

## SECTION 07 01 55

### MODIFIED BITUMINOUS MEMBRANE RE-ROOFING PROCEDURES

#### PART 1 – GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Membrane re-roofing preparation for roof tear-off, temporary roofing membrane, roof recover preparation, removal of base flashings and protection of existing roofing system that is not re-roofed.
- B. Related Sections:
  - 1. Refer to Division 01 Section Price and Payment Procedures for requirements related to unit prices, measurement, and payment.
  - 2. Division 07 Section Common Work Results for Thermal and Moisture Protection.
  - 3. Division 07 Section Modified Bituminous Membrane Roofing.

##### 1.3 MATERIALS OWNERSHIP

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

##### 1.4 SUBMITTALS

- A. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- B. Manufacturer's Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof.
- C. Fastener pull-out test reports.
- D. Documentation of Existing Conditions: Document existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by re-roofing operations. Submit before work begins. Use high-resolution digital photographs or video tape supplemented by written commentary for preparing reports.
- E. Any material submitted as equal to the specified material must be accompanied by a report signed and sealed by a professional engineer licensed in the state in which the installation is to take place. This report shall show that the submitted equal meets the Design and Performance criteria in this specification. Substitution

requests submitted without licensed engineer approval will be rejected for non-conformance.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with not less than [12] years documented experience [and have ISO 9001 certification].
- C. Installer Qualifications: Company specializing in modified bituminous roofing installation with not less than [5] years experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Maintain proper supervision of workmen.
- E. Maintain a copy of the Contract Documents in the possession of the Supervisor/Foreman and on the roof at all times.
- F. Source Limitations. Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
  - 1. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- G. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001.
- H. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

## 1.6 PRE-INSTALLATION CONFERENCE

- A. Preliminary Re-roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of reproofing installation and associated work.
- B. Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing which must precede or follow roofing work (including mechanical work if any), Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities. Objectives of conference include:
  - 1. Review foreseeable methods and procedures related to re-roofing work.
  - 2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.



3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
4. Review re-roofing system requirements (drawings, specifications and other contract documents).
5. Review required submittals both completed and yet to be completed.
6. Review and finalize construction schedule related to re-roofing work and verify availability of materials, installer s personnel, equipment and facilities needed to make progress and avoid delays.
7. Review required inspection, testing, certifying and material usage accounting procedures.
8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not mandatory requirement).
9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
10. Review notification procedures for weather or non-working days.

#### 1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below re-roofing area. Conduct re-roofing 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.
- B. Coordinate work activities daily with Owner so Owner implement 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.
- C. 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 prior to proceeding with work over the impaired deck area.
- D. Protect building to be re-roofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from re-roofing operations.
- E. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- F. Owner assumes no responsibility for condition of areas to be re-roofed. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.
- G. Weather Condition Limitations: Do not apply roofing membrane during inclement weather or when inclement weather is expected.
- H. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer s recommendations and warranty requirements.

#### 1.8 WARRANTY

- A. Upon completion of installation, and acceptance by the Owner [and Architect], the manufacturer will supply to the Owner the appropriate warranty. Refer to Division 07 Section Modified Bituminous Membrane Roofing for specific warranty terms.
- B. Installer will submit a [five (5)] year warranty to the membrane manufacturer with a copy directly to Owner.

## PART 2 – PRODUCTS

### 2.1 TEMPORARY ROOFING MATERIALS

- A. Sheathing Paper: Red-rosin type, minimum 3 lb/100 sq. ft. (0.16kg/sq. m).
- B. Base Sheet: ASTM D4601, Type II, nonperforated, asphalt-coated, glass-fiber sheet.
- C. Glass-Fiber Felts: ASTM D2178, Type IV, asphalt-impregnated, glass-fiber felt.
- D. Asphalt Primer: ASTM D41.
- E. Roofing Asphalt: ASTM D312, Type III or IV.

### 2.2 RECOVER BOARDS

- A. Recover Board: ASTM C1177/C 1177M, glass-mat, water-resistant gypsum substrate; [1/4 inch (6 mm)] thick.
- B. Fasteners: Factory-coated steel fasteners, No. [12] [or] [14], and metal or plastic plates listed in FM "Approved Guide," designed for fastening recover boards to deck.

### 2.3 RE-ROOFING MATERIALS

- A. Refer to Division 07 Section Modified Bituminous Membrane Roofing.

### 2.4 AUXILIARY RE-ROOFING MATERIALS

- A. General: Auxiliary re-roofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of [existing and] new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval Guide.
- C. Metal Flashing Sheet: Metal flashing sheet is specified in Division 07 Section Sheet Metal Flashing and Trim.

## PART 3 – EXECUTION

### 3.1 PREPARATION

- A. Protect existing membrane roofing system that is indicated not to be re-roofed.
  - 1. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during re-roofing, by methods and with materials so as not to void existing roofing system warranty. Notify warrantor before proceeding.
  - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.



3. Maintain temporary protection and leave in place until replacement roofing has been completed.
- B. Coordinate with Owner to shut down air intake equipment in the vicinity of the Work. Cover air intake louvers before proceeding with re-roofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- C. During removal 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. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  1. If roof drains will be temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- E. Verify that rooftop utilities and service piping have been shut off before commencing Work.
- F. Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that cant strips, nailing strips, and reglets are set in place.

