

## SECTION 07591 - SINGLE-PLY MEMBRANE ROOF PATCHING

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.02 SUMMARY

- A. This Section includes the following:
  - 1. Alterations to the existing roofing system, including tie-in of new curbs with existing roof membrane, flashing of new vents and conduit, and flashing new pipe vents.
  - 2. Protection of existing roofing system.
  - 3. Reinspection fees for roofs still under warranty.
  - 4. Protection of existing roofing system.
- B. Related Sections include the following:
  - 1. Division 7 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

#### 1.03 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

#### 1.04 DESIGN REQUIREMENTS

- A. Roof system repairs shall be designed to meet FM Class 1, and I-60 or I-90 requirements, as indicated in the existing roof warranty. New roof system shall meet FM Class 1A-60 fastening requirements.
- B. Roof flashing details shall be consistent with those shown on the drawings. Where cap flashing is shown, a standard manufacturer's bar anchor only detail is not acceptable. Membrane manufacturer's recommended flashing detail may be considered by the Architect when no detail is provided.

#### 1.05 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: For each type of product indicated. Provide installation instructions, and general recommendations from manufacturer of single-ply membrane system for types of roofing materials required. Include data substantiating that materials comply with requirements.
- C. Shop Drawings: Submit shop drawings approved by the manufacturer showing roof modification locations, sheet layout, seam locations, colors (as applicable), details at perimeter, penetration and flashing details and special conditions.

1. Submit copy of shop drawings to manufacturer of existing roofing for review and approval to maintain existing warranty.

D. Warranties: Special warranties specified in this Section.

E. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing modifications and new roofing work.

#### 1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, factory trained and licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty. Contractor shall have a minimum of 3 years experience installing the system and shall employ personnel experienced and skilled in the application of the manufacturer's roofing system.

1. Work associated with single-ply membrane roofing, including (but not limited to) insulation, flashing, and membrane sheet joint sealers, shall be performed by Installer of this Work.

B. Source Limitations: Obtain primary single-ply membrane roofing from original manufacturer. Provide secondary materials by same manufacturer or as recommended in writing by manufacturer of primary materials.

C. Roofing work shall be applied in strict accordance with the provisions of the specification criteria. No deviations shall be permitted without written consent from the Architect. Should a conflict between this specification and the manufacturer's requirements arise, the most restrictive provision as determined by the Architect shall govern.

D. Coordinate alterations to existing roofing with original manufacturer to maintain warranty. The results of the warranty inspection by the system manufacturer shall be submitted in writing to Owner for their review and records.

#### 1.07 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area.

B. Construction Loads on Roofs: Do not overload any portion of building, with by use of or placement of equipment, storage of debris, or storage of materials. Construction loads shall not exceed 25 lbs./sq. ft.

1. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of roof deck.

C. Weather: Proceed with work when existing and forecasted weather conditions permit work to be performed in accordance with manufacturer's written recommendations and warranty requirements.

D. Substrate Conditions: Do not begin roofing installation until substrates have been inspected and are determined to be in satisfactory condition. All surfaces shall be smooth, dry, clean, free of fins or sharp edges, loose or foreign materials, oil or grease. No work shall proceed when moisture is present on the roof or in the substrate materials.

E. Provide temporary waterstops and closures at the end of each workday to prevent water from entering building and existing roof system and remove before proceeding with the next day's work.

- F. Protect existing roofing at access locations, work areas and construction traffic locations with plywood or other appropriate material to prevent damage to the existing roof system. Remove upon completion of the work.

#### 1.08 WARRANTY

- A. General: The special warranties specified in this Section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B. Notify manufacturer of existing roofing and assist Owner in applying for continuation of original warranty.
- C. Special Project Warranty: Upon completion of the work and prior to acceptance of the work, the Roofing Contractor shall submit a guarantee to Owner. The guarantee shall be for a 2-year period and shall cover any defect in the work or materials. Warranty commencement shall be the same date as substantial project completion. This warranty is in addition to the manufacturer's warranty.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. Performance: Provide roofing materials identified to be of generic type indicated and tested to show compliance with required performances.
- B. Material Compatibility: Provide roofing materials that are fully compatible with existing materials and one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience. Provide separation materials as required to eliminate contact between incompatible materials.

#### 2.02 AUXILIARY MATERIALS

- A. Sheet Flashing: Manufacturer's standard compatible membrane sheet flashing, of same color as sheet membrane.
- B. Bonding Adhesive: Manufacturer's standard solvent-based bonding adhesive for membrane, and solvent-based bonding adhesive for base flashings. Provide adhesives that will withstand Project wind uplift requirements.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to concrete and metal deck substrates, and acceptable to membrane roofing system manufacturer.
- D. Adhesives and Cleaners: Provide bonding adhesive, edge sealant, water cut-off mastic, splicing cement, sealer, and membrane cleaner specifically formulated by the roofing manufacturer for the

intended purpose and as required for a complete roof system. Provide adhesives that comply with project requirements of wind uplift force.

- E. Pipe Flashing: Provide membrane manufacturer's standard pre-molded flashing boot for flashing around pipe and conduit roof penetrations. Provide cone shaped flashing boot with stainless steel clamping ring. Field-formed pipe flashing only permitted where it is not possible to use pre-molded flashing. Coordinate to the maximum extent possible to use pre-molded flashing boot before construction is installed at pipes, conduits, and structural members.
- F. Slip Sheet: Type recommended by membrane manufacturer for protecting membrane from incompatible substrates.

