

SECTION 07 01 50
ROOF PATCHING**PART 1 GENERAL****1.1 SUMMARY**

- A. Section Includes: Patching existing roof where affected by new construction, as required to maintain the system weathertight and existing warranty/guarantee in full force and effect.

1.2 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: Roofing membrane, roof insulation, surfacing, and components and accessories between deck and roofing membrane.
- C. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- D. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
 - 1. Submit letter indicating that system conforms to requirements of existing roof system manufacturer to maintain existing guarantee/warranty in full force and effect, or that none exists.
 - 2. Submit a letter identifying that the materials and techniques to be utilized as appropriate for the type of roof system in place.
- B. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

1.6 QUALITY ASSURANCE

- A. Installer: Experienced in the type of Work required, with minimum five years documented experience and approved by warrantor of existing roofing system.

- B. Existing Warranty/Guarantee: Verify the existence of warranties/guarantees on the existing roofing systems with the Owner. Obtain copies and perform patching in accordance with the requirements of same to maintain them in full force and effect.
- C. Roofing Conference: In accordance with Section.

1.7 PROJECT/FIELD CONDITIONS

- A. Owner will occupy portions of existing building and site. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
 - 1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
 - 2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
- B. Protect existing building and adjacent work to remain, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to prevent excessive deflection of deck or structural members.
- E. Weather Limitations: Install work only under environmental conditions recommended by the flashing materials manufacturer. Proceed with work only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
- F. Coordinate Work with other affected mechanical and electrical work associated with roof penetrations.
- G. Investigate the existing roof system to determine the type of existing roofing systems to be cut and patched.
 - 1. For roofs under warranty/guarantee, investigate with the roofing system producer's authorized technical representative.
 - 2. For roofs not under warranty/guarantee, investigate with a qualified technical party skilled and knowledgeable in the types of roof membranes to be cut and patched.
- H. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of coated roofing sheet set in roofing cement or hot roofing asphalt with joints and edges sealed.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
 - 3. Remove temporary plugs from roof drains at end of each day.
 - 4. Remove and discard temporary seals before beginning work on adjoining roofing.
- I. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect.
 - a. Obtain direction from Architect before proceeding with work in the affected area.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces by methods and with materials so as not to void existing roofing system warranty. Notify warrantor before proceeding.
 - 1. Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.
 - a. Warrantor of Existing Roof: Tremco CPG Inc., Beachwood, OH, (800) 562-2728, www.tremcoroofing.com.

PART 2 PRODUCTS**2.1 MATERIALS - GENERAL**

- A. Provide materials recommended by roofing system manufacturer for intended use, compatible with components of new membrane roofing system.
- B. Use materials and techniques required to maintain existing warranty/guarantee in effect, when applicable.

2.2 INFILL MATERIALS

- A. Infill Materials, General: Where required to replace test cores and to patch existing roofing, use infill materials matching existing roofing system materials, unless otherwise indicated.
- B. Wood Components: In accordance with Division 06 rough carpentry.
 - 1. Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.
- C. Insulation and Membrane Roofing:
 - 1. Membrane: ASTM D4637; Type I EPDM; unreinforced, 0.060 inch (1.5 mm) thick.
 - 2. Adhesive Materials:
 - a. Surface Conditioner: Acceptable to substrate manufacturer, compatible with membrane new and existing membranes.
 - b. Membrane Adhesives: As recommended by membrane manufacturer.
 - c. Insulation Adhesive: Tremco Low Rise Foam insulation adhesive or adhesive recommended by insulation manufacturer.
 - d. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with new and existing membranes.
 - 3. Rigid Polyisocyanurate Roof Insulation: ASTM C1289, Type II, Class I, Grade 3; rigid, closed cell type, with specially formulated glass facers.
 - 4. Substrate/Coverboard: Gypsum panel, glass-mat-faced, ASTM C1177/C1177M; or cellulosic fiber reinforced, water-resistant, ASTM C1278/C1278M.
 - a. Thickness: Match existing.
 - 5. Fluid-Applied Membrane Materials:
 - a. Polyurethane Roof Coating System Base Coat: Single-part moisture-curing, for use with a compatible top coat.
 - 1) Basis of design product: Tremco, AlphaGuard MTS Base Coat.
 - 2) Thickness, Base Coat on Smooth Surface: 48 mils (1.22 mm) wet.

- b. Polyurethane roof coating system top coat, low odor low VOC single-part, for application over compatible base coat.
 - 1) Basis of design product: Tremco, AlphaGuard MTS Top Coat.
 - 2) Minimum Thickness: 32 mils (0.81 mm) wet over cured base coat.
 - 3) Color: Match existing.
- c. Primer for Intercoat and Substrate Adhesion: Single-part, quick-drying primer to promote adhesion of urethane products to previous urethane coats and to other approved surfaces.
 - 1) Basis of design product: Tremco, Geogard Primer.
 - 2) Coverage Rate, 400 sq. ft/ gal. (10 m²/ L): 4 mils (0.10 mm) wet.
- d. Polyester Reinforcing and Protection Fabric: 100 percent stitch-bonded mildew-resistant polyester fabric intended for reinforcement of compatible fluid-applied membranes and flashings and as a protection layer under pavers or stone aggregates.
 - 1) Basis of design product: Tremco, Permafab.
 - 2) Tensile Strength, Minimum, ASTM D1682: 50 lbf (23 kg) avg.
 - 3) Elongation, Minimum, ASTM D1682: 60 percent.
 - 4) Tear Strength, Minimum, ASTM D1117: 16 lbf (7.3 kg) avg.
 - 5) Weight: 3 oz./sq. yd (102 g/sq. m).

