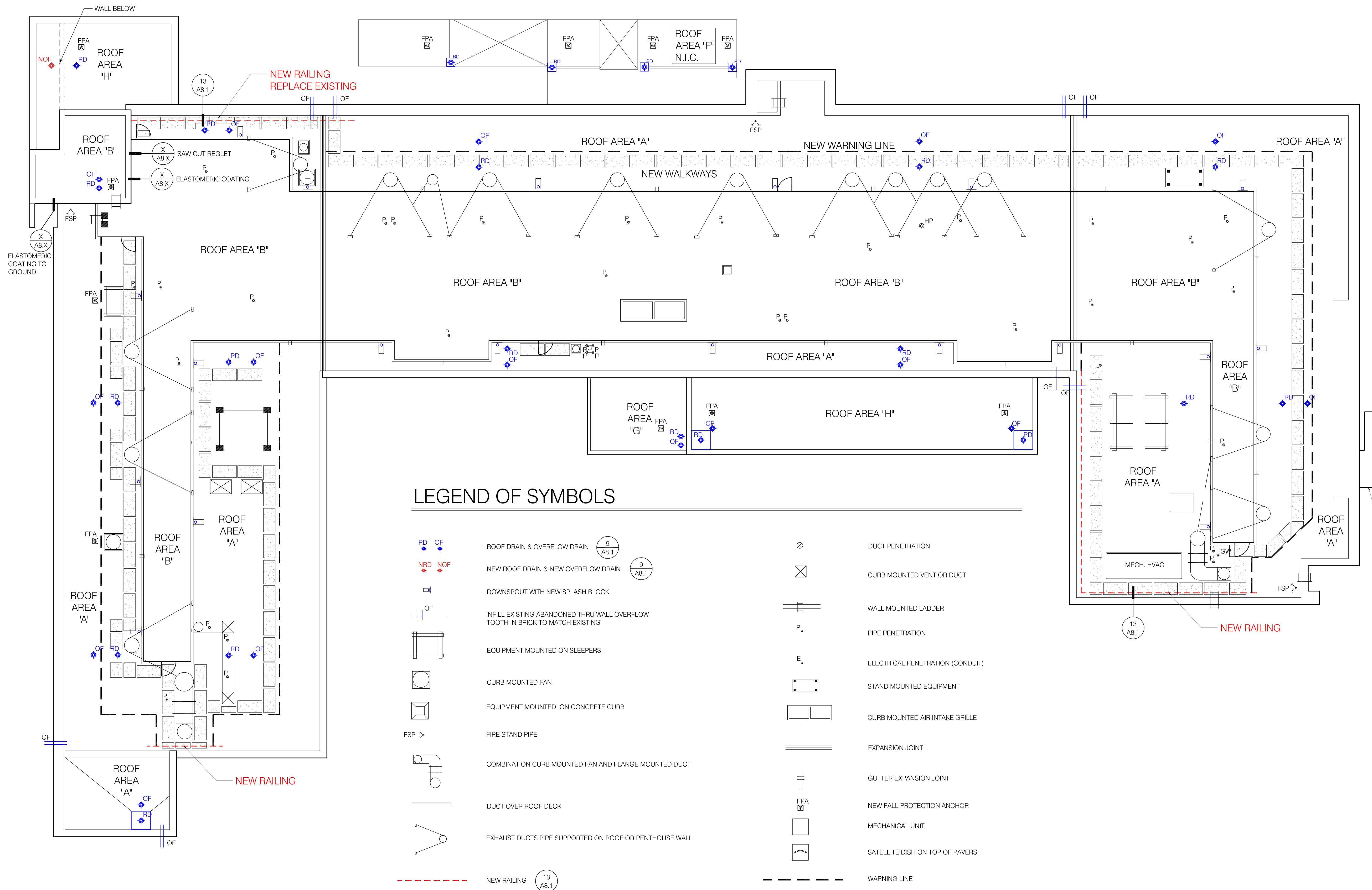
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|--|---|--|----------------------------------|
|  | ROOF DRAIN & OVERFLOW DRAIN   |  | DUCT PENETRATION                 |
|  | NEW ROOF DRAIN - NEW OVERFLOW DRAIN   |  | CURB MOUNTED VENT OR DUCT        |
|  | DOWNSPOUT WITH NEW SPLASH BLOCK   |  | WALL MOUNTED LADDER              |
|  | INFILL EXISTING ABANDONED THRU WALL OVERFLOW TOOTH IN BRICK TO MATCH EXISTING |  | PIPE PENETRATION                 |
|  | EQUIPMENT MOUNTED ON SLEEPERS   |  | ELECTRICAL PENETRATION (CONDUIT) |
|  | CURB MOUNTED FAN  |  | STAND MOUNTED EQUIPMENT          |
|  | FIRE STAND PIPE   |  | CURB MOUNTED AIR INTAKE GRILLE   |
|  | COMBINATION CURB MOUNTED FAN AND FLANGE MOUNTED DUCT                          |  | EXPANSION JOINT                  |
|  | DUCT/PIPE OVER ROOF DECK  |  | GUTTER EXPANSION JOINT           |
|  | EXHAUST DUCTS PIPE SUPPORTED ON ROOF OR PENTHOUSE WALL                        |  | NEW FALL PROTECTION ANCHOR       |
|  | NEW WALL CLADDING @ MECHANICAL PENTHOUSE                                      |  | MECHANICAL UNIT                  |
|  |   |  | SATELLITE DISH ON TOP OF PAVERS  |

**1 ENLARGED ROOF PLAN WEST**  
3/32" = 1' - 0"



LINE IS 2 INCHES  
AT FULL SCALE  
(IF NOT 2" - SCALE ACCORDINGLY)

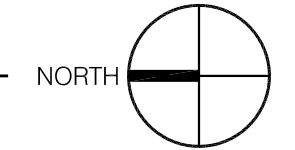
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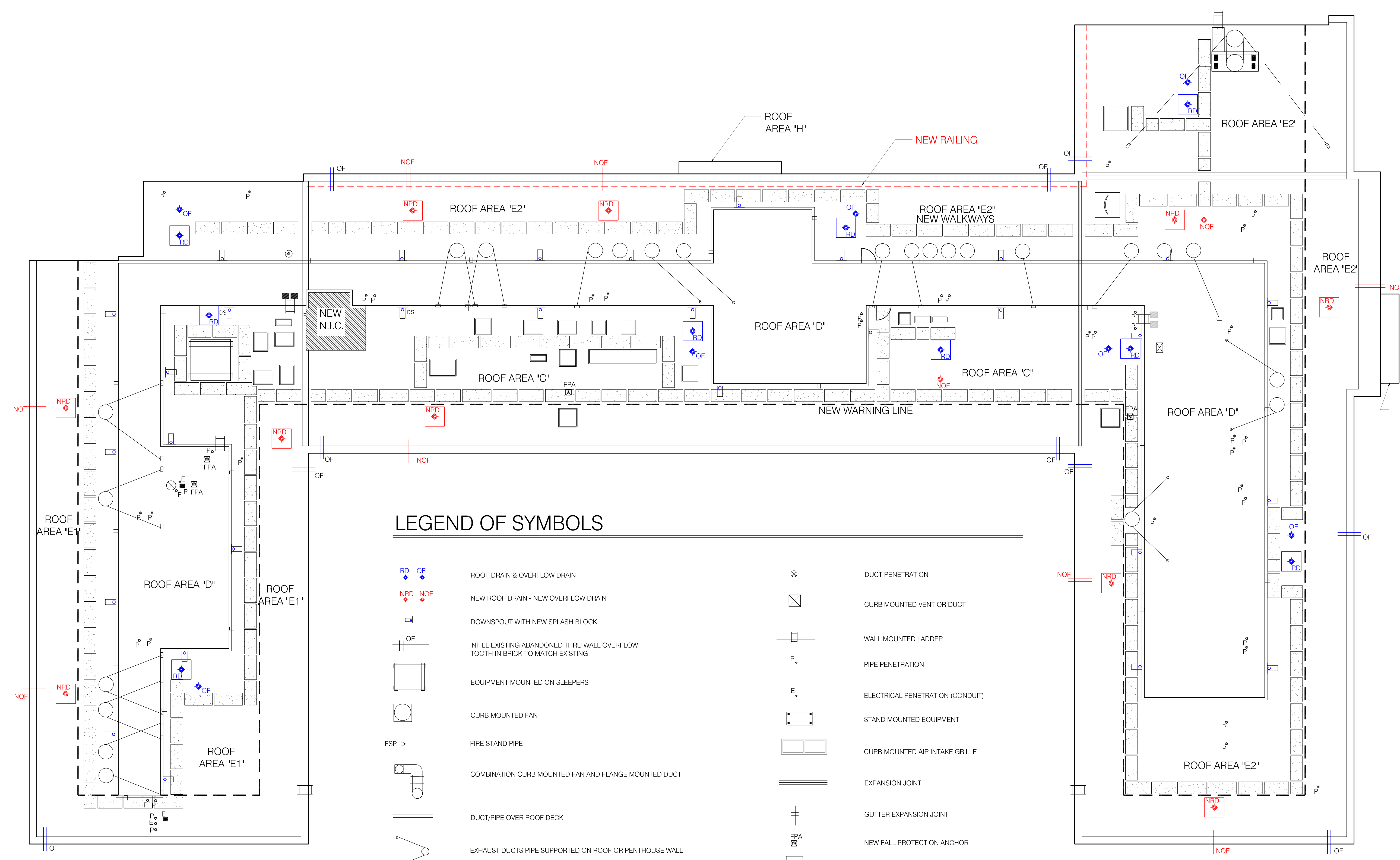
	ROOF DRAIN & OVERFLOW DRAIN			DUCT PENETRATION
	NEW ROOF DRAIN & NEW OVERFLOW DRAIN			CURB MOUNTED VENT OR DUCT
	DOWNSPOUT WITH NEW SPLASH BLOCK			WALL MOUNTED LADDER
	INFILL EXISTING ABANDONED THRU WALL OVERFLOW TOOTH IN BRICK TO MATCH EXISTING			PIPE PENETRATION
	EQUIPMENT MOUNTED ON SLEEPERS			STAND MOUNTED EQUIPMENT
	CURB MOUNTED FAN			EXPANSION JOINT
	EQUIPMENT MOUNTED ON CONCRETE CURB			NEW FALL PROTECTION ANCHOR
	FIRE STAND PIPE			SATELLITE DISH ON TOP OF PAVERS
	COMBINATION CURB MOUNTED FAN AND FLANGE MOUNTED DUCT			
	DUCT OVER ROOF DECK			
	EXHAUST DUCTS PIPE SUPPORTED ON ROOF OR PENTHOUSE WALL			
	NEW RAILING			

**1 ENLARGED ROOF PLAN EAST**  
3/32" = 1' - 0"



LINE IS 2 INCHES  
AT FULL SCALE  
(IF NOT 2" - SCALE ACCORDINGLY)

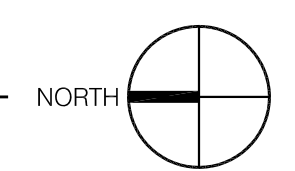
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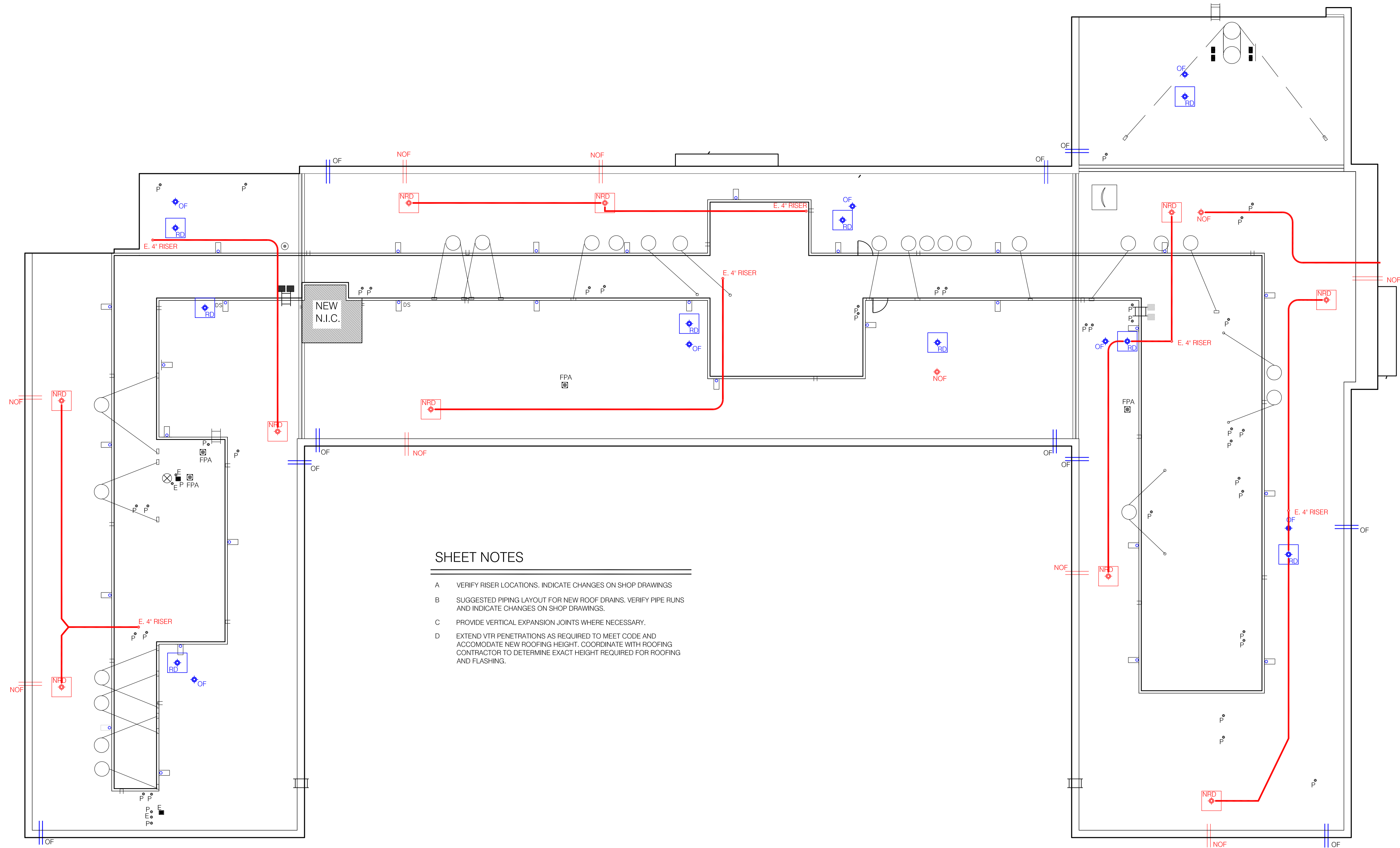
	ROOF DRAIN & OVERFLOW DRAIN		DUCT PENETRATION
	NEW ROOF DRAIN - NEW OVERFLOW DRAIN		CURB MOUNTED VENT OR DUCT
	DOWNSPOUT WITH NEW SPLASH BLOCK		WALL MOUNTED LADDER
	INFILL EXISTING ABANDONED THRU WALL OVERFLOW TOOTH IN BRICK TO MATCH EXISTING		PIPE PENETRATION
	EQUIPMENT MOUNTED ON SLEEPERS		ELECTRICAL PENETRATION (CONDUIT)
	CURB MOUNTED FAN		STAND MOUNTED EQUIPMENT
	FIRE STAND PIPE		CURB MOUNTED AIR INTAKE GRILLE
	COMBINATION CURB MOUNTED FAN AND FLANGE MOUNTED DUCT		EXPANSION JOINT
	DUCT/PIPE OVER ROOF DECK		GUTTER EXPANSION JOINT
	EXHAUST DUCTS PIPE SUPPORTED ON ROOF OR PENTHOUSE WALL		NEW FALL PROTECTION ANCHOR
	NEW RAILING		MECHANICAL UNIT
			SATELLITE DISH ON TOP OF PAVERS
			WARNING LINE

**1 ENLARGED ROOF PLAN WEST**  
3/32" = 1' - 0"



LINE IS 2 INCHES AT FULL SCALE (IF NOT 2" - SCALE ACCORDINGLY)

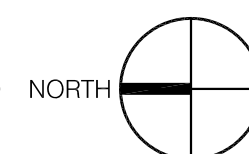
DRAWING FORMATTED FOR PRINTING AT 22" x 34"



### SHEET NOTES

- A VERIFY RISER LOCATIONS. INDICATE CHANGES ON SHOP DRAWINGS
- B SUGGESTED PIPING LAYOUT FOR NEW ROOF DRAINS. VERIFY PIPE RUNS AND INDICATE CHANGES ON SHOP DRAWINGS.
- C PROVIDE VERTICAL EXPANSION JOINTS WHERE NECESSARY.
- D EXTEND VTR PENETRATIONS AS REQUIRED TO MEET CODE AND ACCOMMODATE NEW ROOFING HEIGHT. COORDINATE WITH ROOFING CONTRACTOR TO DETERMINE EXACT HEIGHT REQUIRED FOR ROOFING AND FLASHING.