## 2.03 INSULATING MATERIALS

- A. General: Provide insulating materials to comply with requirements indicated for materials and with referenced standards in sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths, and lengths.
  - 1. Provide tapered boards where indicated for sloping to drain. Fabricate with taper of 1/4 inch per foot, unless otherwise indicated.
- B. Match existing insulation and thickness at patching locations.
- C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4 inch thick.
  - 1. Product: Dens Deck; Georgia Pacific Corporation.
- D. Polyisocyanurate Board Roof Insulation: Rigid, cellular, thermal insulation with polyisocyanurate closed-cell foam core and manufacturer's standard fiber reinforced facing laminated to both sides; complying with FS HH-I-1972/2, Class 1.
  - 1. Hy Therm AP; The Celotex Corporation
  - 2. E'nerg'y 2; Johns Manville.
  - 3. Roofing manufacturer's required insulation for system warranty.

## 2.04 AUXILIARY INSULATION MATERIALS

- A. Mechanical Anchors: Corrosion-resistant, fluoropolymer coating; type as recommended by insulation manufacturer for deck type and complying with fire and insurance wind-uplift rating requirements.
  - 1. Provide system tested and approved for wind-uplift rating of existing roof system.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine and document existing substrates, areas, and conditions, with Installer present, for compliance with the roofing system manufacturer's requirements.
  - 1. Document deteriorated roof conditions such as wet insulation that are encountered and need correcting.

### 3.02 PREPARING SUBSTRATE

- A. General: Comply with manufacturers' instructions to prepare substrate to receive single-ply membrane system.
  - 1. Verify that penetrations, expansion joints, and blocking are in place and secured and that roof drains are properly clamped into position.
- B. Partial Roof Tear-Off: Roofing removed to allow for new curbs, steel supports, piping and conduit. Remove only as much roofing as can be replaced in same day.
- C. Clean substrate of dust, debris, and other substances detrimental to single-ply system installation. Remove sharp projections.
- D. Install flashings, and accessory items as shown and as recommended by manufacturer.
- E. Prime substrate or install slip sheet where recommended by manufacturer of materials being installed.
- F. Prevent materials from entering and clogging drains and conductors and from spilling or migrating onto surfaces of other work.

### 3.03 INSTALLING INSULATION

- A. General: Extend insulation full thickness in two layers, or in multiple layers over entire surface to be insulated to match thickness of existing insulation, cutting and fitting tightly around obstructions. Form crickets, saddles, and tapered areas with additional material as shown and as required for proper drainage of membrane.
  - 1. Provide tapered units to suit existing drainage pattern.
- B. Secure roof insulation to substrate with mechanical anchors of type and spacing required by the system manufacturer, and no less than 2 fasteners per piece of insulation.

### 3.04 MECHANICALLY FASTENED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing. Install sheet according to ASTM D 5082.
- B. Mechanically or adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- C. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
- D. In-Splice Attachment: Secure one edge of roofing membrane using fastening plates centered within membrane splice and mechanically fasten roofing membrane to roof deck. Field-splice seam.
- E. Base Flashing Installation: Flashing of curbs and other parts of the roof must be performed using

compatible membrane. Compatible membrane can be used for flashing pipe penetrations and scuppers, as well as inside and outside corners, when the use of pre-fabricated accessories is not feasible. Sealant pockets are not permitted.

1. Flash all projections including pipes, conduits, and curbs passing through the membrane with pre-molded cone type flashing boots. Do not field fabricate pipe flashings.
2. Topes of elastomeric base flashing shall be secured with a continuous aluminum termination bar and counterflashed.
3. All vertical flashings and membranes shall be adhered to substrates regardless of height.

### 3.05 PROTECTING ROOFING

- A. After completing roofing (including associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. At the end of the construction period, or at a time when remaining construction will in no way affect or endanger roofing, make a final inspection of roofing and prepare a written report to Owner, describing nature and extent of deterioration or damage found.
- B. Repair or replace as required by the architect, deteriorated or defective work found at the time of final inspection to a condition free of damage and deterioration at the time of Substantial Completion and according to the requirements of the specified warranty.

### 3.06 INSTALLER'S WARRANTY

- A. WHEREAS **<Insert name>** of **<Insert address>**, herein called the "Installer," has performed siding, roofing, flashing and associated work ("work") on the following project:
  1. Owner: **<Insert name of Owner.>**
  2. Address: **<Insert address.>**
  3. Building Name/Type: **<Insert information.>**
  4. Address: **<Insert address.>**
  5. Area of Work: **<Insert information.>**
  6. Acceptance Date: **<Insert date.>**
  7. Warranty Period: **<Insert time.>**
  8. Expiration Date: **<Insert date.>**
- B. AND WHEREAS Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
  1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
    - a lighting;
    - b peak gust wind speed exceeding 70 mph (**<Insert wind speed>** m/sec);
    - c fire;

- d failure of siding and roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
  - e faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
  - f vapor condensation on bottom of work; and
  - g activity on work by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
  3. Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
  4. During Warranty Period, if Owner allows alteration of work by anyone other than Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Installer to perform said alterations, Warranty shall not become null and void unless Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
  5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
  6. Owner shall promptly notify Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
  7. This Warranty is recognized to be the only warranty of Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of siding, roofing, flashing, or trim failure. Specifically, this Warranty shall not operate to relieve Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this **<Insert day>** day of **<Insert month>**, **<Insert year>**.

1. Authorized Signature: **<Insert signature.>**
2. Name: **<Insert name.>**
3. Title: **<Insert title.>**

END OF SECTION 07591