



**METRO**



**Attachment '3'**

**AFRICAFAE BUILDING ROOF  
RESTORATION & REPAIR**

**Project Manual**

**RFB #13-2394**

**Metro Oregon Zoo  
4001 SW Canyon Road  
Portland, Oregon 97221**

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# AFRICAFAE BUILDING ROOF RESTORATION SPECIFICATIONS

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

- A. The attached are components of this section:
  - 1. Scope of work
  - 2. General Conditions.
  - 3. Specifications.
  - 4. Bid form

### 1.02 SCOPE OF WORK

- A. Furnish and install cold process roof restoration for the AfriCafe roofs
- B. Work includes:
  - 1. Infrared and capacitance scan roof for wet insulation and provide a report.
  - 2. Removal and replacement of wet insulation as found, flashings and miscellaneous materials for roof restoration of the Africafe Roofs.
  - 3. Rework existing drains
  - 4. Roof restoration;
    - a. Tremlastic SP and Rapid set fabric with a reflective surface . Roof replacement of wet insulation and install a three ply Power ply granulated MB on all flat roofs in solvent free adhesive.
    - b. New flashings on all walls and new parapet cap metal.
  - 5. Bid roof replacement of wood deck, wet insulation and the roof membrane on a cost per 100 square foot basis.

### 1.03 QUALITY CONTROL

- A. Contractor shall:
  - 1. Be experienced in cold process roofing ten years minimum.
  - 2. Be a certified installer of the materials.
  - 3. Be acceptable by Owner and roofing material supplier.

4. Keep a copy of the roofing specifications on the job at all times and supply a schedule for the shutdown and removal of all roof top units.

B. Roofing material supplier shall:

1. Be Associate Member in good standing with National Roofing Contractors' Association (NRCA).
2. Be nationally recognized in roofing, waterproofing, and moisture survey industry.
3. Provide Owner names of qualified applicators.
4. Provide a manufactures employee Field Representative to make weekly site visits and provide a written report with photos on the work quality and job progress.
5. The presence and activity of the manufacturer's representative and/or owner's representative shall in no way relieve the contractor of his contractual responsibilities or duties.

C. Project meetings:

1. Pre-job conference:

- a. Meeting will be scheduled by Owner within fifteen (7) days after notice of award.
- b. Attendance:
  - 1) Representative of Owner.
  - 2) Roofing material manufacturer/specifier.
  - 3) Contractor.
- c. Agenda:
  - 1) Designation of responsible personnel
  - 2) Walkover inspection
  - 3) Schedule

2. Progress meetings:

- a. Will be scheduled by Owner weekly.
- b. Attendance:
  - 1) Contractor.
  - 2) Job superintendent.
  - 3) Roofing material manufacturer/specifier
  - 4) Manufactures field employee.
  - 5) Subcontractors, as appropriate.
- c. Minimum agenda:
  - 1) Review of work progress.
  - 2) Field observations, problems, and decisions.
  - 3) Identification of problems which impede planned progress.
  - 4) Maintenance of progress schedule.
  - 5) Maintenance of quality and work standards.
  - 6) Effect of proposed changes on progress schedule and coordination.

D. Final inspection:

1. The final inspection will be scheduled by roofing material manufacturer upon job completion.
  - a. In attendance:
    - 1) Owner's representative.
    - 2) Contractor.
    - 3) Roofing material manufacturer/specifier.
    - 4) Manufacturers field employee.
2. Minimum agenda:
  - a. Walkover and inspection.
  - b. Identification of problems which may impede issuance of the warranty.
3. UL 790, Class A & FM 1-90.

E. Plans and specifications:

1. If the contractor feels a conflict exists between what is considered good roofing practice and these specifications he shall state in writing all objections prior to submitting quotations. (Follow Instructions under (Instructions to Bidders "ADDENDA TO PLANS AND SPECIFICATIONS")
2. It is the contractor's responsibility during the course of the work, to bring to the attention of the owner's representative any defective membrane, insulation or deck discovered where not previously identified.

#### 1.04 DELIVERY, STORAGE AND HANDLING

A. Delivery of materials:

1. Deliver materials to job-site in new, dry, unopened, and well-marked containers showing product and manufacturer's name.
2. Deliver materials in sufficient quantity to allow continuity of work.
3. Coordinate delivery with Owner.
4. Store rolls goods on ends only. Discard rolls which have been flattened, creased, or otherwise damaged. Place materials on pallets. Do not stack pallets.
5. Store materials marked "keep from freezing" in areas where temperatures will remain above 40EF.
6. Rooftop storage: Disperse material to avoid concentrated loading.
7. Cover top and sides of all exterior stored materials with canvas tarpaulin (or polyethylene). Secure tarpaulin.
8. No materials may be stored in open or in contact with ground or roof surface.
9. Should Contractor be required to quickly cover material temporarily, such as during an unanticipated rain shower, all materials shall be stored on a raised platform covered with secured canvas tarpaulin (or polyethylene), top to bottom.
10. Contractor shall assume full responsibility for the protection and safekeeping of products stored on premises. All barrels shall be stored on the job site.