1 ENLARGED ROOF PLAN WEST  
 3/32" = 1' - 0"



LINE IS 2 INCHES  
 AT FULL SCALE  
 (IF NOT 2" - SCALE ACCORDINGLY.)



OREGON STATE UNIVERSITY

### CORDLEY HALL REROOFING PROJECT

SHEET TITLE:  
 PROPOSED NEW  
 DRAIN PIPE ROUTING  
 ROOF PLAN WEST



Date: 05/02/2017  
 Revisions:  
 1 05/02/2017

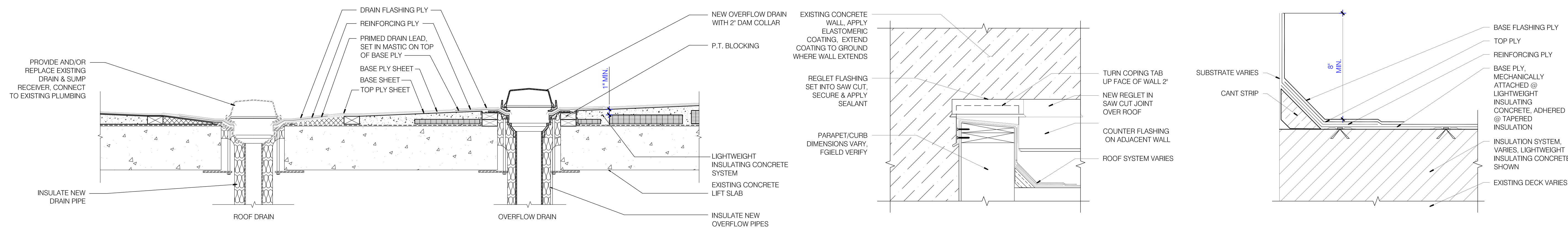
Drawn: PAS  
 Check: RLM  
 File: 15049.02

Project: 15049.02  
 SHEET NUMBER:

