

SECTION 07590
CUTTING AND PATCHING EXISTING ROOFING

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 General Requirements, apply to work specified in this Section.

1.02 SUMMARY

- A. This Section includes cutting and patching existing roofing to the extent required to install new mechanical equipment on the roofs. Work includes walkway pads to new equipment.
- B. Related Work Specified in Other Sections:
 - 1. Wood nailers, curbs, and blocking: Section 06100, "Rough Carpentry."
 - 2. Division 7 Section "Joint Sealants."

1.03 PERFORMANCE REQUIREMENTS

- A. Roofing System Design: Existing roofing was designed and installed to resist design wind uplift pressures calculated in accordance with BOCA National Building Code 1999 edition for wind speed of 90 mph, I = 1.0, exposure B, as follows; modifications shall provide at least the same performance:
 - 1. Design Wind Uplift: 21 lbf/sq. ft. in field and 27 lbf/sq. ft. within 4' of roof edge.
- B. Install roofing and flashing watertight.
- C. Maintain insulation values of the existing roofing.

1.04 SUBMITTALS

- A. Product Data: For each type of roofing product proposed for use. Include data substantiating that materials comply with requirements.
- B. Shop Drawings: Include plans, sections, and details of the following:
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation, including slopes.
- C. Samples for Verification: As requested by the Architect. At the Architect's request, samples of any of the roofing materials may be required to be submitted for verification.
- D. Manufacturer Certificates: Signed by roofing manufacturer certifying that it has reviewed the modifications and patching and that the Warranty remains in effect for the total system.

- E. Contract Closeout Submittals:
 - 1. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.
 - 2. Warranty endorsement from manufacturer holding the warranty.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform work of this Section who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product.
- B. Source Limitations: Obtain components for membrane roofing system from same manufacturer as roofing membrane or from a supplier approved by roofing membrane manufacturer.
- C. Fire-Test-Response Characteristics: Class A, as determined by testing identical products per ASTM E108 for application and slopes indicated by UL, FM, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid materials from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.07 PROJECT CONDITIONS

- A. Existing Roofing Systems:
 - 1. Low Roof (3-story portion of the building): Adhered EPDM over insulated deck.
 - 2. Mechanical Penthouse Roof: Adhered TPO over uninsulated steel deck.
 - 3. High Roof (6-story portion of the building): Adhered TPO over insulated steel deck.

- B. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.

1.08 WARRANTY

- A. The roofing system on this building was completed in 2003 and is still under the manufacturer's original 15 year warranty with 90 MPH wind speed endorsement. Comply with warrantor's conditions, and with provisions of this section addressing prior approvals and inspections, to ensure that roofing warranty is not compromised or voided. Before beginning work which affects the roofing system:
 1. Notify the materials manufacturer of type and extent of work planned for the roofing system.
 2. Obtain written approval of the proposed work and the roofing materials which are to be used.
 3. Obtain a list of contractors approved by the warrantor, or written approval of the roofing installer the Contractor intends to use.
- B. Manufacturer's Warranty Endorsement: At completion of the roofing work under this contract, obtain from the roofing manufacturer and submit to the Owner an endorsement of the original warranty, stating that the roofing manufacturer accepts the roofing work performed under this contract, including materials and workmanship, and that the original warranty remains in force.
- C. The warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Manufacturer: Provide products by Firestone Building Products or, for components other than the roofing and flashing membranes, by manufacturer acceptable to the roofing system manufacturer in order to maintain the performance and warranty.
- B. Existing Roofing, Low Roof: The existing roof covering system is a Firestone EPDM membrane on insulated deck; consisting of the following components, top to bottom:
 1. EPDM sheet, 60 mils thick, light gray color; fully adhered to insulation.
 2. Roof Insulation: Polyisocyanurate board with glass-fiber mat facers, ASTM C1289, Type II; tapered to provide slope to drains.
 3. Other components: Unknown.
- C. Existing Roofing, High Roof: The existing roof covering system is a Firestone TPO membrane on insulated concrete-filled steel deck; consisting of the following components, top to bottom:

1. Reinforced thermoplastic polyolefin (TPO) sheet, 60 mils thick, light gray color; fully adhered to cover board.
 2. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick; "Dens-Deck" manufactured by Georgia-Pacific Corporation. Cover board and insulation mechanically fastened to deck with plate-type concrete spike fasteners.
 3. Roof Insulation: Polyisocyanurate board with glass-fiber mat facers, ASTM C1289, Type II; tapered to provide slope to drains.
 4. Vapor Retarder: 3-ply, fiber reinforced polyethylene sheet for use in FM Class 1 assembly; Reef Industries, "Griffolyn" Type 65 or Type -55 FR or Raven Industries, "Dura-Skrim" was specified. Presence of the vapor retarder will have to be confirmed when the roof is opened up.
- D. Roofing Materials for Patching: Match the existing roofing materials, unless otherwise approved by the system manufacturer in writing.
- E. Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing material.
1. Liquid materials shall meet VOC limits of authorities having jurisdiction.
- F. Walkway Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 3/16 inch thick, of materials acceptable to roofing system manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect existing membrane roofing system outside the areas which have to be cut. Cover with molded polystyrene overlaid with OSB panels, or provide similar protection acceptable to the Owner 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 reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- C. During removal operations, have 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, for example by inserting roof-drain while work is in progress and removing them at end of each workday or when rain is forecast.
- E. Verify that rooftop utilities and service piping have been shut off before commencing Work.

3.02 CUTTING AND PROTECTION

- A. Remove existing roofing membrane and other membrane roofing system components down to the deck in areas where deck will be cored or cut for installation of new work, to the extent necessary to install new work.
- B. Cut the existing roofing materials neatly, using methods which are least likely to damage adjacent roofing construction to be retained or adjoining construction.
- C. At the end of each day's work, provide temporary watertight cover over openings. Cover exposed insulation. Install temporary flashings where required for weather protection. Seal edges. Remove water cut-offs and temporary flashings immediately before resuming work.
- D. Also provide temporary structural cover over openings and appropriate safety barriers or warnings as required by OSHA and other applicable workplace safety regulations.

3.03 PREPARATION FOR PATCHING

- A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.
 - 1. Verify that roof openings and penetrations are in place and set and braced.
 - 2. Verify that wood nailers are in place and secured and match thicknesses of insulation required.
- B. Clean substrate to remove dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- C. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.04 INSTALLATION

- A. General: To the extent possible, maintain and reinstall existing materials. Where existing materials were damaged by cutting, replace with new, sealed to existing materials in a manner that maintains the performance of each component of the assembly.
- B. Conform to manufacturer's printed instructions and recommendations for installing roof covering components.
- C. Vapor Retarder: Seal laps in vapor retarder with tape or with roofing membrane manufacturer's standard adhesive. Completely seal vapor retarder at terminations, obstructions, and penetrations.
- D. Cut cover board and insulation snugly around new penetrations and curbs. No piece of cover board insulation shall be secured with fewer than two fasteners.

- E. Bond roofing membrane to cover board with bonding adhesive. Apply bonding adhesive to substrate and underside of sheet at rate required by manufacturer and allow to partially dry. Do not apply bonding adhesive to seam area of sheet.
- F. Seams, TPO Roofing: Weld new roofing membrane and flashing to existing using hot-air welding and equipment and methods recommended by the membrane manufacturer. Maintain uniform laps of minimum dimensions required by manufacturer.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply seam calk to seal cut edges of sheet membrane.
 - 2. Repair tears, voids, and lapped seams in roofing that does not meet requirements.
- G. Seams, EPDM Roofing: Adhere new roofing membrane and flashing to existing using seaming adhesive and methods recommended by the membrane manufacturer. Maintain uniform laps of minimum dimensions required by manufacturer.
 - 1. Scrupulously clean surfaces to be bonded before applying adhesive, using solvents recommended by membrane manufacturer and clean cloths.
 - 2. Test lap edges with probe to verify seam weld continuity. Apply seam calk to seal cut edges of sheet membrane.
 - 3. Repair tears, voids, and lapped seams in roofing that does not meet requirements.
- H. Install sheet flashings and preformed flashing accessories and adhere to substrate according to roofing system manufacturer's written instructions.
- I. Mechanically fasten sheet at terminations, as shown on Drawings.

3.05 WALKWAYS

- A. Walkways: Install walkway pads in locations indicated. Heat weld or adhere walkway pads to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.06 FIELD QUALITY CONTROL

- A. Verify field strength of seams according to manufacturer's written instructions, and repair seam sample areas.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 - 1. Notify Architect or Owner 48 hours in advance of the date and time of inspection.

END OF SECTION 07540