## 1.05 SITE CONDITIONS

- A. Field measurements and material quantities:
  - 1. Applicator shall have SOLE responsibility for accuracy of all measurements, estimates of material quantities and sizes, and site conditions that will affect work.
  
- B. Existing conditions:
  - 1. Building space directly under roof area covered by this specification will be utilized by ongoing operations. Do not interrupt Owner operations unless written approval is received from Owner.
  - 2. Access to roof shall be from exterior only.  
No roofing employees will be allowed within building.
  
- C. Asbestos:
  - 1. Owner agrees to exonerate, indemnify, defend, and hold harmless contractor and roofing material manufacturer from and against all claims, demands, lawsuits, damages, expenses and losses incurred by Contractor's removal of asbestos-containing materials from Owner's building and work site provided Contractor conducts its operations according to applicable requirements established by:
    - a. Occupation Safety and Health Administration (OSHA).
    - b. Environmental Protection Agency (EPA).
  
- D. Environmental requirements:
  - 1. Do not work in rain, snow, or in presence of water.
  - 2. Do not work in temperatures below 40EF.
  - 3. Do not install materials marked "keep from freezing" when daily temperatures are scheduled to fall below 40EF.
  - 4. Do not perform masonry work below 35EF. Make proper provisions to protect work from freezing 48 hours after lying if work is performed between 35EF. and 45EF.
  - 5. Remove any work exposed to freezing.
  
- E. Safety requirements:
  - 1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
  - 2. Comply with federal, state, local and Owner fire and safety requirements.
  - 3. Advise Owner whenever work is expected to be hazardous to Owner employees and/or operators.
  - 4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
  - 5. Maintain fire extinguisher within easy access whenever power tools, roofing kettles, and torches are being used.
  - 6. Advise Owner when volatile materials are to be used near air ventilation intakes so that they can be shut down or blocked.

F. Security requirements:

1. Comply with Owner security requirements.
2. Provide Owner with current list of accredited persons.
3. Require identification be displayed by all persons employed on this project.

1.06 PAYMENT SECURITY

- A. Progress payments: Progress payments are defined in Owners contract.

1.07 WARRANTY

1. Roofing contractor shall be responsible for repairs for two (2) years.
2. The materials manufacturer is responsible for a 5 (5) year manufacturer's warranty as is specified for roofing system roof warranty.

**END OF SECTION 1 - GENERAL**

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. Comply with quality control, references, specifications, and manufacturer's data. Products containing asbestos are prohibited on this project. Use only asbestos-free products.

### 2.02 ACCEPTABLE MANUFACTURER

- A. Tremco Inc., Cleveland, OH (216) 292-5000 or equal. Substitutions: The new roof submittals must include submittals of the UL class A, FM I-90, three ply cold process specifications with product data and MSDS sheets. Product data sheets and MSDS sheets must be provided with the restoration submittals. The warranty shall require the materials manufacturer to repair all blisters and delaminating in the roofing system for the life of the warranty. A sample warranty for each roofing system must be included. The assembled new three ply roofing system must meet or exceed ASTM 2523 with a minimum of 400lb. machine and cross machine tensile strength.

### 2.03 WOOD BLOCKING & CURBS

- A. Sleepers: 4" x 6". Treated wood sleepers to match the existing wood sleepers.
- B. All exterior wood to be treated wood.

### 2.04 ROOFING MATERIALS

- A. Cold surfacing:
  - 1. Temlastic SP and One Coat,
- B. Membrane:
  - 1. Burmesh.
  - 2. Ply sheet (Burmastic Composite Ply).
  - 3. Power Ply MB.
  - 4. Rapid Set Fabric.
- C. Related materials:
  - 1. Asphalt mastic:
    - a. ELS.
  - 2. Asphalt primer:
    - a. Tremprime WB.
  - 3. Elastomeric mastic:
    - a. Polyroof.

4. Flashing adhesive:
  - a. ELS.
5. Flashing sheet:
  - a. 18 inch wide rapid set fabric.
6. Flashing coating:
  - a. One Coat Aluminum.
  - b. Tremlastic Sp
7. Sealants:
  - a. Coping sealant: Tremseal S.
  - b. Draw band sealant: Tremseal S.
  - c. Reglet sealant: Tremseal S by.
8. Walkway panels:
  - a. Approved to match the existing.
9. Inner ply adhesive:
  - a. Burmastic Solvent Free Adhesive.
  - b. Tremlastic SP.
10. Insulation Adhesive:
  - a. Approved adhesive and mechanical fasteners.