# A2.6



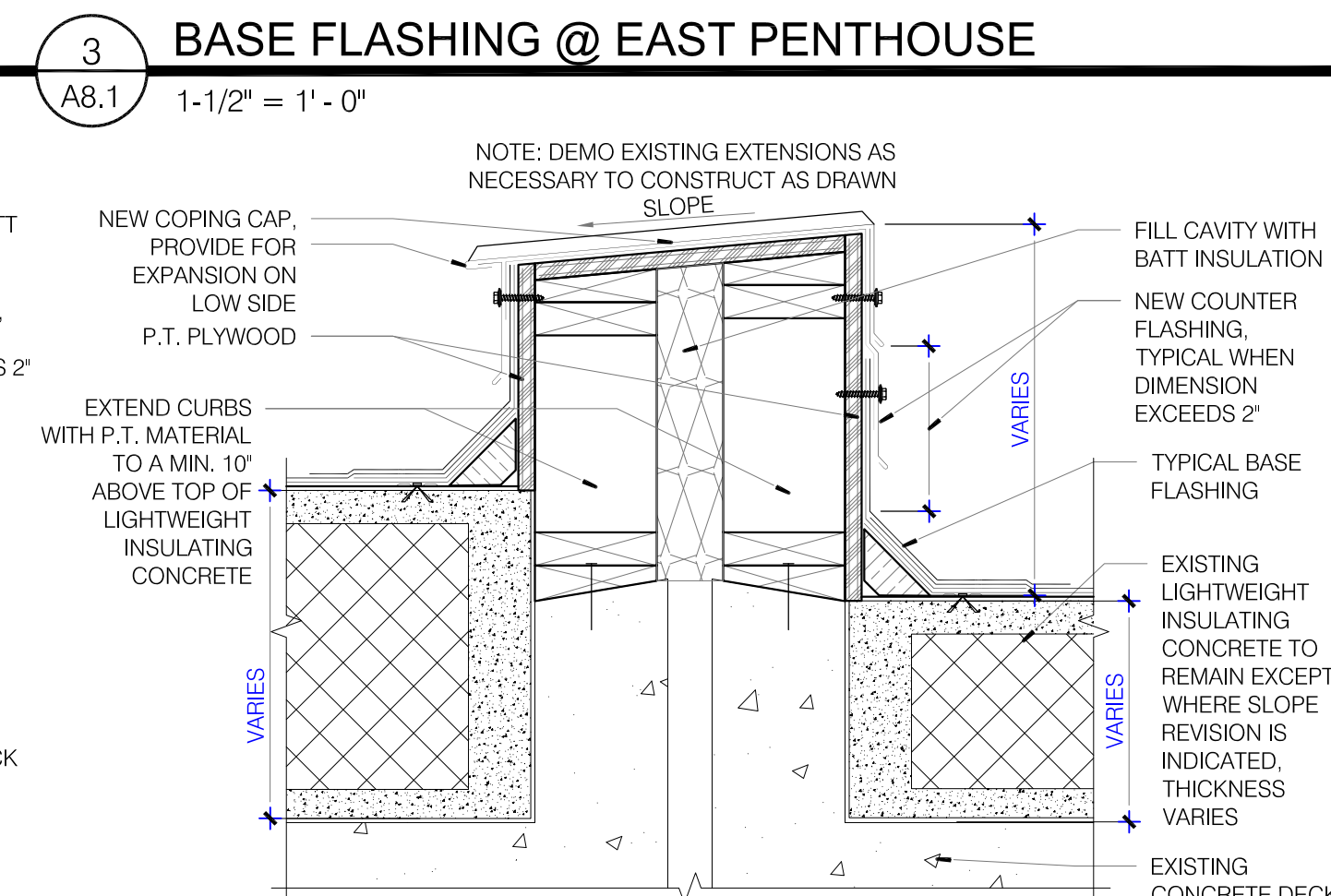
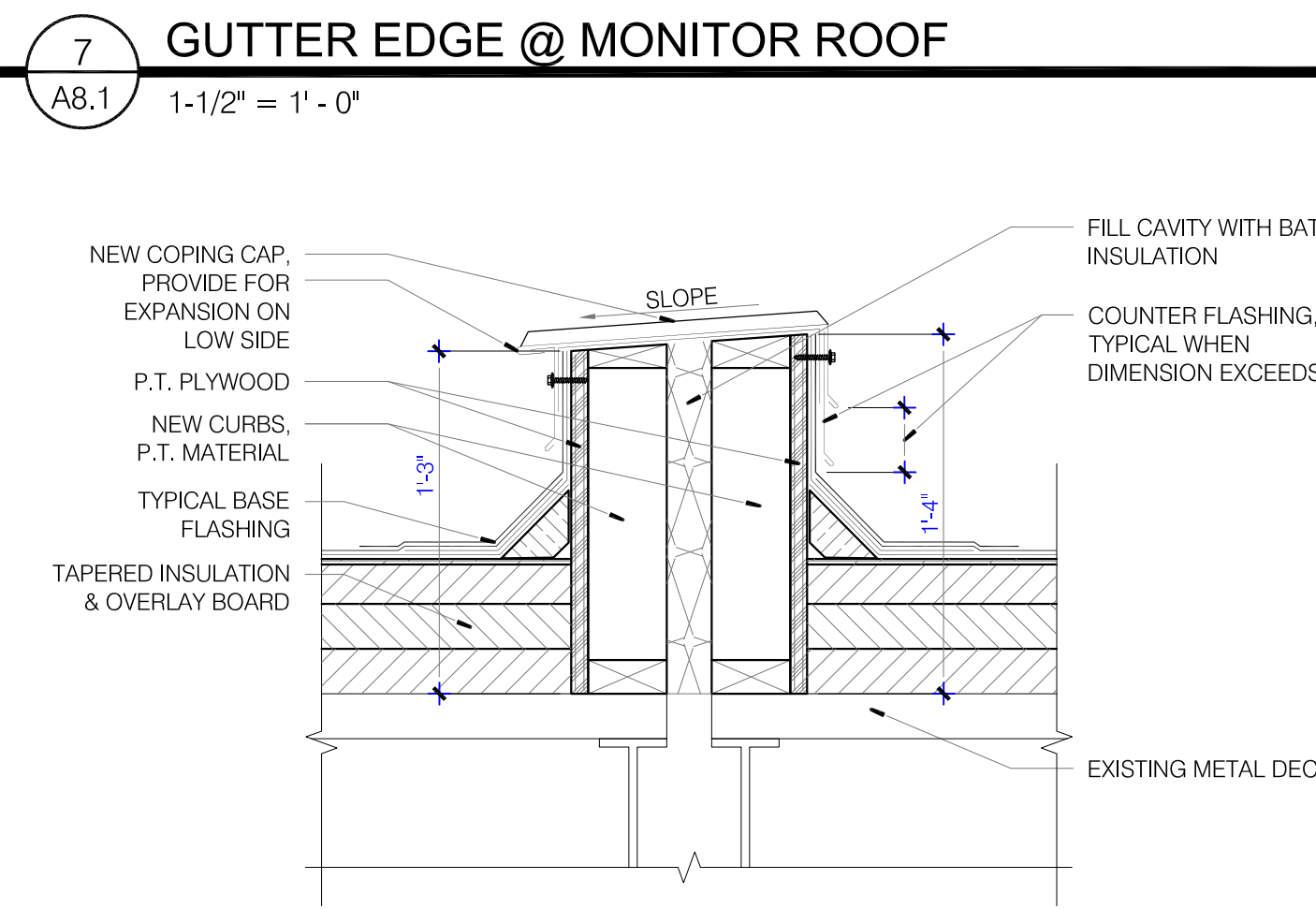
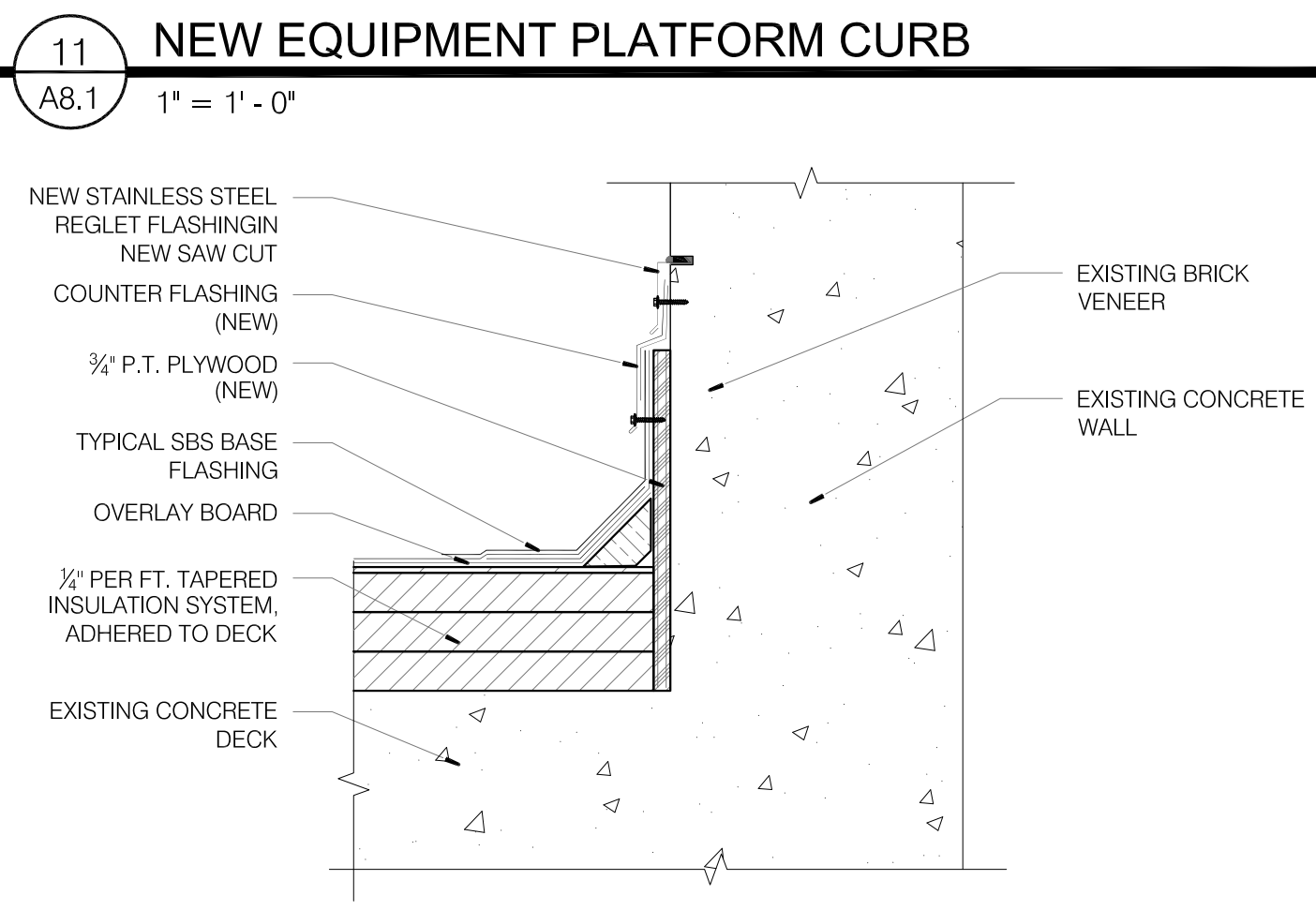
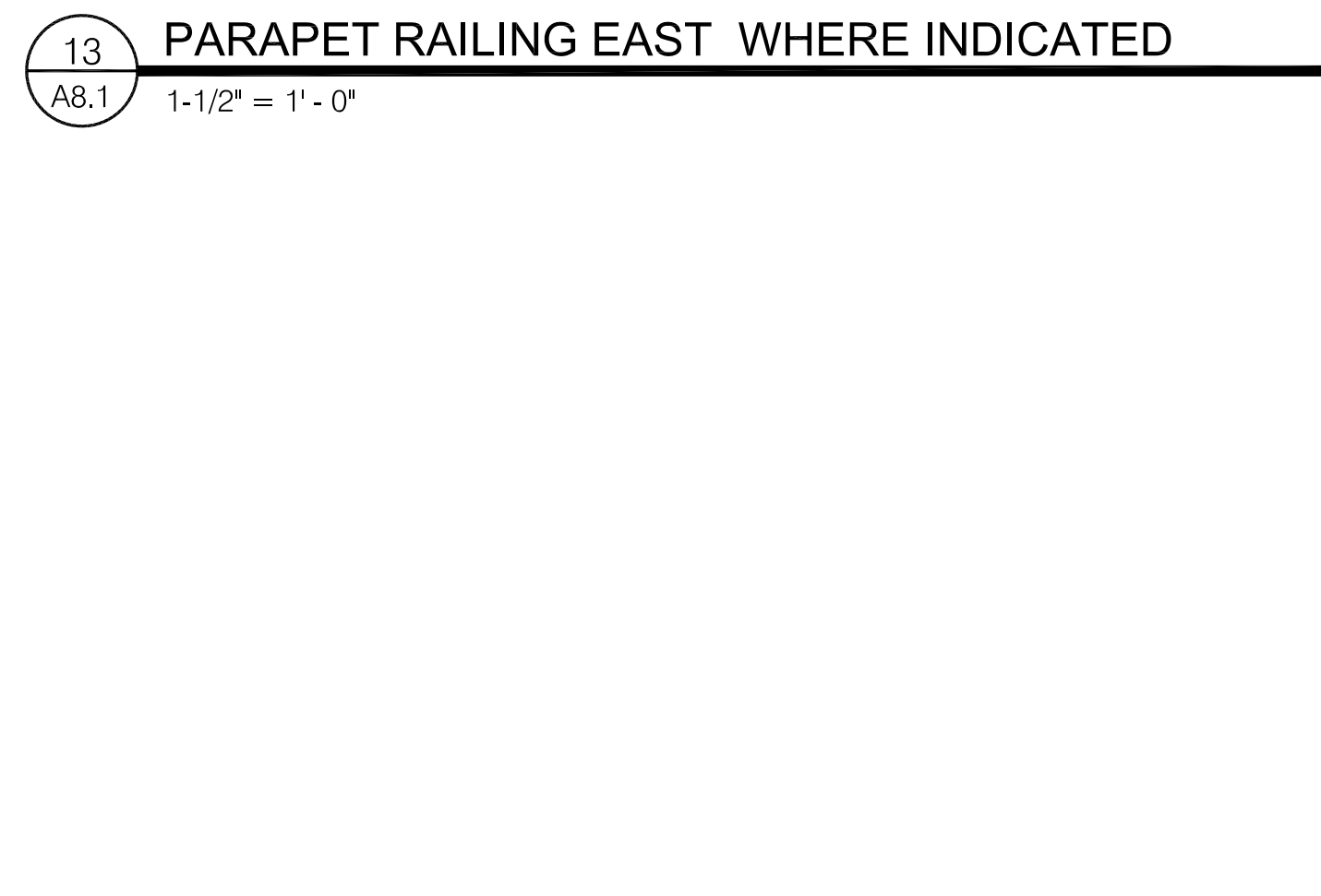
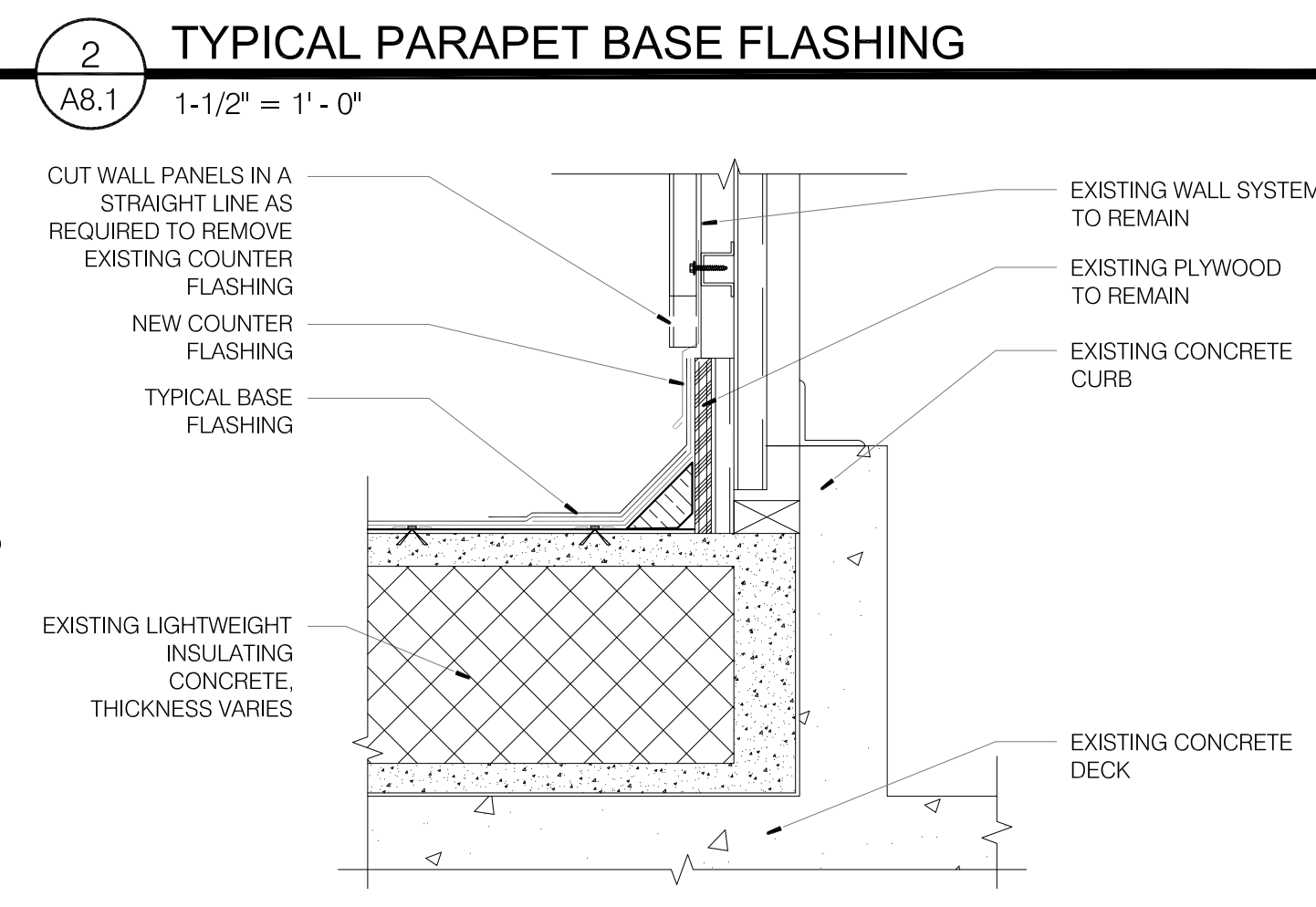
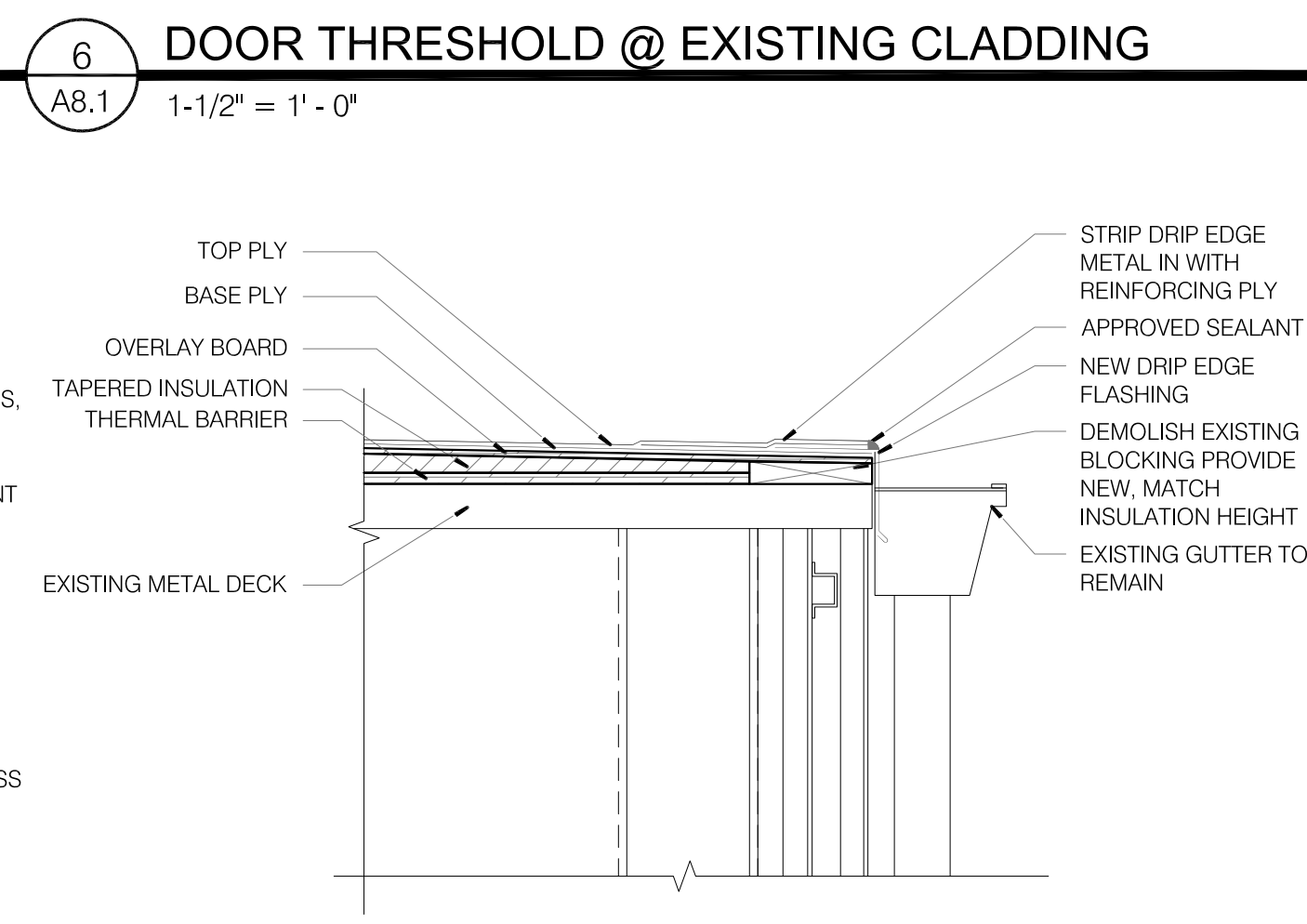