### 3.2 ROOFING DEMOLITION

- A. General: Notify Owner each day of extent of roof tear-off proposed.
- B. Remove aggregate ballast from roofing membrane.
- C. Remove loose aggregate from aggregate-surfaced built-up bituminous roofing with a power broom.
- D. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.
- E. Bitumen and felts that are firmly bonded to concrete decks are permitted to remain if authorized and the felts are dry. Remove unadhered bitumen and felts and wet felts.
- F. Remove excess asphalt from steel deck. A maximum of 15 lb/100 sq. ft. (0.72 kg/sq. m) of asphalt is permitted to remain on steel decks.
- G. Remove fasteners from deck.

### 3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
  1. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263 or by pouring 1 pint (0.5 L) of hot roofing asphalt on deck at start of each day's work and at start of each roof area or plane. Do not proceed with roofing work if moisture

condenses under the plastic sheet or if asphalt test sample foams or can be easily and cleanly stripped after cooling.

- B. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.
- C. If deck surface is not suitable for receiving new roofing, or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

#### 3.4 TEMPORARY ROOFING

- A. Install approved temporary roofing membrane over area to be re-roofed.
- B. Install temporary roofing membrane over area to be re-roofed. [Install 2 glass-fiber felts] [Mechanically fasten base sheet and install a glass-fiber felt] lapping each sheet 19 inches (483 mm) over preceding sheet. Embed glass-fiber felt in a solid mopping of hot roofing asphalt applied within equiviscous temperature range. Glaze-coat completed surface with hot roofing asphalt.
- C. Remove temporary roofing membrane before installing new roofing membrane.
- D. Prepare the temporary roof to receive new roofing membrane [according to approved temporary roofing membrane proposal] [by patching and repairing temporary roofing membrane]. Restore temporary roofing membrane to watertight condition. Obtain approval for temporary roof substrate from membrane manufacturer and Architect prior to installation of new roof.

#### 3.5 ROOF RE-COVER PREPARATION

- A. Conduct a thermographic scan of the roof prior to commencing on any recovery work.
- B. Remove blisters, ridges, buckles and other substrate irregularities from existing roofing membrane that inhibit new recover boards from conforming to substrate.
  - 1. Remove loose aggregate from aggregate-surfaced, built-up bituminous roofing with a power broom.
  - 2. Broom clean existing substrate.
  - 3. Coordinate with Owner's inspector to schedule times for tests and inspections before proceeding with installation of recover boards.
  - 4. Verify that existing substrate is dry before proceeding with installation of recover boards. Spot check substrates with an electrical capacitance moisture-detection meter.
  - 5. Remove materials that are wet or damp. Removal will be paid for by adjusting the Contact Sum according to unit prices included in the Contract Documents.
- C. Remove blisters, ridges, buckles, [mechanically attached roofing membrane fastener buttons projecting above the membrane.] and other substrate irregularities from existing roofing membrane that inhibit new [recover boards] [roofing membrane] from conforming to substrate.
  - 1. Remove loose aggregate from aggregate-surfaced, built-up bituminous roofing with a power broom.
  - 2. Broom clean existing substrate.



3. Coordinate with Owner's inspector to schedule times for tests and inspections.
  4. Verify that existing substrate is dry before proceeding with installation. Spot check substrate with an electrical capacitance moisture-detection meter.
  5. Remove materials that are wet and damp. Removal will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
- B. Remove [mechanically attached roofing membrane fastener buttons projecting above the membrane and other] substrate irregularities that inhibit new recover boards from conforming to substrate.
1. Remove loose aggregate from aggregate-surfaced, built-up bituminous roofing with a power broom.
  2. Clean substrate of contaminants such as dirt, debris, oil, and grease.
  3. Power vacuum the existing roof surface.
  4. Verify that existing substrate is dry before proceeding with installation. Spot check substrate with an electrical capacitance moisture-detection meter.

### 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.] [specified in Division 07 Section Sheet Metal Flashing and Trim.] [specified in Division 07 Section Manufactured Roof Specialties].
- C. Inspect parapet sheathing for deterioration and damage. If parapet sheathing has deteriorated, immediately notify Architect.
- D. Remove existing parapet sheathing and replace with new [pressure-preservative] [exterior fire-retardant] -- treated plywood sheathing, [19/32 inch (15 mm)] [Insert thickness] thick. If parapet framing has deteriorated, immediately notify Architect.

### 3.7 FIELD QUALITY CONTROL

- A. Perform field inspection and testing as required [under provisions of Division 07 Section Common Work Results for Thermal and Moisture Protection].
- B. Correct defects or irregularities discovered during field inspection.
- C. Require attendance of roofing [and insulation] materials manufacturer representatives at site during installation of the roofing system.

### 3.8 CLEANING

- A. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.
- B. In areas where finished surfaces are soiled by work of this Section, comply with the cleaning instructions of the manufacturer of surfaces.
- C. Repair or replace defaced or disfigured finishes caused by work of this section.

### 3.9 CONSTRUCTION WASTE MANAGEMENT

- A. Remove and properly dispose of waste products generated during maintenance procedures. Comply with requirements of authorities having jurisdiction.

### 3.10 FINAL INSPECTION

- A. Upon completion of roofing maintenance work, meet with Installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. At the manufacturer's discretion a thermographic scan of the roof during final inspection may be performed to determine the presence of damp or wet materials installed. The thermographic scan shall be provided at a price negotiated between the Contractor and the Owner and paid for by the Owner by means of a change order.
- D. If core cuts verify the presence of damp or wet materials, the Contractor shall be required to replace the damaged areas at his own expense.
- E. Repair or replace (as required) deteriorated or defective work discovered at time of inspection to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- F. The Contractor shall notify the Owner upon completion of corrections.
- G. Following the final inspection, acceptance will be made in writing by the material manufacturer.

END OF SECTION