## 2.05 METAL FLASHINGS

- A. Counter flashing and Cap Metal:
  1. All metal to be 24 ga. pre-painted metal. Kynar finish color to be approved by Oregon Zoo.
- B. Pitch Pans and Jacks:
  1. Stainless steel: Type 304, ASTM A 167-86, with AISI 2D finish, dead soft, fully annealed, twenty-six (26) ga.
  2. Pitch pans to have 4 lb. lead flange and stainless steel caps.
- C. Pitch pan cement:
  1. Tremcrete.
- D. Pitch pan mastic:
  1. Polyroof.
- E. Plumbing Vents:
  1. Replace all leads and caps with new, four (4) lb. lead. ASTM B 29-79 (1984), four (4) lb. sheet lead.

## END OF SECTION 2 – PRODUCTS

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify conditions as satisfactory to receive work.
- B. Do not begin roofing until all unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions.
- C. Verify that work of other trades penetrating roof deck or requiring men and equipment to traverse roof deck has been approved by Owner, manufacturer, and roofing contractor.
- D. Check projections, curbs, and deck for inadequate anchorage, foreign material, moisture, or unevenness that would prevent quality and execution of new roofing system.

### 3.02 GENERAL WORKMANSHIP

- A. Substrate: Free of foreign particles prior to completing roofing.
- B. Wrapper and packaging materials: Not to be included in roofing system.

### 3.03 PREPARATION

- A. Protection:
  - 1. Contractor shall be responsible for protection of property during course of work. Lawns, shrubbery, paved areas, and building shall be protected from damage. Repair damage at no extra cost to Owner.
  - 2. Provide at site prior to commencing removal of debris, a dumpster or dump truck to be located adjacent to building where directed by Owner.
  - 3. Roofing, flashings, membrane repairs, and insulation shall be installed and sealed in a watertight manner on same day of installation or before arrival of inclement weather.
  - 4. At start of each work day drains within daily work area shall be plugged. Plugs to be removed at end of each work day or before arrival of inclement weather.
  - 5. Preparation work shall be limited to those areas that can be covered with installed roofing material on same day or before arrival of inclement weather.
  - 6. Clean the roof of all dirt and debris.
  - 7. Infrared and capacitance scan the roof for wet insulation.

### 3.04 ROOF SYSTEM APPLICATION

- 1. Roof replacement of wet insulation.
  - a. Remove the designated roof membrane and set insulation.

- b. Replace the insulation to match the existing insulation. Screw fasten per 1-90
  - c. Install a new three (3) ply cold process roof membrane in Solvent Free adhesive.
  - d. Install two ply of Composit Ply membrane and a Power Ply MB over the insulation.
  - e. Install the roof restoration membrane around the lower level shingled roofs. See drawings.
  - f. Install new 24 ga Kynar wall metal and replace defective drain parts.
2. Prime the existing roof with water base asphalt primer at one (1) gallon per 100 square feet.
  3. Apply a base additional ply of Rapid Set fabric over all roof membrane ridges or weak areas.
  4. Flash all pitch pans and pipe penetrations base flanges. Fill all pitch pans and install stainless metal caps.
  5. Install new 24 ga. stainless metal vent jacks.
  6. Metal clad all duct and Install 24 ga. Kynar painted standing seam metal duct cap.
  7. Flash all walls with Tremlastic and set Rapid Set Fabric in Tremlastic.
    - a. Top coat the flashings with Tremlastic and One Coat Aluminum.
  8. Install new parapet cap metal and metal wall counter flashings.
  9. Apply Tremlastic over the roof at four (4) gallons per 100 square feet.
  10. Broom Rapid Set Fabric into the Tremlastic and lap all joints 4”.
  11. Broom Tremlastic over the rapid Rabid Set Fabric at 3 gallons per 100 square feet.
  12. Apply One Coat Aluminum over the roof at 2.5 gallons per 100 square feet.
  13. Allow the Tremlastic 14 days to cure prior to applying One Coat Aluminum at (2.5) gallons per 100 square feet.