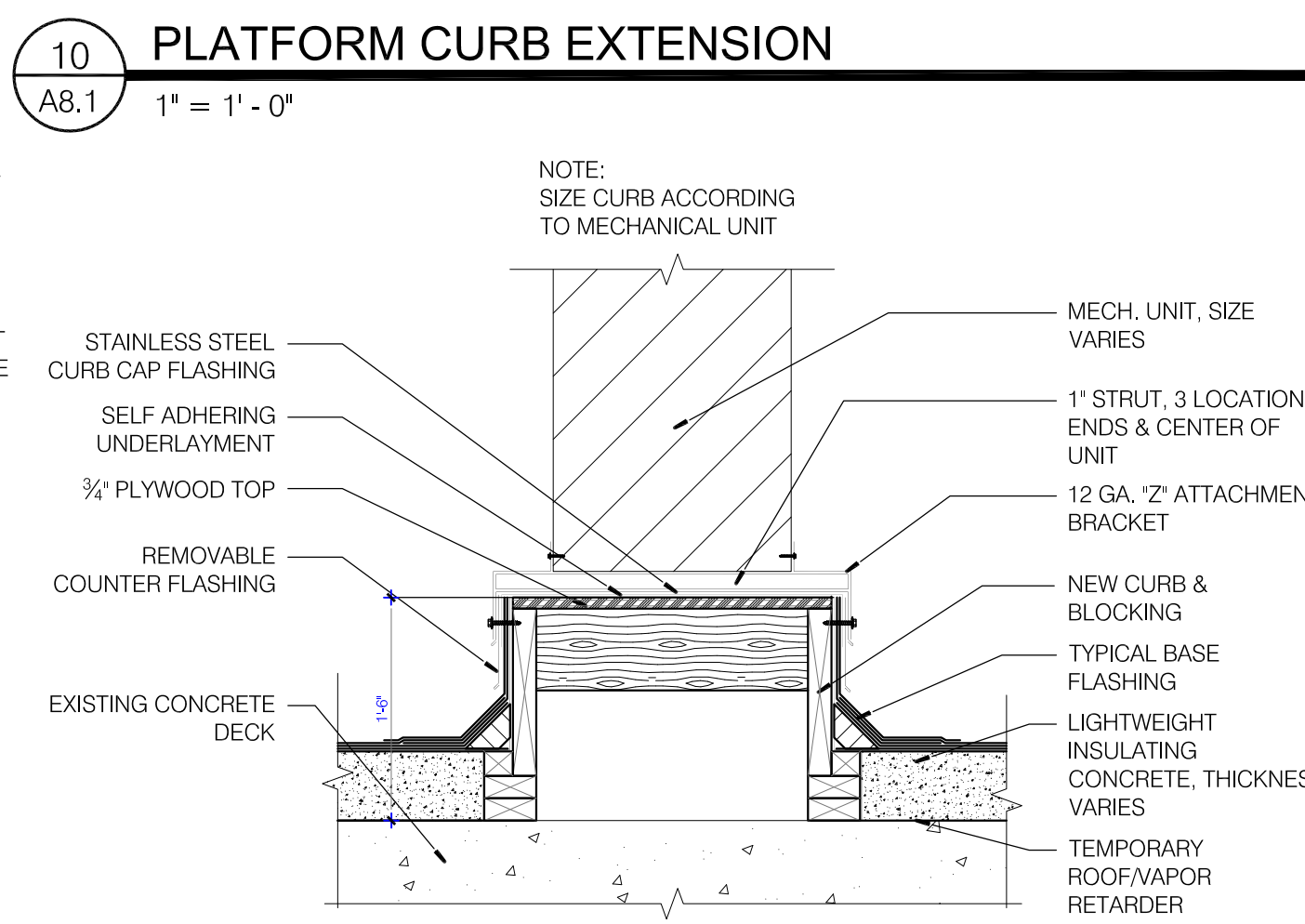
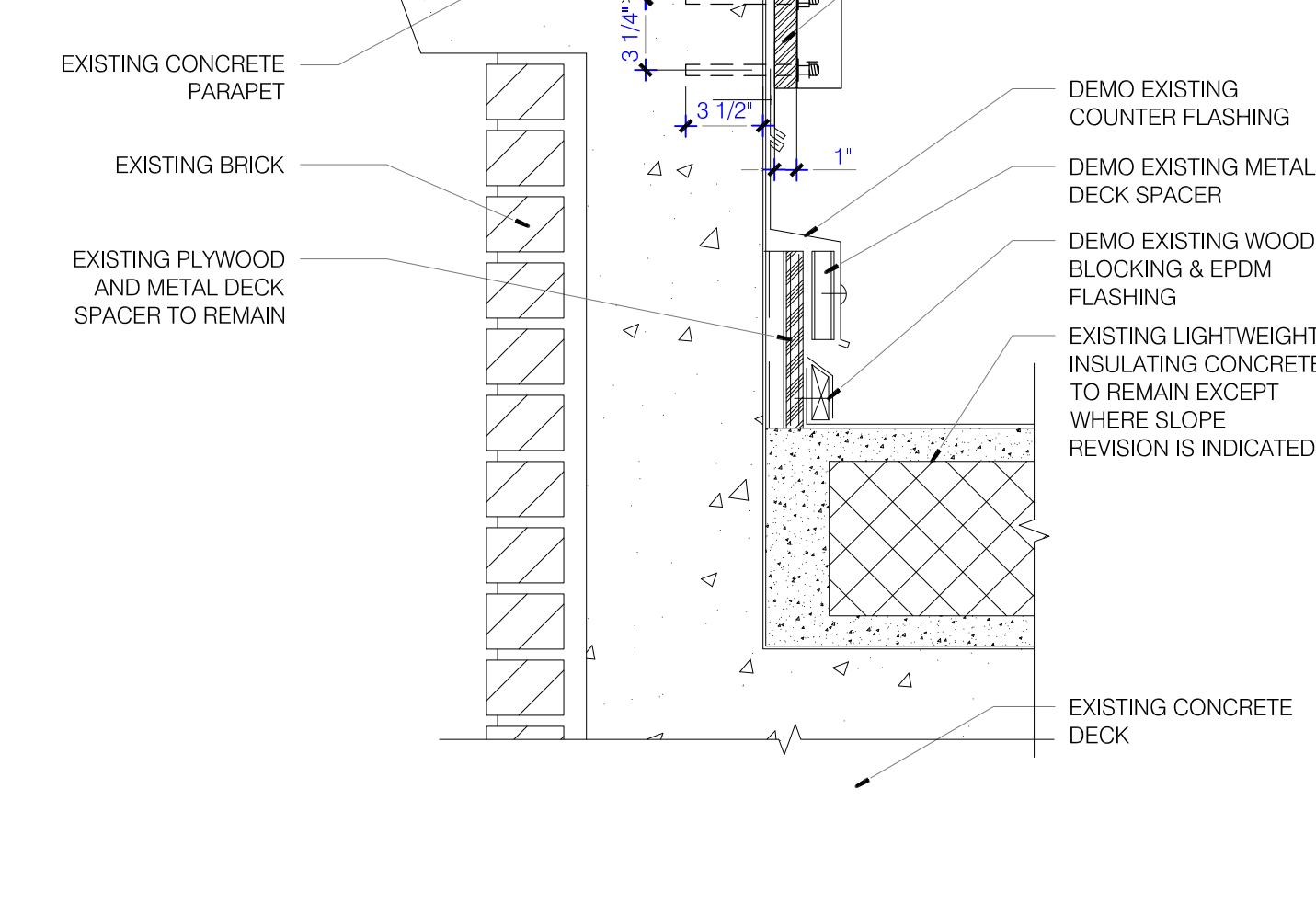
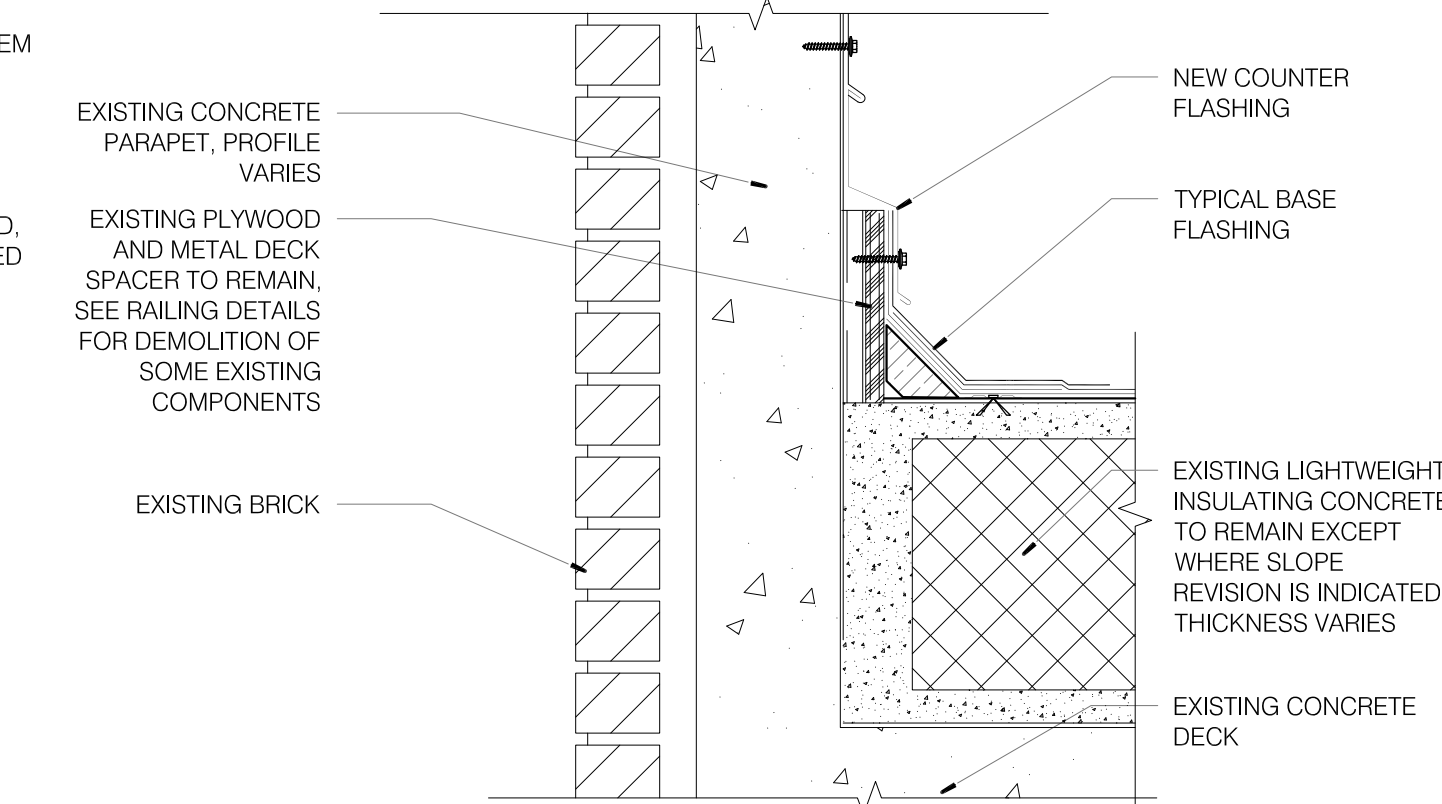
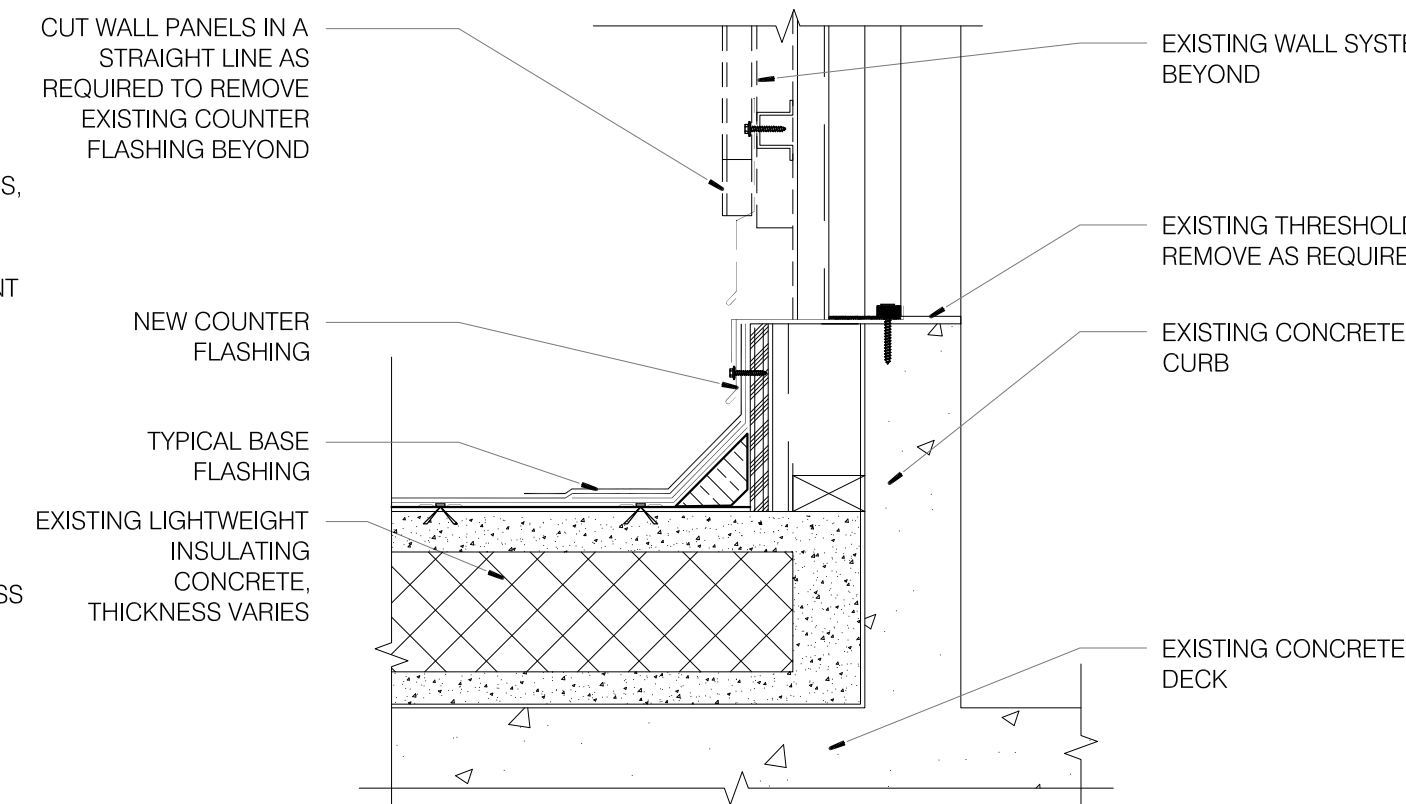
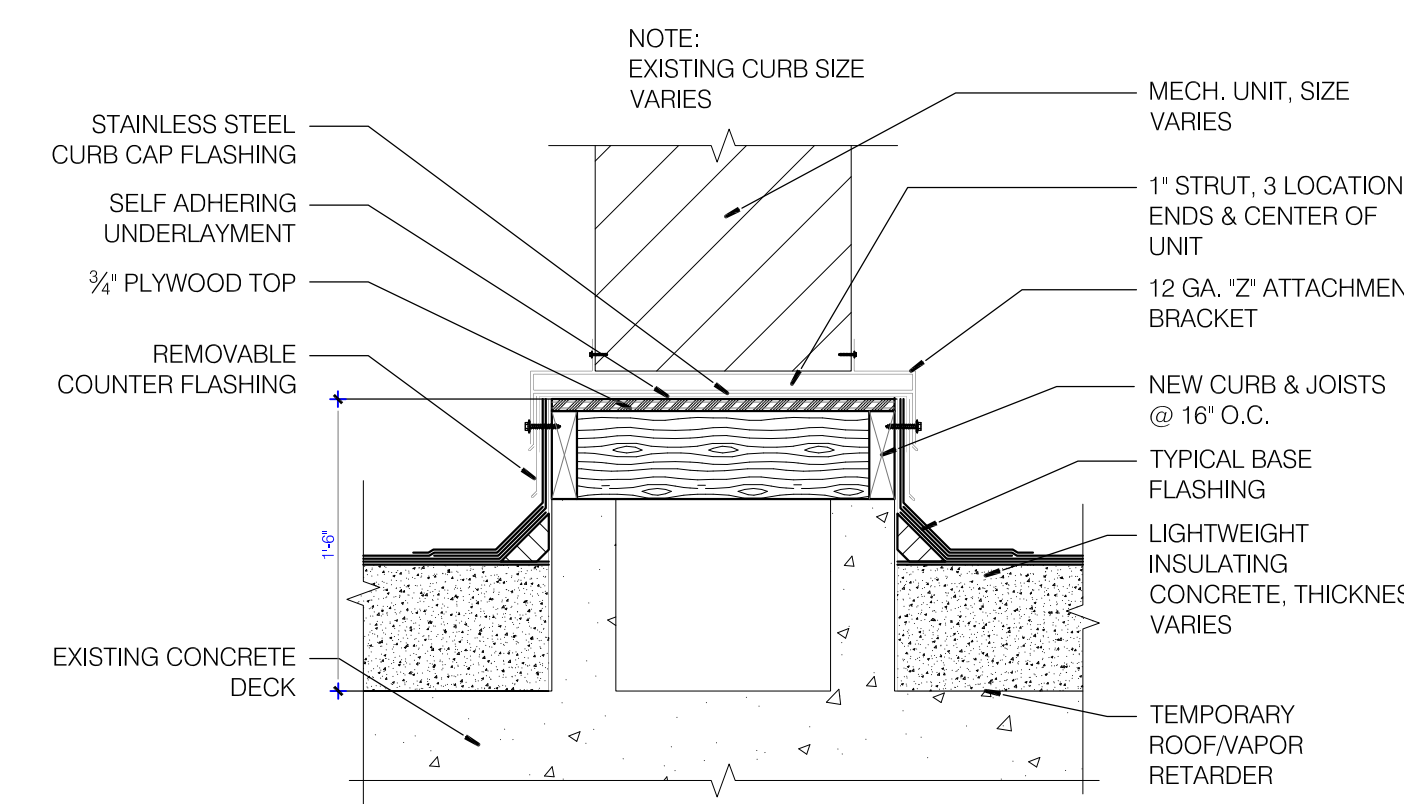
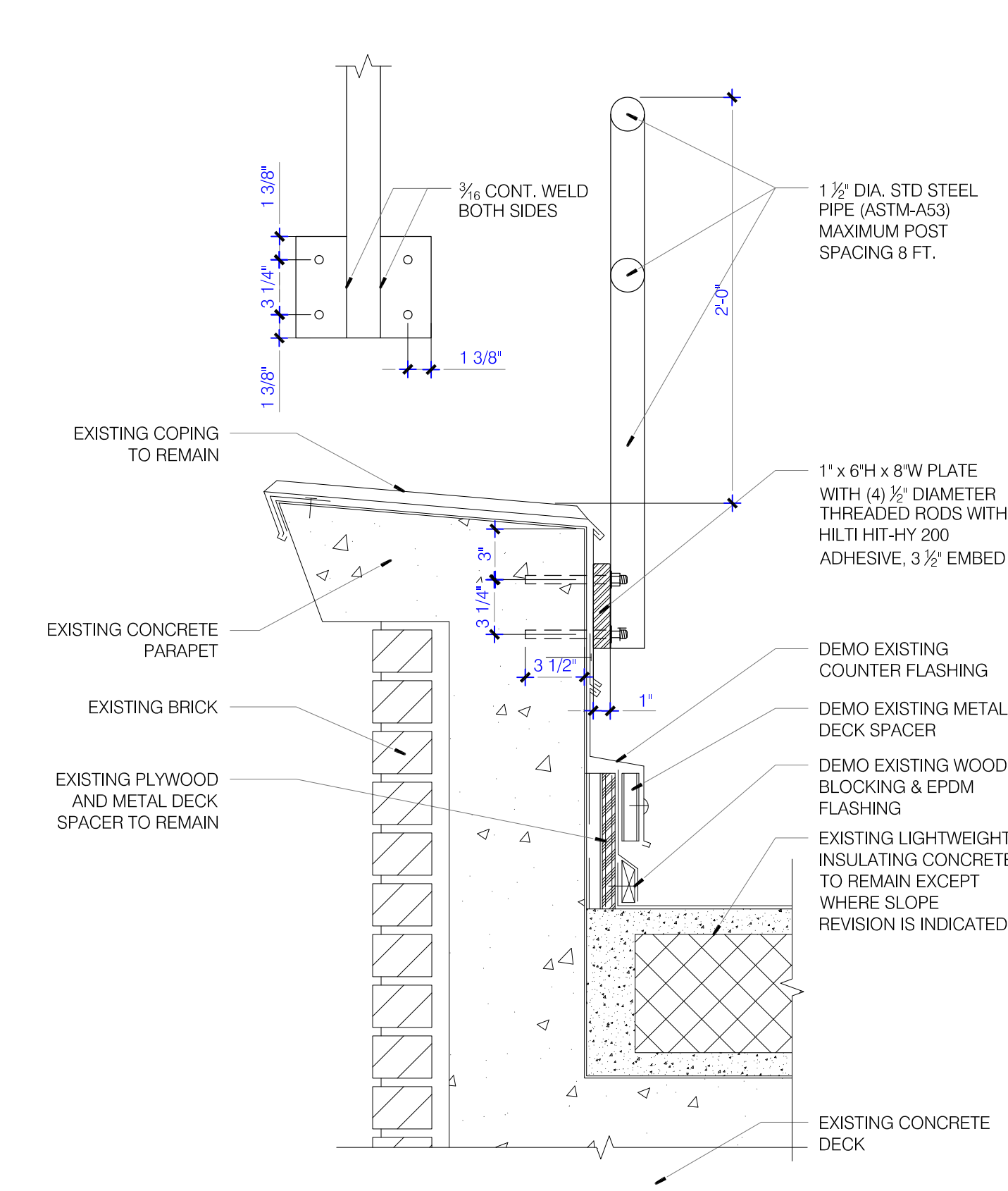
DRAWING FORMATTED FOR PRINTING AT 22" x 34"