2.3 AUXILIARY REROOFING MATERIALS

- A. recommended by roofing system manufacturer for intended use and compatible with components of existing and new membrane roofing system.
- B. Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."
- C. Metal Flashing Sheet: Provide metal flashing of same metal, weight or thickness, and finish as required to match existing metal flashing.

PART 3 EXECUTION

3.1 PREPARATION

- A. Protect existing membrane roofing system.
 - 1. Loosely lay 1-inch (25-mm) minimum thick, molded expanded polystyrene (MEPS) insulation over the roofing membrane in and around work areas, access pathways and storage areas. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over MEPS. Extend MEPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
 - 3. Limit traffic and material storage to areas of existing roofing membrane that have been
 - 4. protected.
- B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with work that could affect indoor air quality or activate smoke detectors in the ductwork.
- C. During patching operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors.
- E. Verify that rooftop utilities and service piping have been shut off before beginning the Work.

3.2 REMOVAL

- A. Cut back roof membrane, and underlying materials including cover board, insulation and substrate board to straight line; remove materials to existing deck or to suitable substrate.
- B. If unsuitable deck/substrate conditions are encountered, notify the Architect and obtain direction before proceeding.

3.3 WOOD BLOCKING, NAILERS, EQUIPMENT AND SUPPORT BASES INSTALLATION

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

3.4 ROOF PATCHING

- A. Cut substrate board, insulation and cover board to exactly fill void to top of existing roof membrane and install in manufacturer's recommended adhesive. Provide cants and insulate curbs as required to provide sound, level substrate for flashing.
- B. cants, saddles, crickets, tapered edge strips, and other insulation shapes as indicated/required to provide positive slope to drainage.
- C. Furnish and install roof patching materials according to manufacturer's written instructions.
 - 1. Prime contact surfaces, as recommended by system manufacturer.
 - 2. Install EPDM roofing and flashing patches, lap existing roofing membrane 6 inches (150 mm). Use largest size flashing sheets practical. Lap joints 2 inches (50 mm). Offset joints in each layer 4 inches (100 mm).
 - 3. Scrub EPDM material with soap and water using an abrasive pad to remove carbon black from membrane and to scuff the surface for proper adhesion of subsequent coating materials.
- D. Fluid-Applied Flashing and Detail Base Coat Application: Complete base coat and fabric reinforcement at parapets, curbs, penetrations, and drains prior to application of field of fluid-applied membrane. Apply base coat in accordance with manufacturer's written instructions.
 - 1. Extend coating minimum of 8 inches up vertical surfaces and 4 inches onto horizontal surfaces.
 - 2. Back roll to achieve minimum coating thickness of 48 wet mils (1.2 wet mm) unless greater thickness is recommended by manufacturer; verify thickness of base coat as work progresses.
 - 3. Embed fabric reinforcement into wet base coat. Lap adjacent flashing pieces of fabric minimum 3 inches along edges and 6 inches at end laps.
 - 4. Roll surface of fabric reinforcing to completely embed and saturate fabric. Leave finished base coat with fabric free of pin holes, voids, or openings.
 - 5. Roof Drains: Install base coat onto surrounding membrane surface and metal drain bowl flange. Install target piece of fabric reinforcement immediately into wet base coat and roll to fully embed and saturate fabric. Reinstall clamping ring and strainer following application of top coat. Replace broken drain ring clamping bolts.
 - 6. Allow base coat to cure prior to application of top coat.
 - 7. Following curing of base coat and prior to application of top coat, sand raised or exposed edges of fabric reinforcement.
- E. Base Coat: Apply base coat to field of membrane in accordance with manufacturer's written instructions.
 - 1. Apply base coat on prepared and primed surfaces and spread coating evenly.
 - 2. Back roll to achieve minimum coating thickness of 48 wet mils (1.2 wet mm) unless greater thickness is recommended by manufacturer; verify thickness of base coat as work progresses.

3. Fabric Reinforcement: Embed fabric reinforcement into wet base coat. Lap adjacent pieces of fabric minimum 3 inches (75 mm) along edges and 6 inches (150 mm) at end laps.
 4. Roll surface of fabric reinforcing to completely embed and saturate fabric. Leave finished base coat with fabric free of pin holes, voids, or openings.
 5. Following curing of base coat and prior to application of top coat, sand raised or exposed edges of fabric reinforcement.
 6. Allow base coat to cure prior to application of top coat.
- F. Top Coat: Apply top coat to field of membrane and flashings uniformly in a complete, continuous installation.
1. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
 2. Apply top coat extending coating up vertical surfaces and out onto horizontal surfaces. Install top coat over field base coat and spread coating evenly.
 3. Back roll to achieve minimum coating thickness of 32 wet mils (0.8 wet mm) unless greater thickness is recommended by manufacturer.
 4. Avoid foot traffic on new fluid-applied membrane for a minimum of 24 hours.

3.5 PROVIDE ALL AUXILIARY MATERIALS AND ACCESSORY ITEMS AS REQUIRED FOR A COMPLETE, WEATHERTIGHT INSTALLATION.

3.6 EXISTING BASE FLASHINGS

- A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
 1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish.

3.7 FIELD QUALITY CONTROL

- A. Roof Inspection: Contractor shall engage roofing system manufacturer's technical personnel to inspect roofing installation, and submit report to the Architect. Notify Architect or Owner 48 hours in advance of dates and times of inspections.

3.8 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 01 50