### 3.05 WALK PADS:

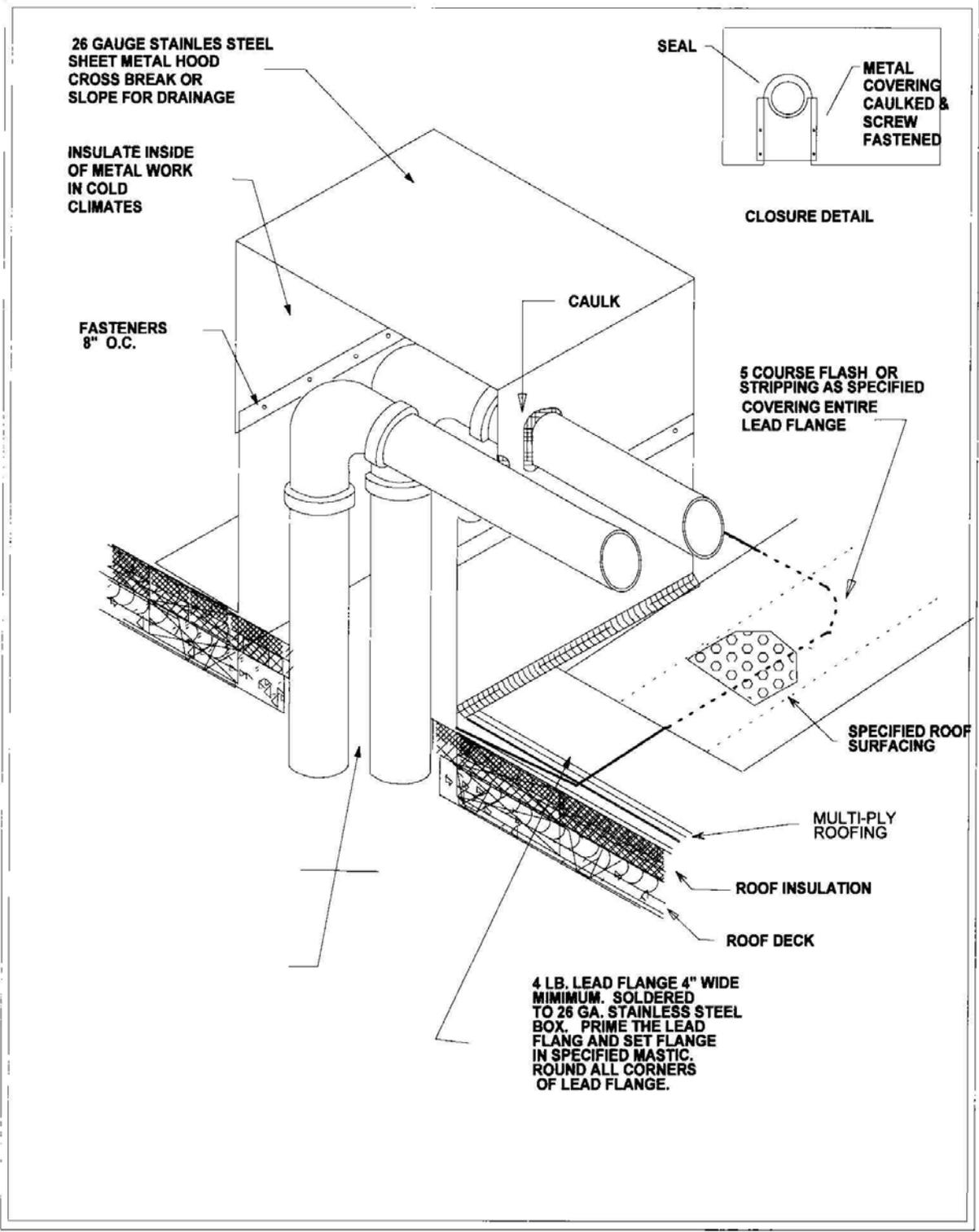
- A. Install 3' x 4' walk pads at all doorway and ladder exits. Install walk pads to match the existing.

### 3.06 CLEAN-UP

#### A. Clean-up:

1. Immediately upon job completion, roof membrane and flashing surfaces shall be cleaned of debris.
2. Clean drains and down spouts of debris.