9 ROOF DRAIN & OVERFLOW DRAIN DETAIL  
A8.1 1" = 1' - 0"

5 COPING TERMINATION @ CONCRETE WALL TYP.  
A8.1 1-1/2" = 1' - 0"

1 TYPICAL BASE FLASHING  
A8.1 3" = 1' - 0"



13 PARAPET RAILING EAST WHERE INDICATED  
A8.1 1-1/2" = 1' - 0"

11 NEW EQUIPMENT PLATFORM CURB  
A8.1 1" = 1' - 0"

7 GUTTER EDGE @ MONITOR ROOF  
A8.1 1-1/2" = 1' - 0"

3 BASE FLASHING @ EAST PENTHOUSE  
A8.1 1-1/2" = 1' - 0"

12 REGLET FLASHING @ CONCRETE WALL  
A8.1 1-1/2" = 1' - 0"

8 MONITOR EXPANSION JOINT  
A8.1 1-1/2" = 1' - 0"

4 EXPANSION JOINT REVISION & FLASHING  
A8.1 1-1/2" = 1' - 0"



OREGON STATE UNIVERSITY

CORDLEY HALL REROOFING PROJECT

SHEET TITLE:  
DETAILS



Date: 03/15/2017

Revisions:

Drawn: PAS  
Check: RLM  
File: 15049.02

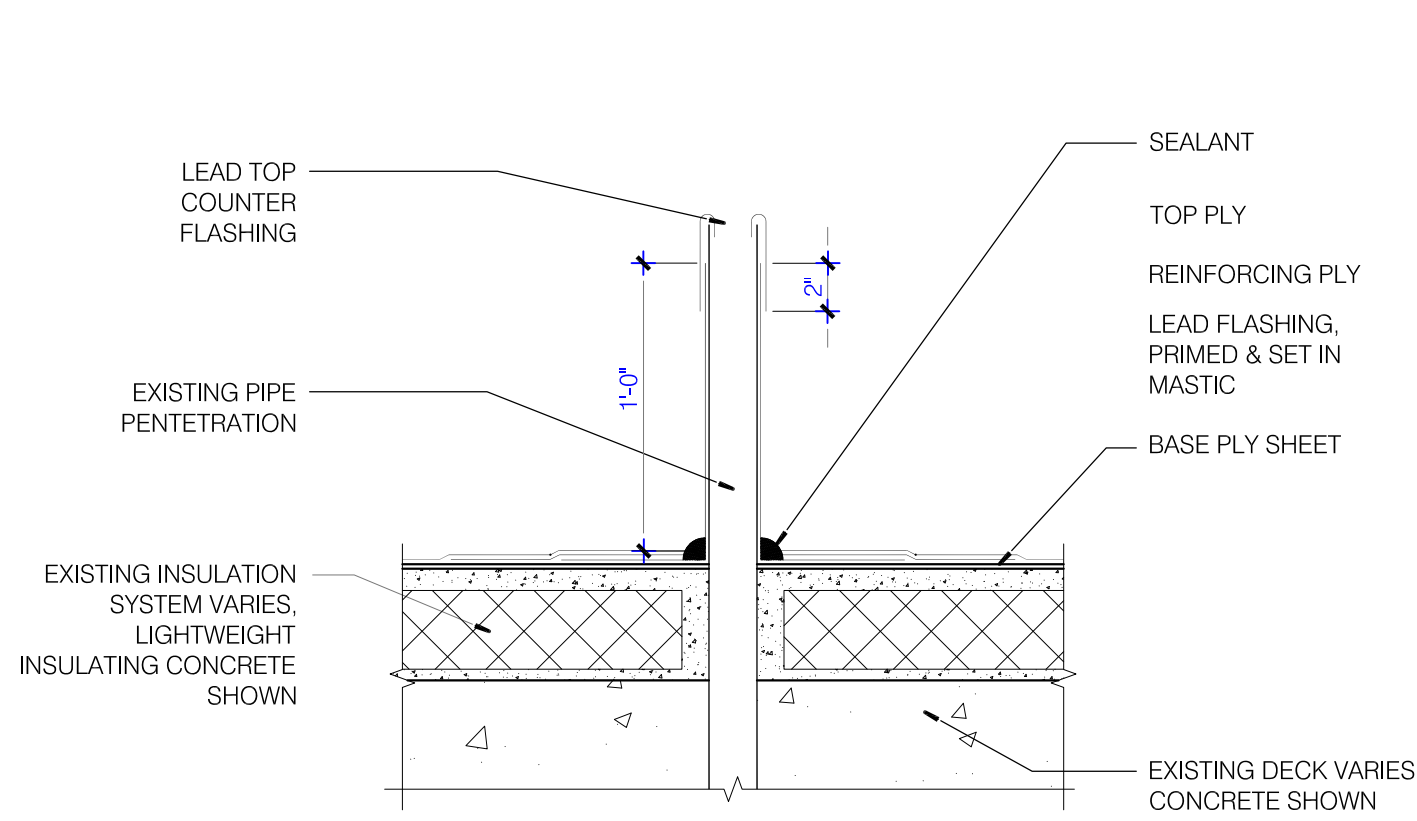
Project: 15049.02

SHEET NUMBER:

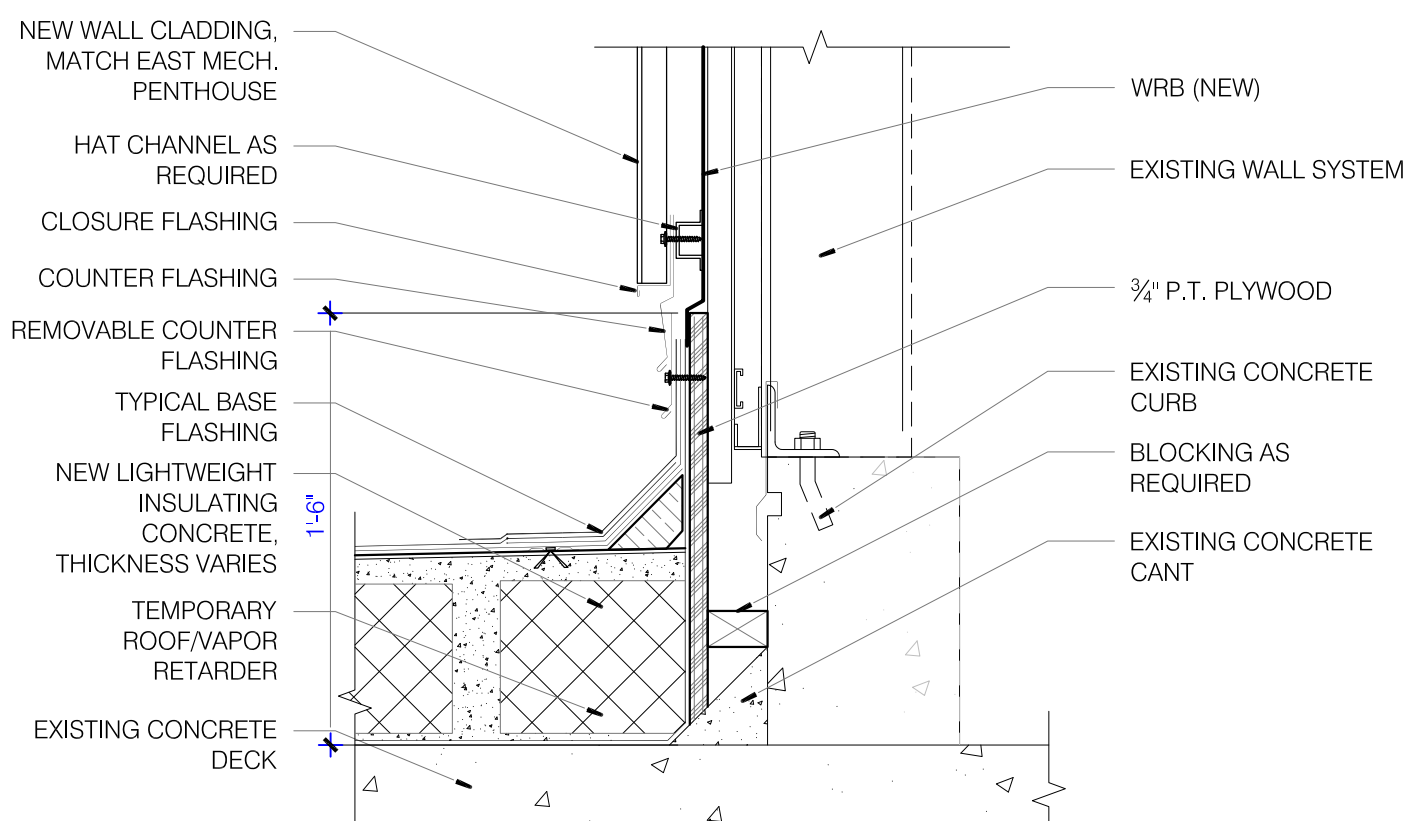
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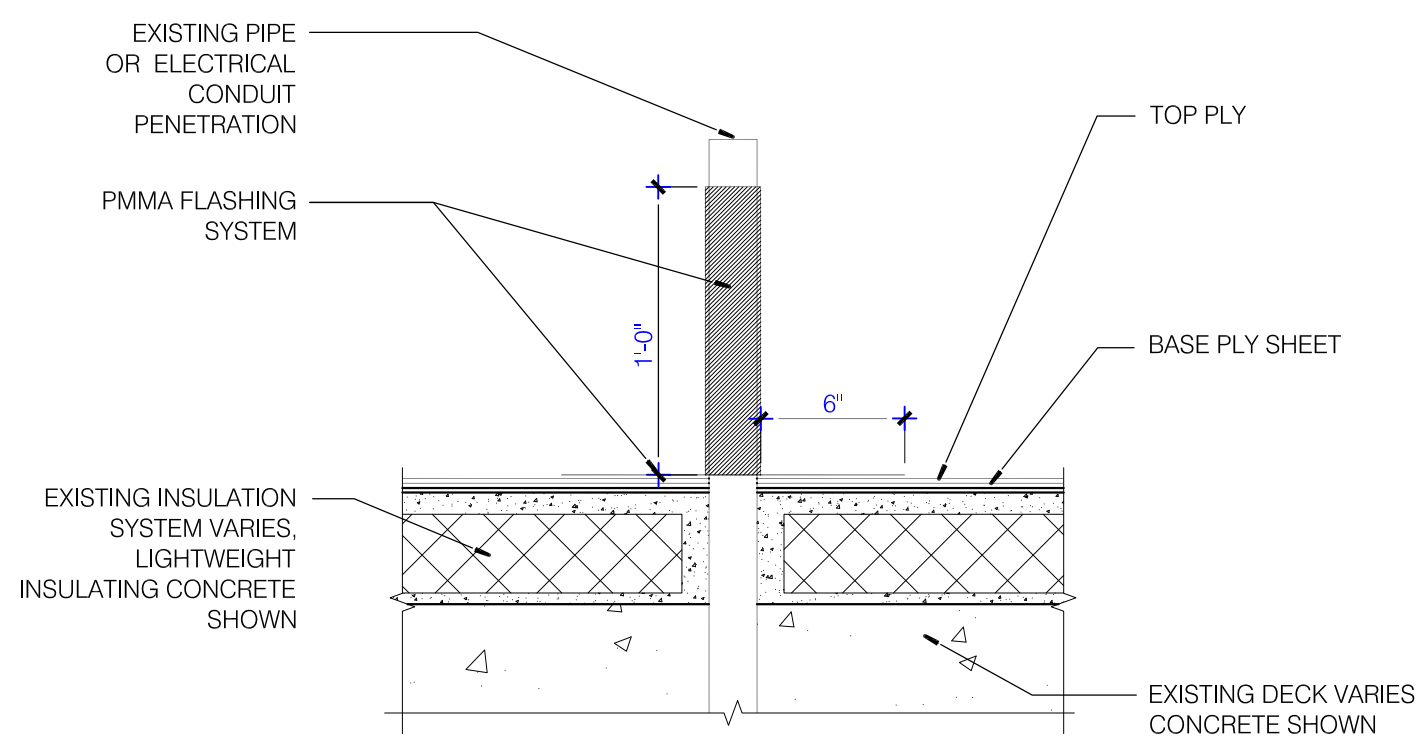
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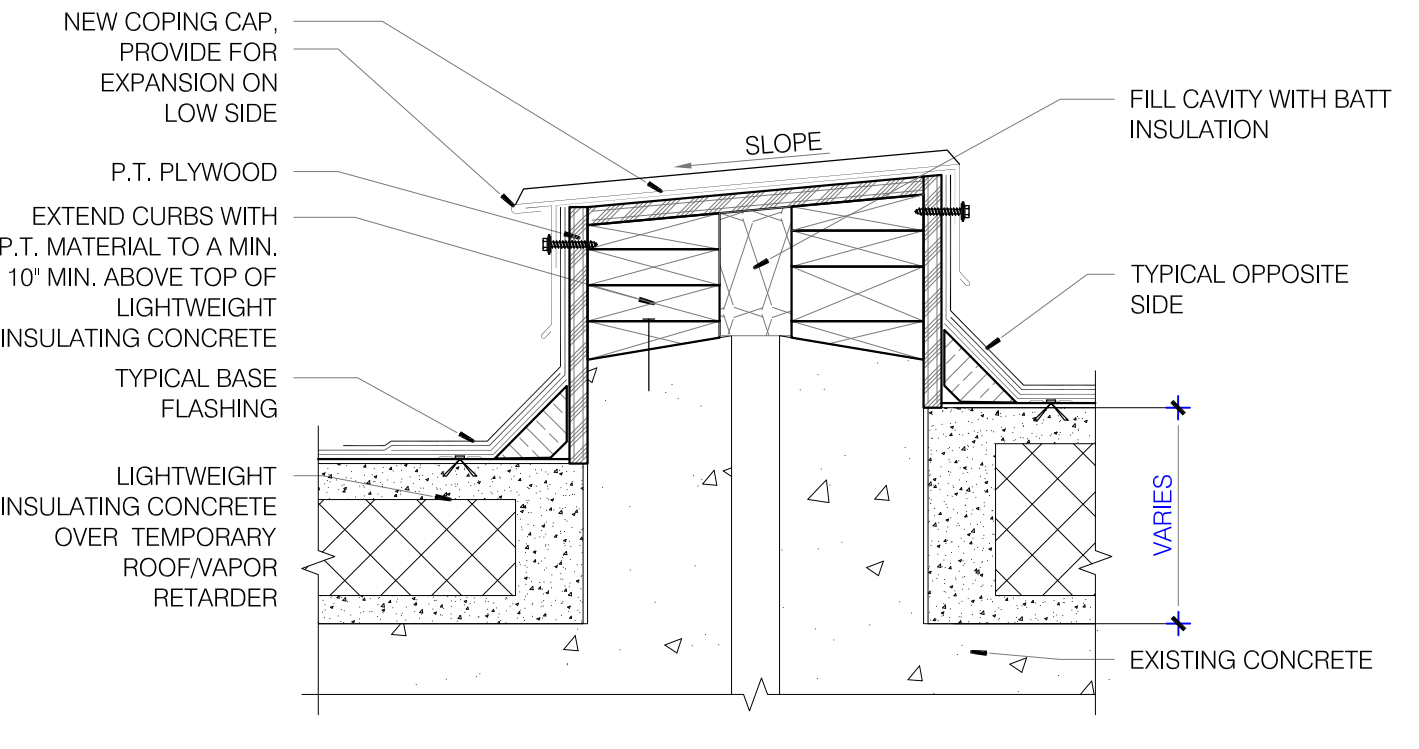
12 PIPE PENETRATION  
A8.2 1-1/2" = 1'-0"



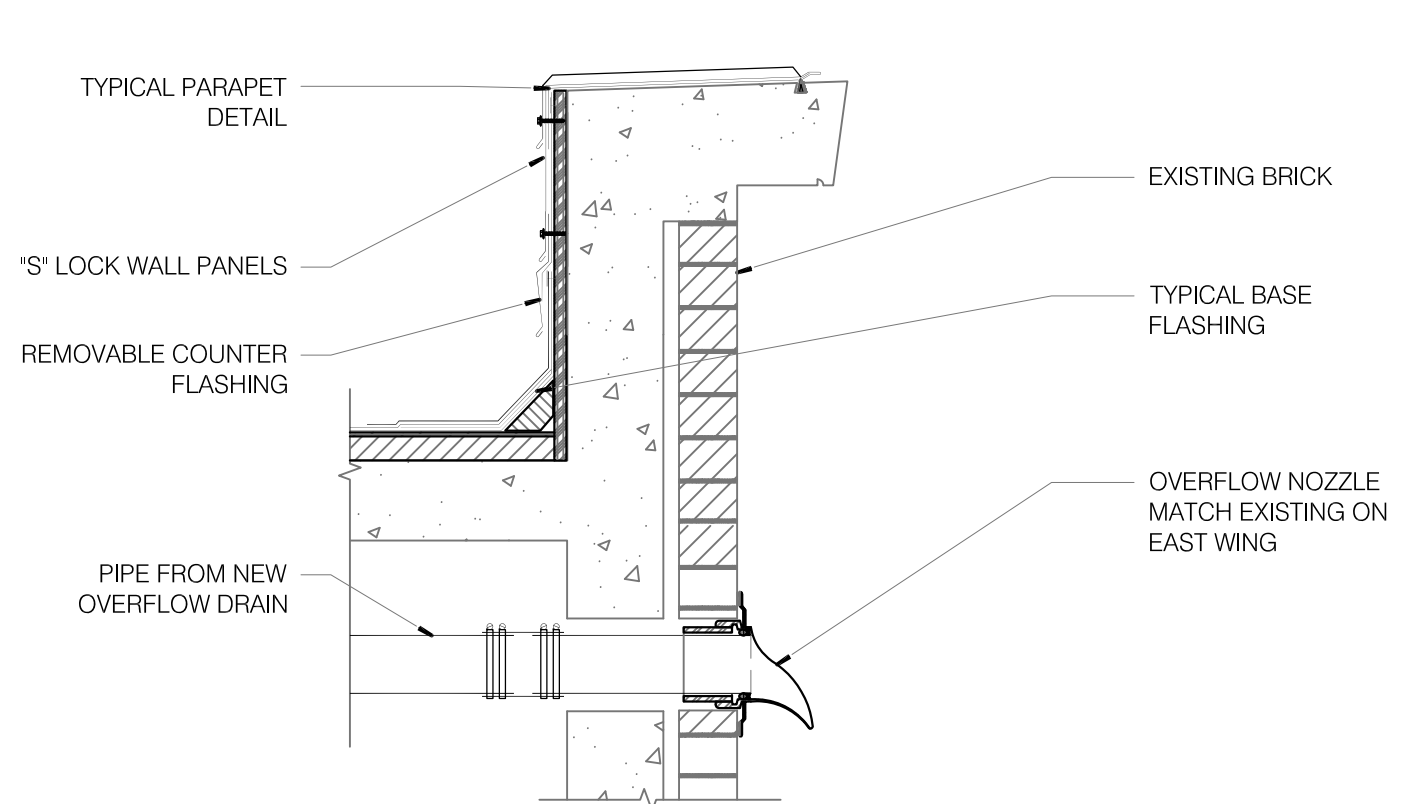
8 WEST MECH. PENTHOUSE @ NEW CLADDING  
A8.2 1-1/2" = 1'-0"



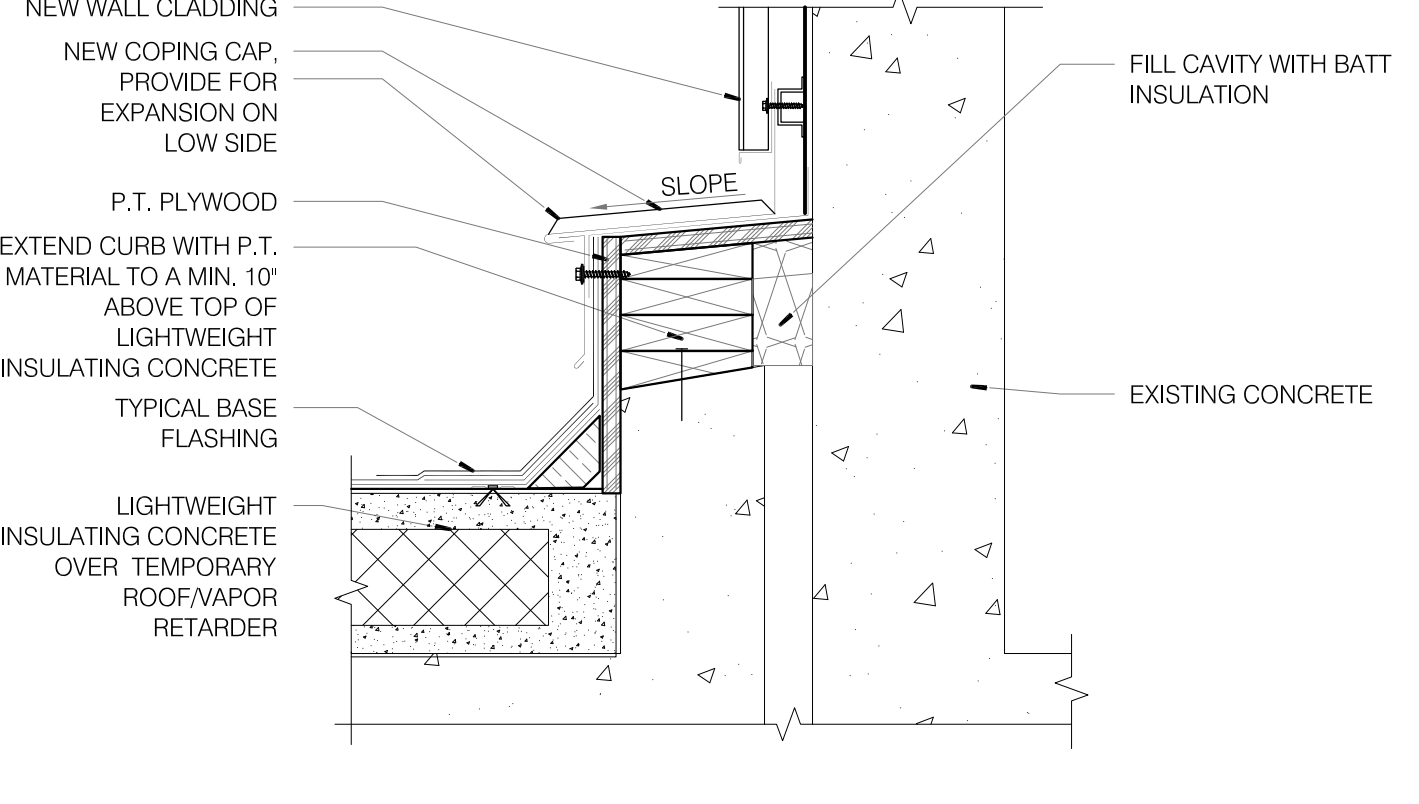
13 PIPE PENETRATION - ALTERNATE  
A8.2 1-1/2" = 1'-0"



9 EXPANSION JOINT AREA 'C' TO 'E1'  
A8.2 1-1/2" = 1'-0"



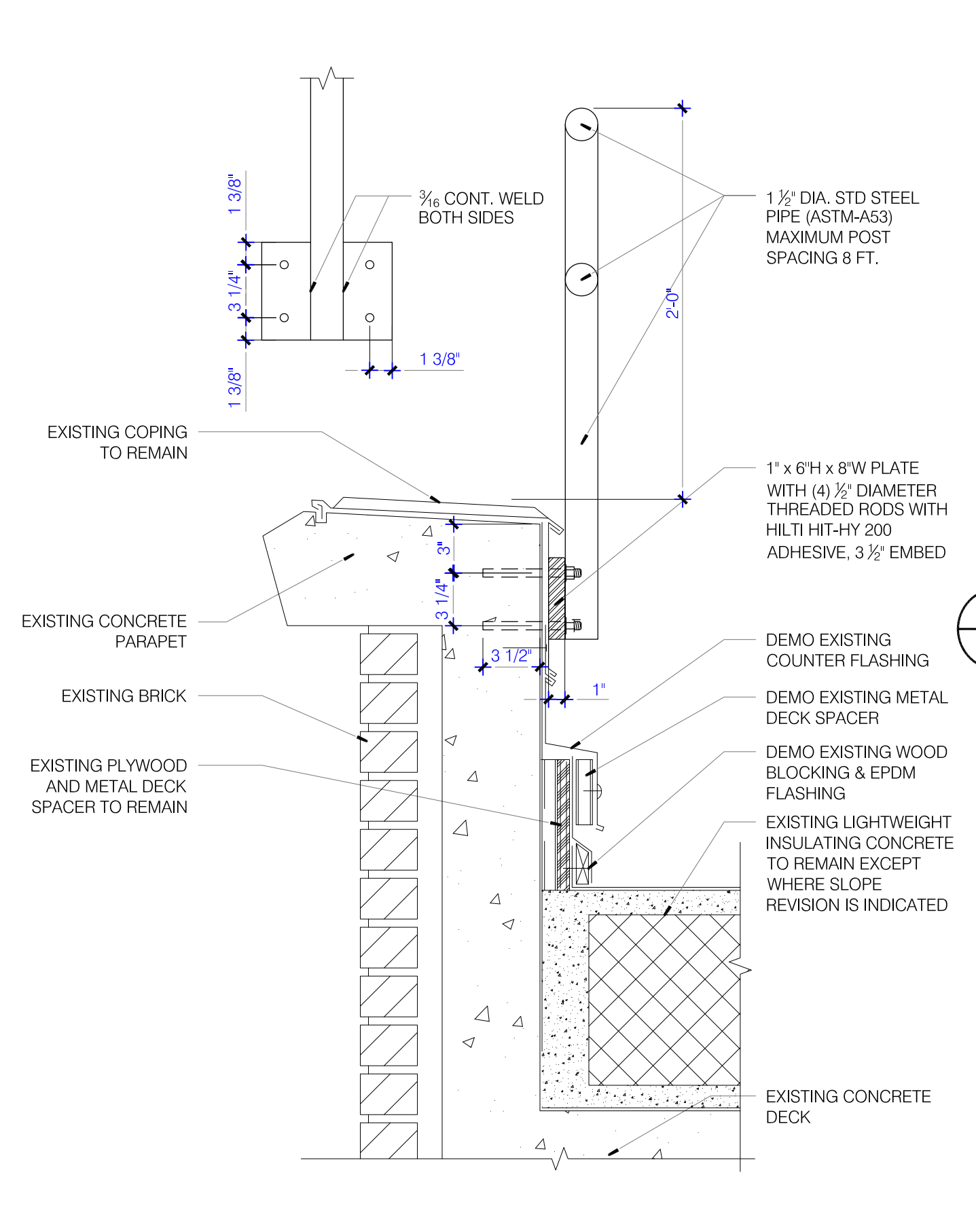
14 OVERFLOW NOZZLE  
A8.2 1" = 1'-0"