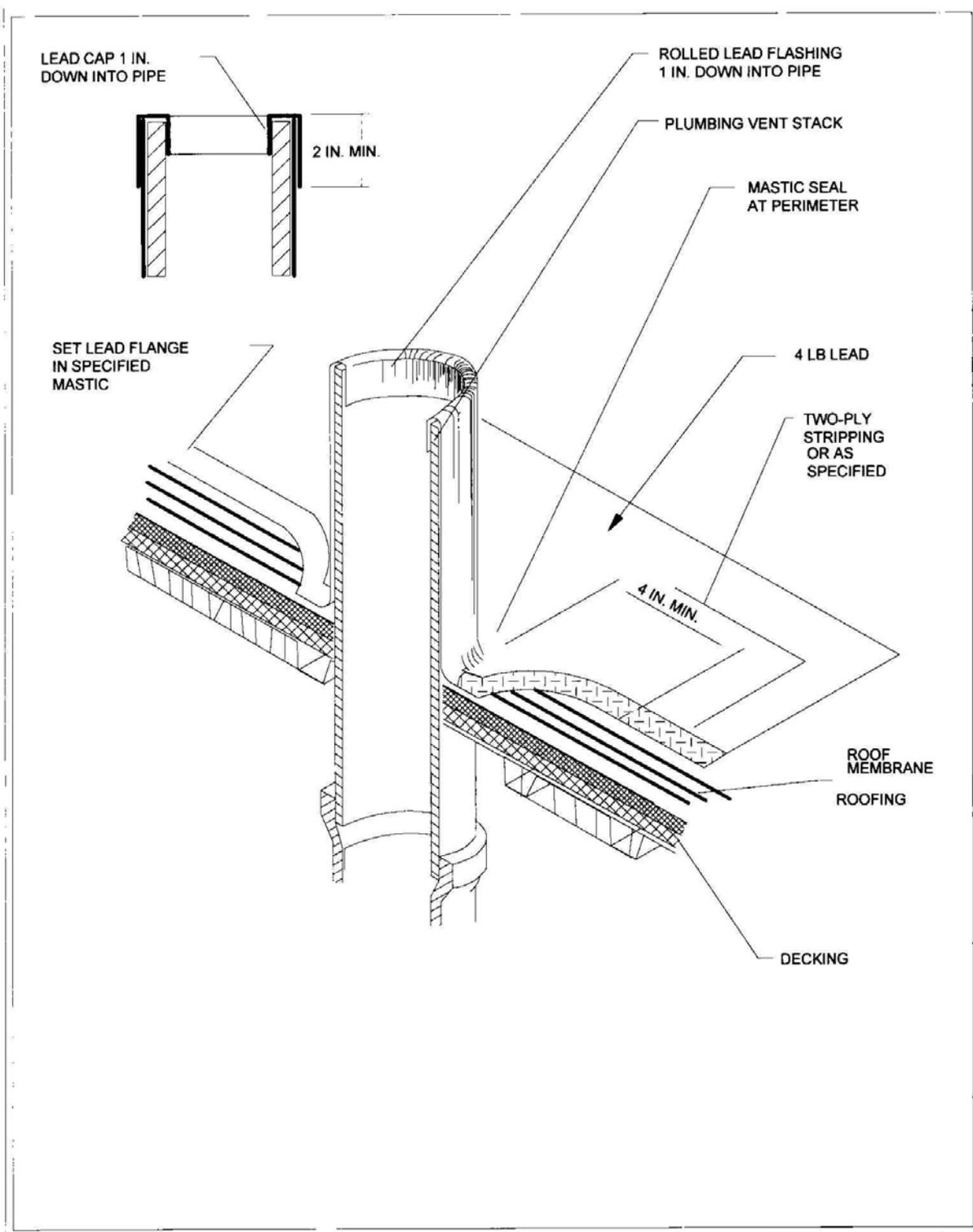
## **END OF SECTION 3 – EXECUTION**



**PIPING THROUGH ROOF DECK BOX WITH LEAD