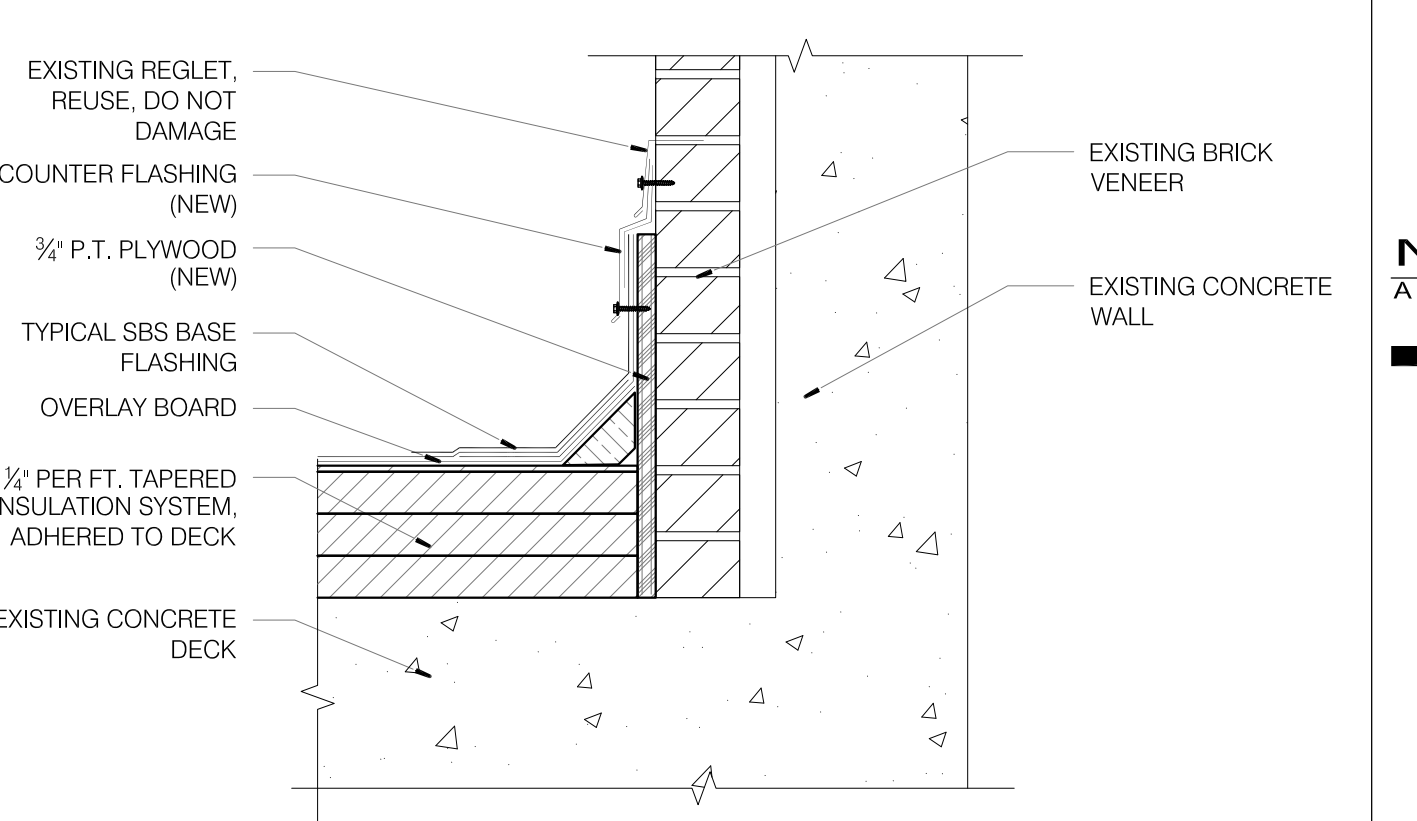
10 EXPANSION JOINT @ ELEVATOR SHAFT  
A8.2 1-1/2" = 1'-0"



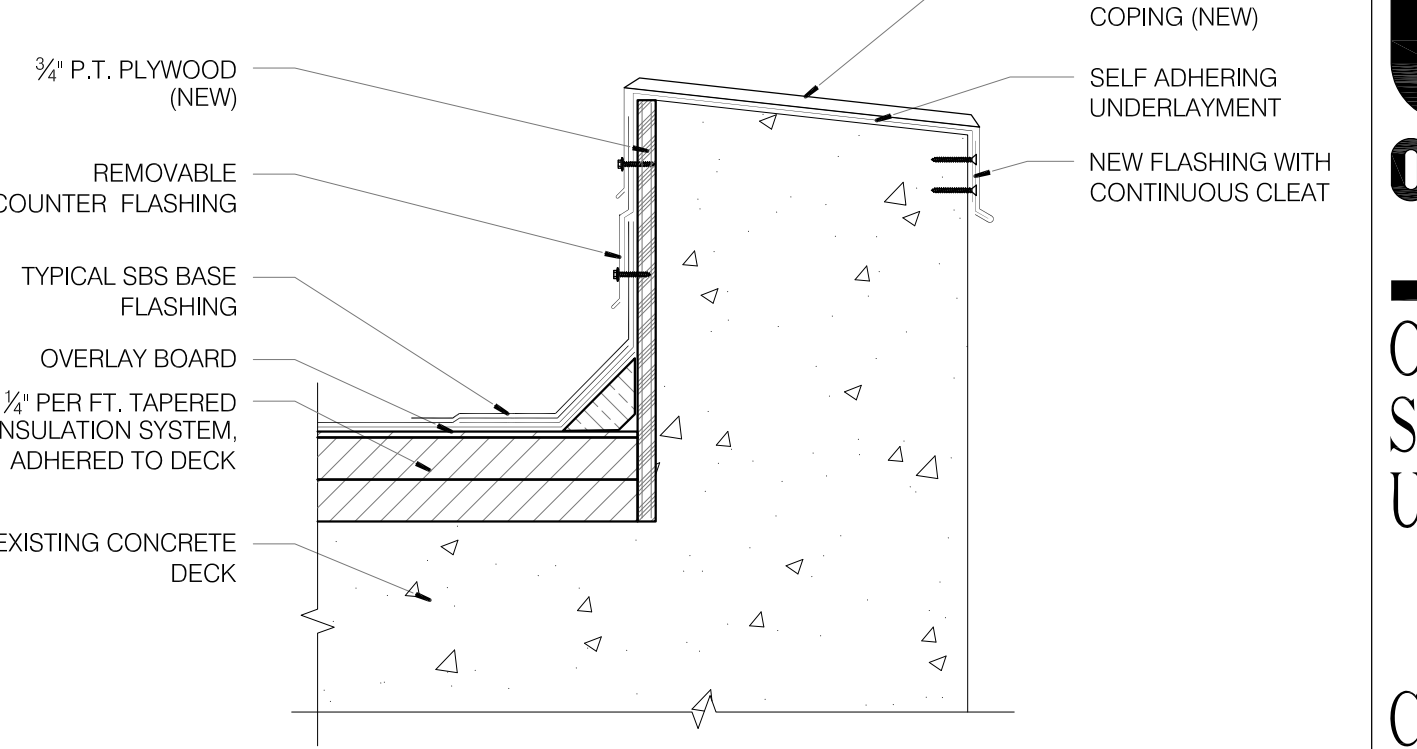
11 COPING TERMINATION @ BRICK WALL TYPICAL  
A8.2 1-1/2" = 1'-0"



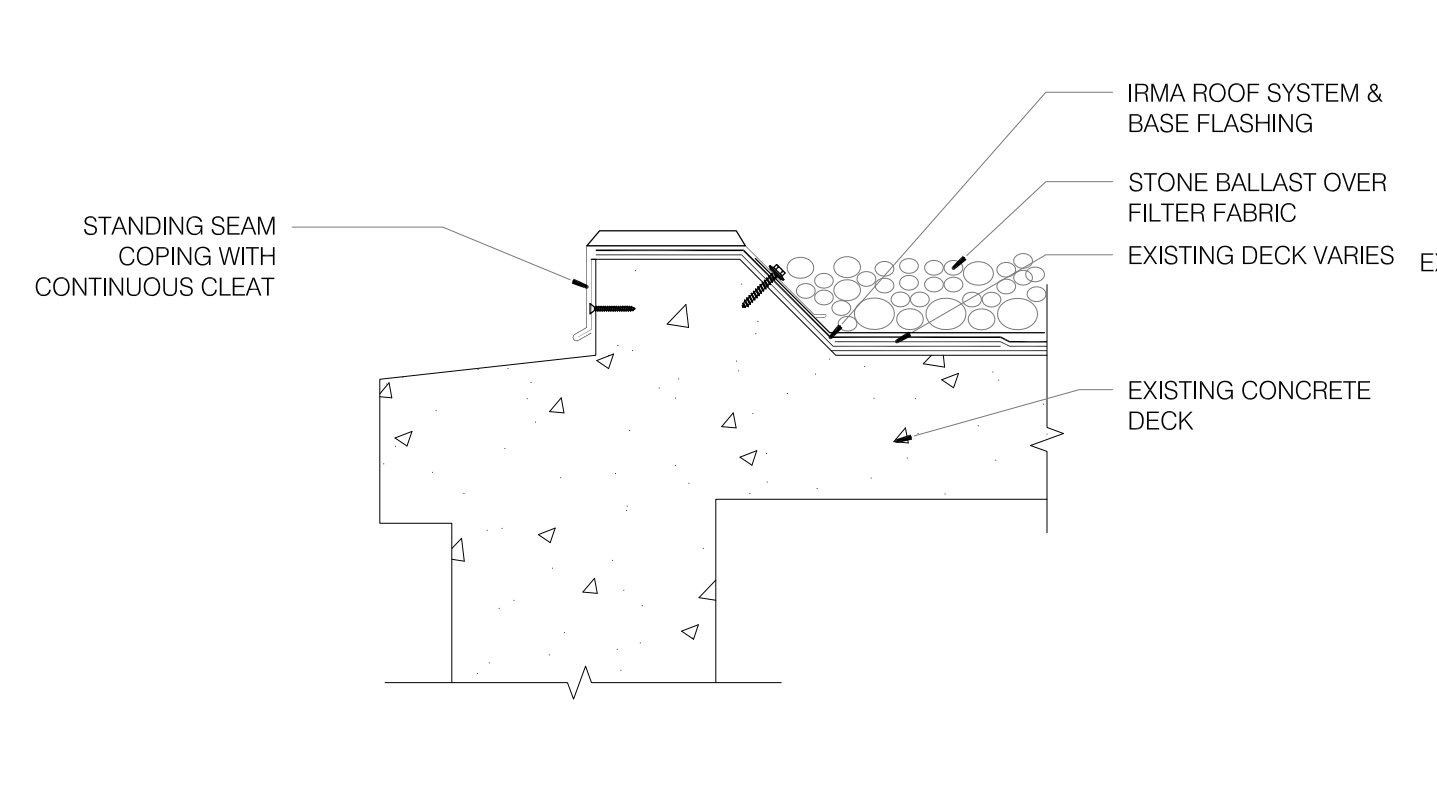
5 PARAPET RAILING WEST WHERE INDICATED  
A8.2 1-1/2" = 1'-0"



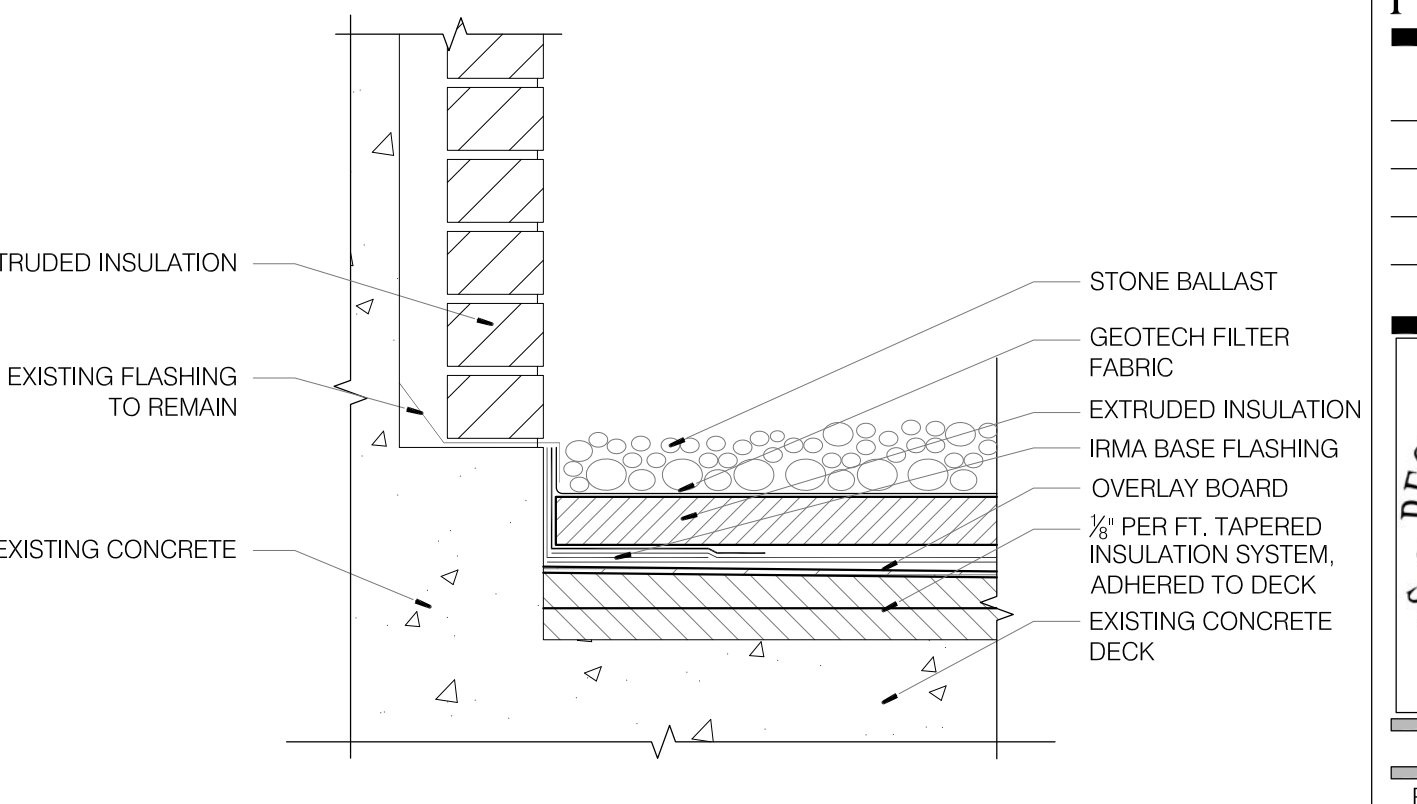
1 COURTYARD AREA 'G' @ BRICK WALL  
A8.2 1-1/2" = 1'-0"