FLANGE**

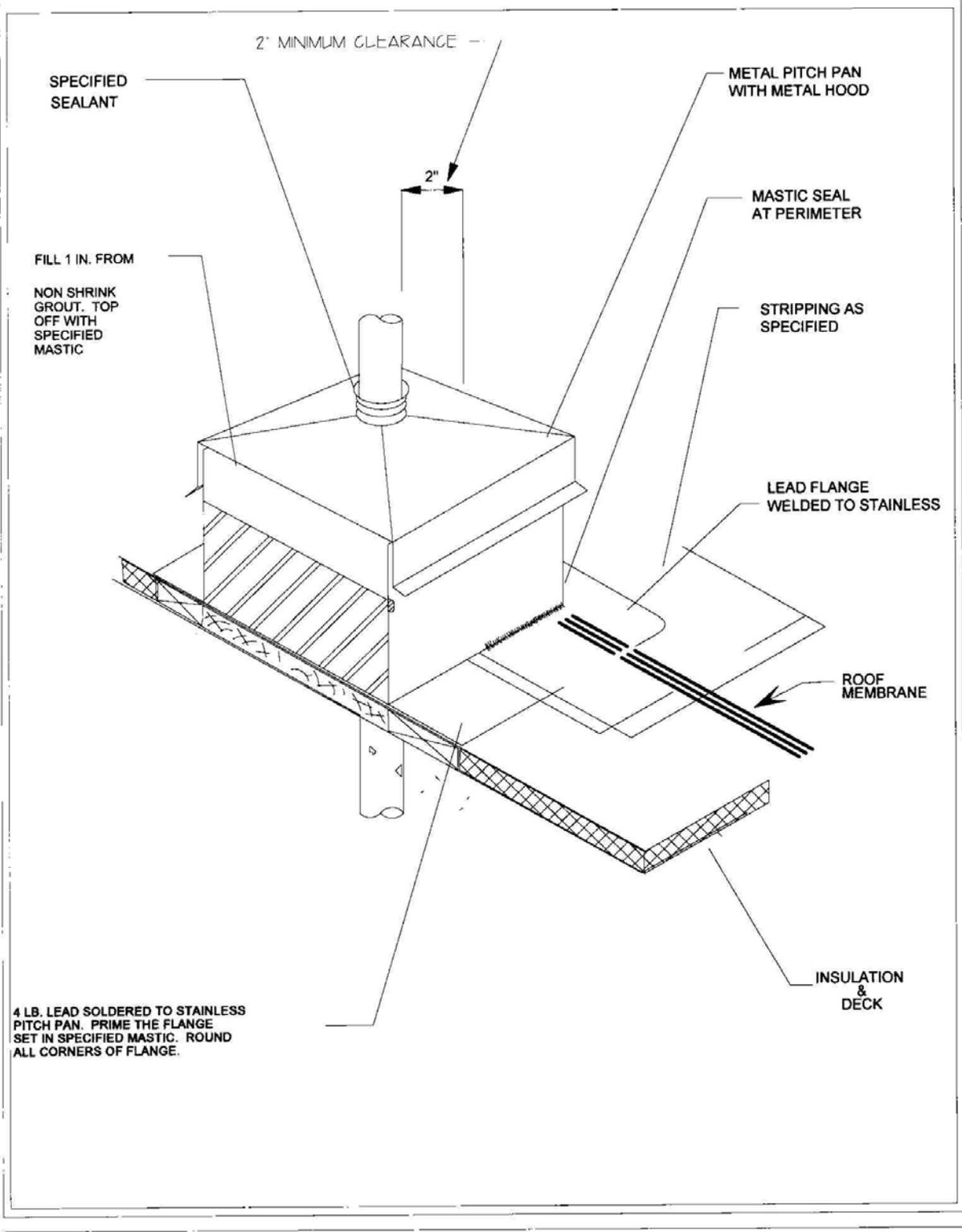
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**Detail  
01**



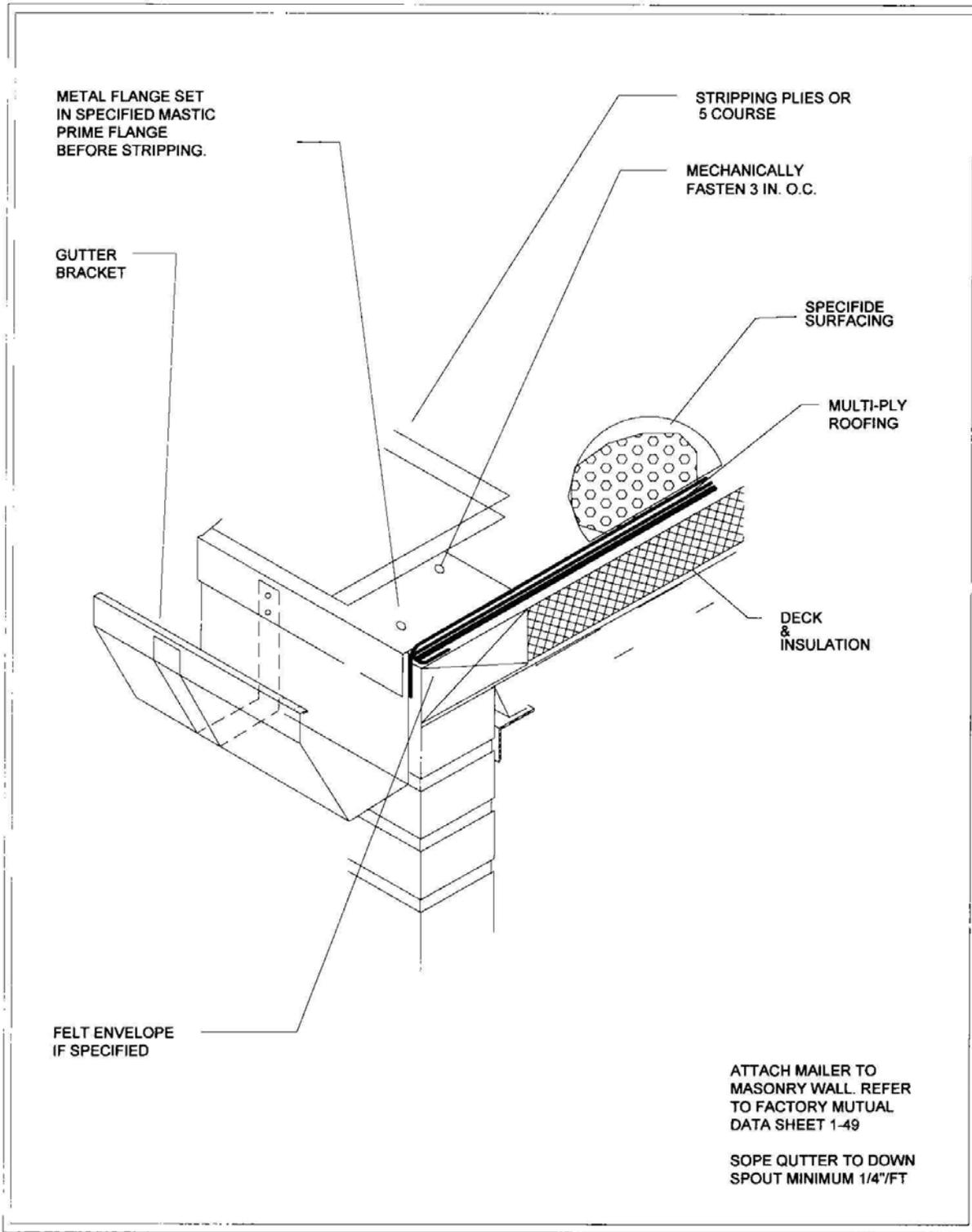
PLUMBING VENT FLASHING

**Detail  
02**



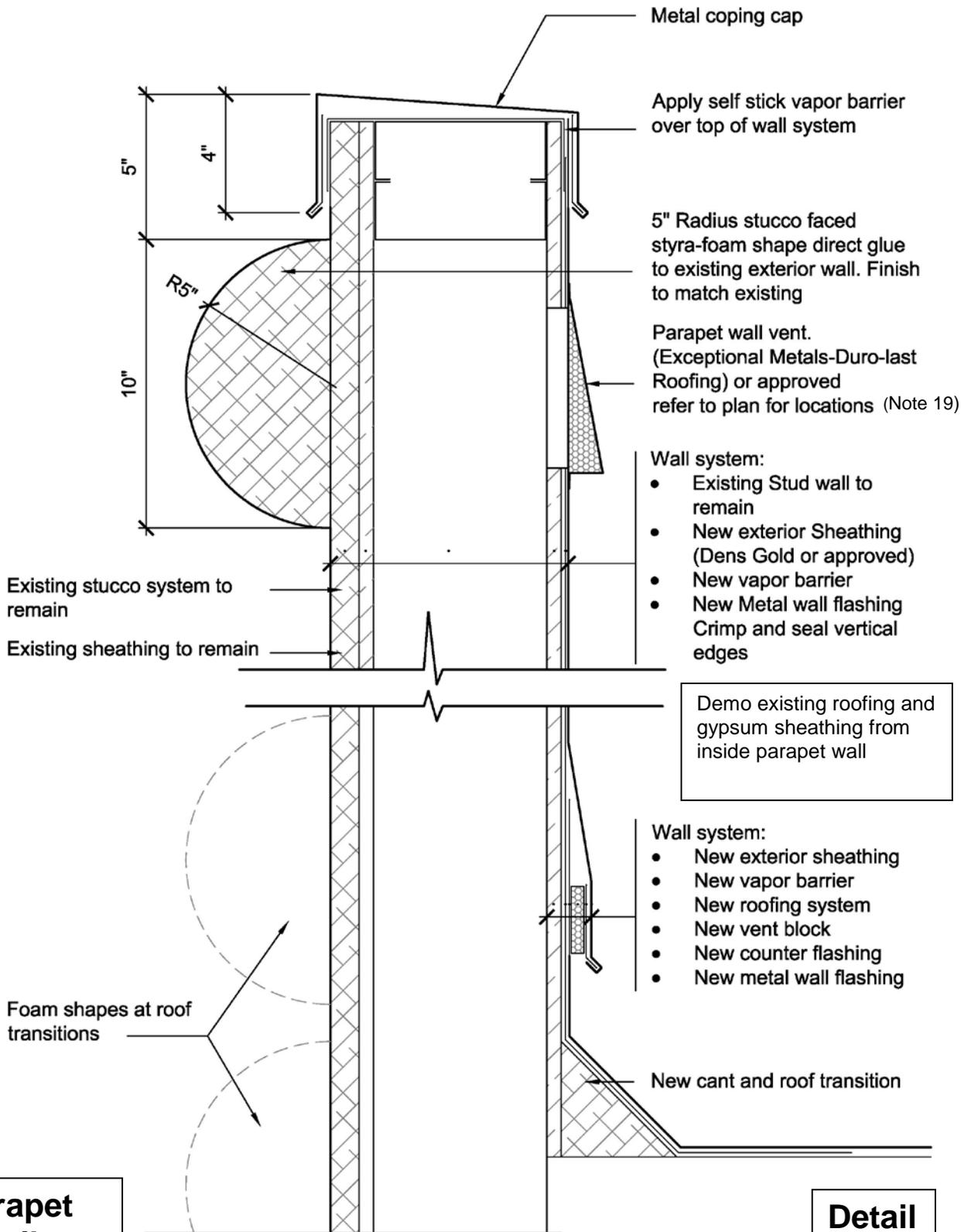
PITCH POCKET

**Detail  
03**