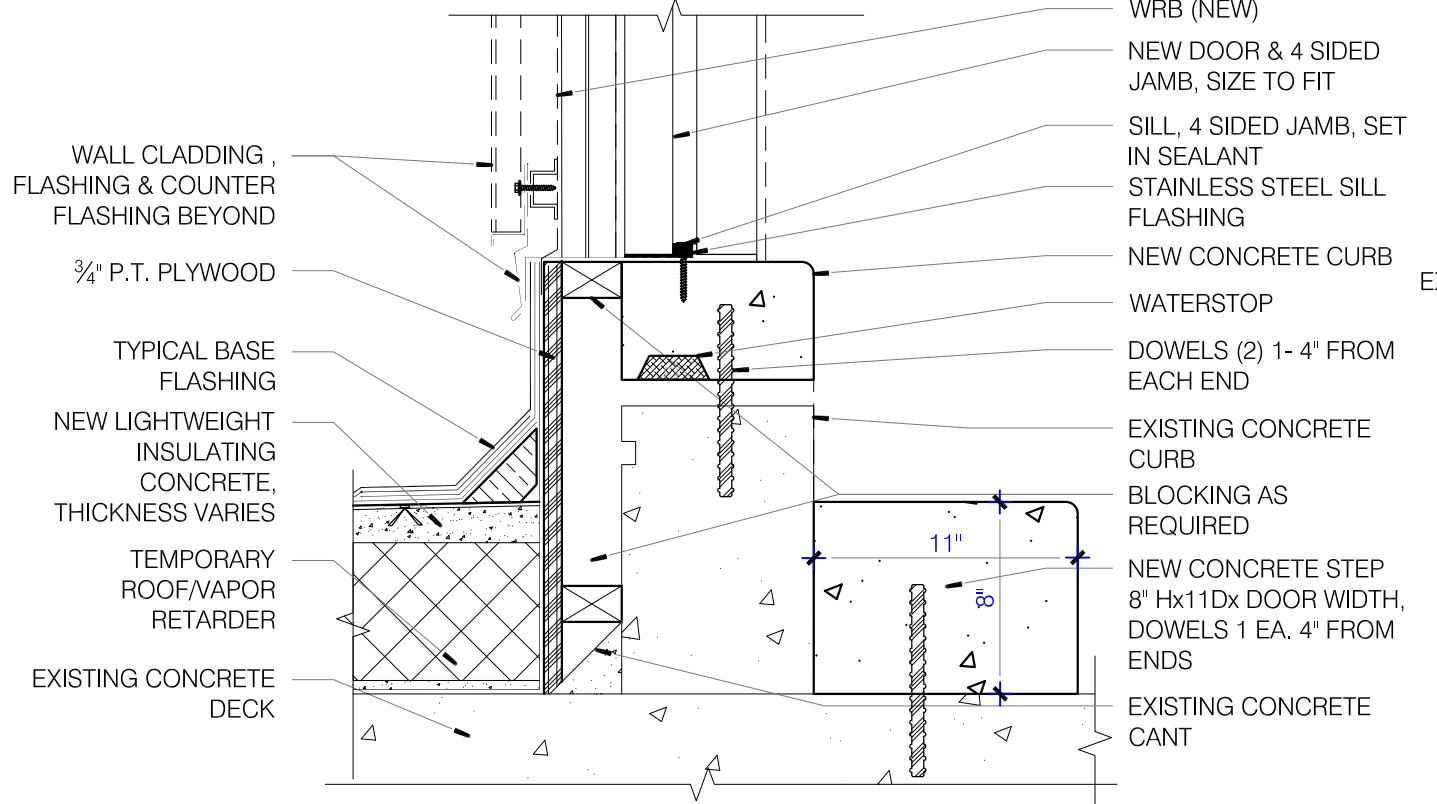
2 COURTYARD AREA 'G' PARAPET  
A8.2 1-1/2" = 1'-0"



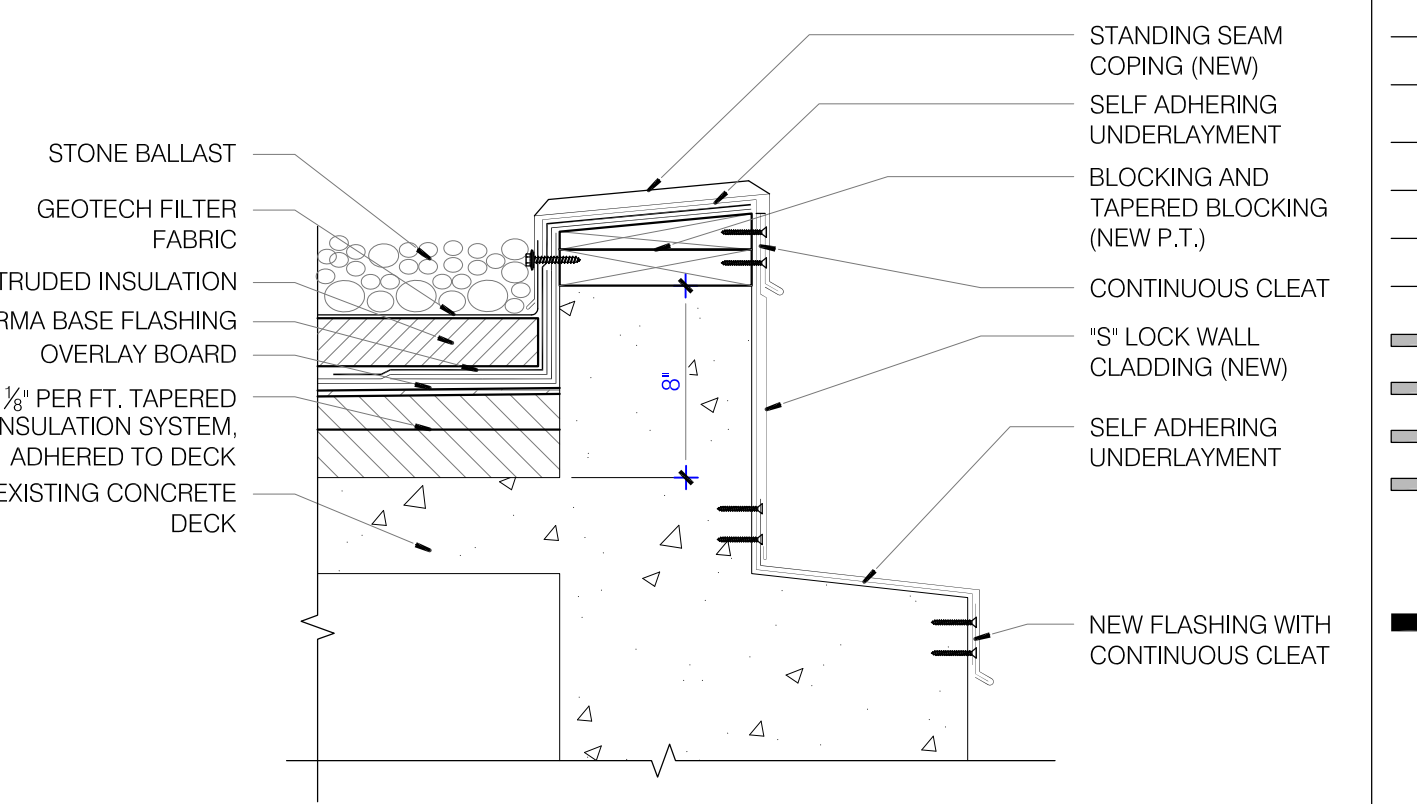
6 CANOPY ROOF EDGE  
A8.2 1-1/2" = 1'-0"



3 COURTYARD AREA 'H' @ BRICK WALL  
A8.2 1-1/2" = 1'-0"



7 DOOR THRESHOLD @ NEW CLADDING  
A8.2 1-1/2" = 1'-0"



4 COURTYARD AREA 'H' PARAPET  
A8.2 1-1/2" = 1'-0"



OREGON STATE UNIVERSITY

CORDLEY HALL REROOFING PROJECT

SHEET TITLE:

DETAILS



Date: 03/15/2017

Revisions:

Drawn: PAS  
Check: RLM  
File: 15049.02

Project: 15049.02

SHEET NUMBER:

A8.2

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SUBSTITUTION REQUEST FORM

TO: Mr. Phillip Strand - McBride Architecture, PC

PROJECT: OSU ~~Roof Replacement~~ AG: Life Sciences (ALS) Building

SPECIFIED ITEM:

Section	Page	Paragraph	Description
<u>075215</u>	<u>5</u>	<u>2.01</u>	<u>Manufacturers</u>

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: CertainTeed Corporation

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

Submitted by: Terry Wheeler / Joe Thompson

Signature [Signature]

Firm CertainTeed Corporation

Address 20 James Rd.

Malvern, PA 19355

Date 5/5/17

Telephone 610-893-5229

Attachments: Yes

For use by Design Consultant:

Accepted  Accepted as noted

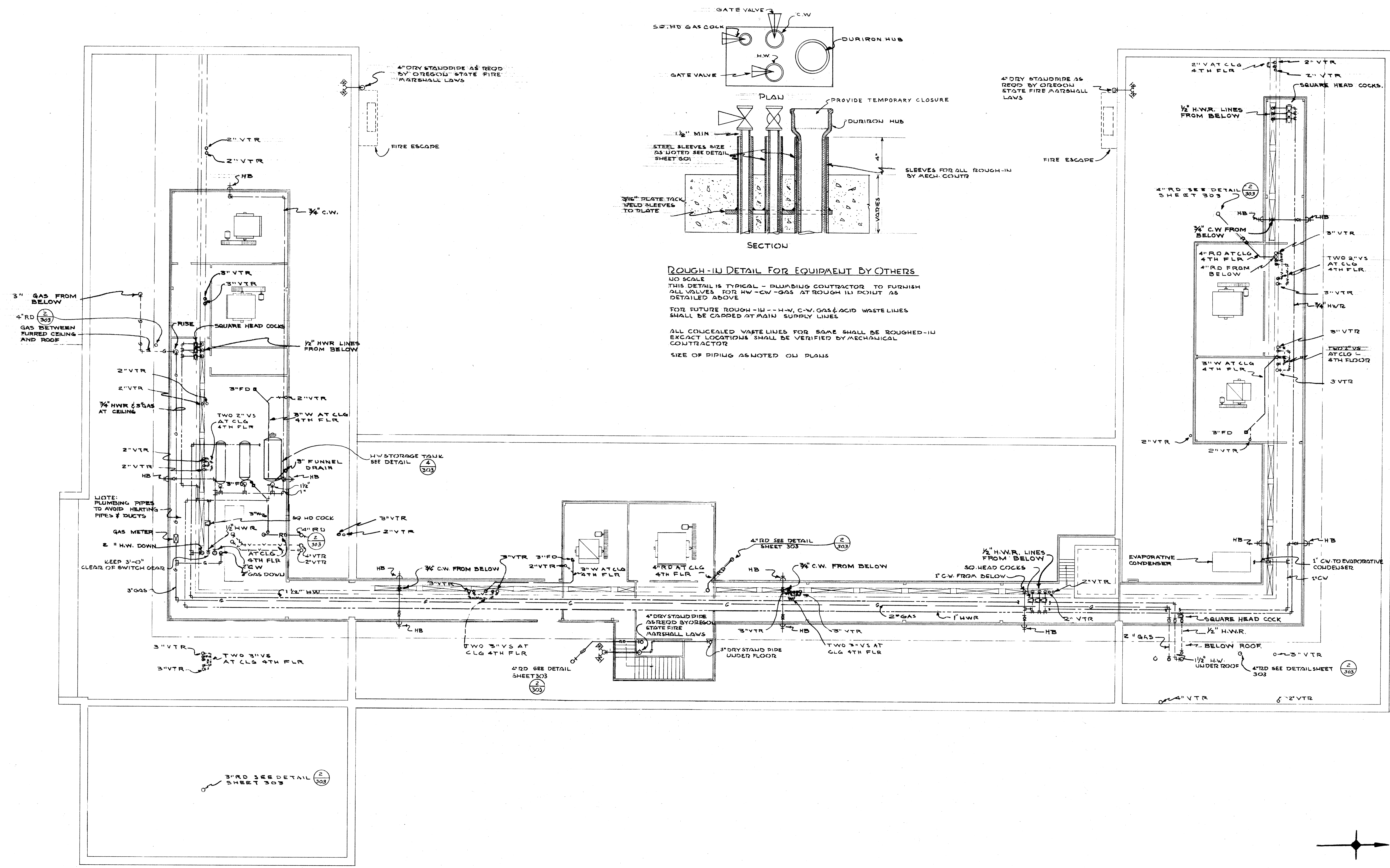
Not Accepted  Received too late

By [Signature]

Date 5/5/2017

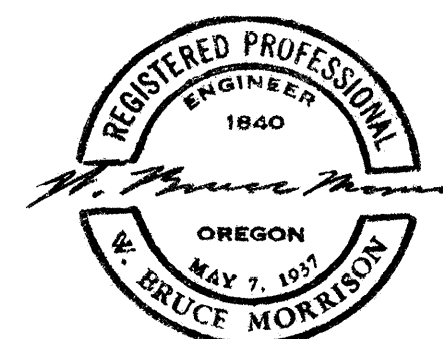
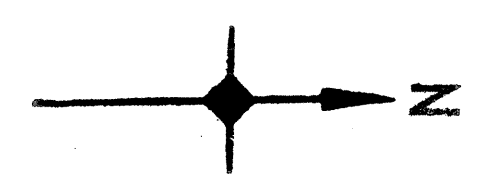
Remarks Approved for ALS Only





**ROUGH-IN DETAIL FOR EQUIPMENT BY OTHERS**  
 NO SCALE  
 THIS DETAIL IS TYPICAL - PLUMBING CONTRACTOR TO FURNISH ALL VALVES FOR HW-GAS AT ROUGH IN POINT AS DETAILED ABOVE  
 FOR FUTURE ROUGH-IN -- H.W., C.V., GAS & ACID WASTE LINES SHALL BE CAPPED AT MAIN SUPPLY LINES  
 ALL CONCEALED WASTE LINES FOR SAME SHALL BE ROUGHED-IN EXACT LOCATIONS SHALL BE VERIFIED BY MECHANICAL CONTRACTOR  
 SIZE OF PIPING AS NOTED ON PLANS

**ROOF AND MONITOR PLUMBING PLAN**  
 SCALE 1/8"=1'-0"



**CORDLEY HALL - ORIGINAL**  
**ROOF AND MONITOR PLUMBING PLAN**

AGRICULTURAL & BIOLOGICAL SCIENCE BUILDING  
 OREGON STATE COLLEGE  
 CORVALLIS, OREGON

DATE: 5-12-56  
 JOB: 56-1  
 SHEET: 306

NOTE:  
 SEE SHEETS NO. 601, 602, 603, AND 604 FOR FIXTURES, CURBS, AND SLEEVES FOR ROUGHING-IN AND SETTING.

BURNS, BEAR, McNEIL & SCHNEIDER ARCHITECTS  
 2940 S. E. BELMONT ST. PORTLAND 15, OREGON

5-04-00 1-P196



DRAWING NUMBER