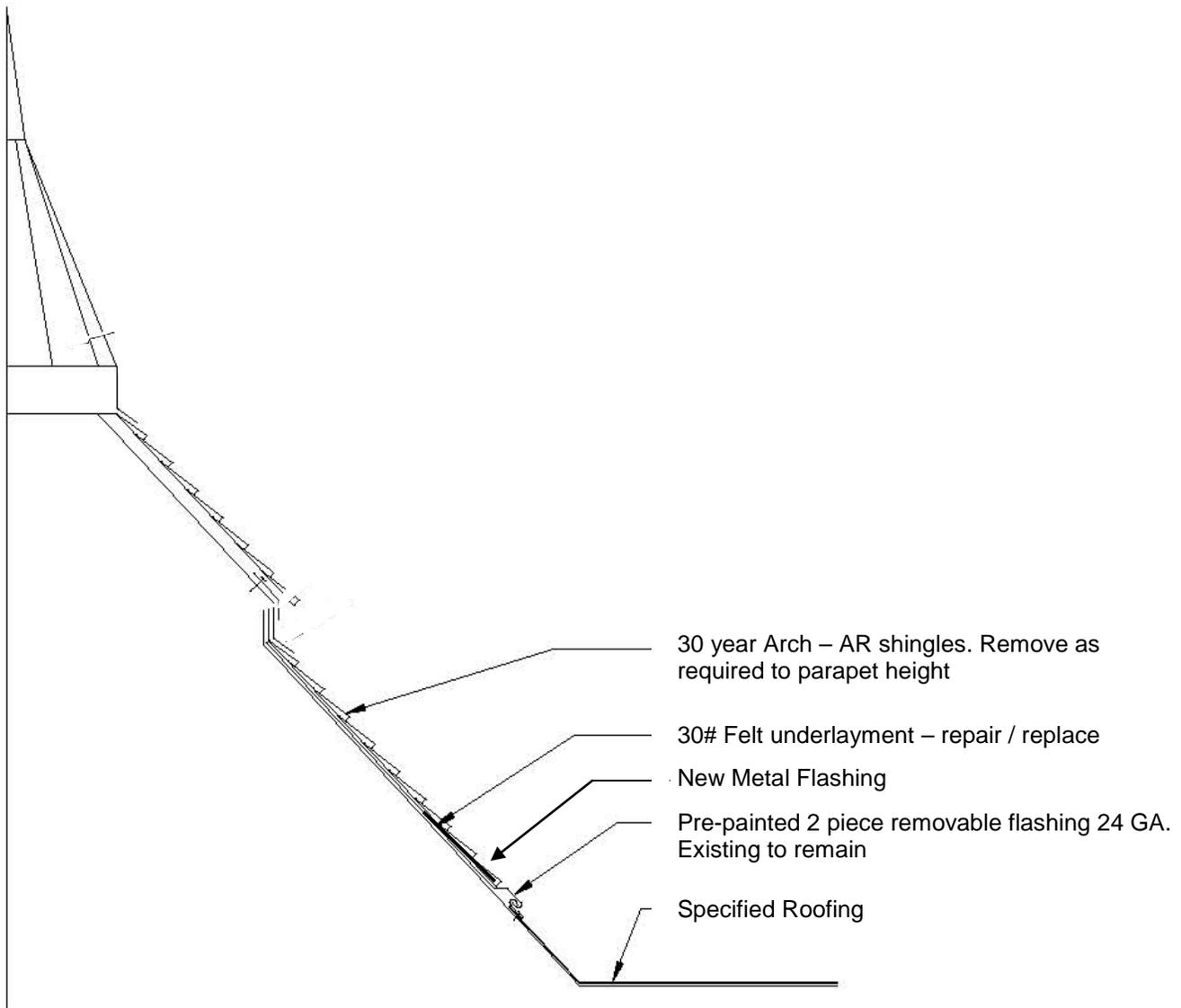
ROOF EDGE WITH GUTTER

**Detail  
04**



**Parapet detail**

**Detail 05**



## SHINGLED ROOF

**Detail  
06**