

## SECTION 07 54 19 - POLYVINYL-CHLORIDE (PVC) ROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Patching, flashing and membrane protection at areas where new HVAC units and access steps will be installed.
- B. Related Sections:
  - 1. Section 07 62 00 "Sheet Metal Flashing and Trim"

#### 1.3 DEFINITIONS

- A. Roofing Terminology:
  - 1. See 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.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. General Performance and Design:
  - 1. Installed membrane roofing and base flashings shall withstand exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility:
  - 1. Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

#### 1.5 SUBMITTALS

- A. Product Data:
  - 1. For each type of product indicated.
- B. Pre-Installation Notice:
  - 1. Copy to show that manufacturer's required Pre Installation Notice (PIN) has been accepted and approved by the manufacturer.
- C. Shop Drawings:

1. For roofing system repairs and coordination of new work with existing work. Include plans, elevations, sections, details, and attachments to other work.
- D. Qualification Data:
  1. For qualified Installer and manufacturer.
- E. Manufacturer Certificates:
  1. Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
- F. Field quality-control reports:
  1. Filed by manufacturer's representative.
- G. Warranties:
  1. Sample of special warranties shall clearly indicate repair work complies with existing warranty requirements.

#### 1.6 QUALITY ASSURANCE

- A. Existing Service Contract:
  1. The Owner has a service contract with Snyder Roofing of Oregon LLC for maintenance and repair. Contact Mike Schilling at Snyder Roofing (503) 620-5252 [mschilling@snyder-builds.com](mailto:mschilling@snyder-builds.com) to coordinate membrane work required at new HVAC and installation.
- B. Preinstallation Roofing Conference:
  1. Conduct conference at Project site.
  2. Meet with Owner, Architect, Consultant, Owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  4. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  5. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
  6. Review structural loading limitations of roof deck during and after roofing.
  7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
  8. Review governing regulations and requirements for insurance and certificates if applicable.
  9. Review temporary protection requirements for roofing system during and after installation.
  10. Review roof observation and repair procedures after roofing installation.

## 1.7 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, approval or listing agency markings, 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 material from direct sunlight.
- C. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- D. 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.
- E. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
- F. Store all adhesives and sealants at temperatures above 40 degrees F and less than 100 degrees F.

## 1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

## 1.9 WARRANTY

- A. Comply with all existing warranty procedures required by manufacturer, including notifications, scheduling, and inspections.

## PART 2 - PRODUCTS

### 2.1 PVC MEMBRANE ROOFING

- A. General:
  - 1. Membrane roofing materials recommended by existing roofing system manufacturer for intended use, and compatible with membrane roofing.
- B. PVC Sheet: ASTM D 4434/D4434M, Type II, fabric reinforced. (Match existing)
  - 1. Manufacturer: Sika Sarnafil.
  - 2. Exposed Face Color: White

### 2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

- B. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- C. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Plastic Foam Adhesives: 50 g/L.
  - 2. Gypsum Board and Panel Adhesives: 50 g/L.
  - 3. Multipurpose Construction Adhesives: 70 g/L.
  - 4. Single-Ply Roof Membrane Adhesives: 250 g/L.
  - 5. Other Adhesives: 250 g/L.
  - 6. PVC Welding Compounds: 510 g/L.
  - 7. Adhesive Primer for Plastic: 650 g/L.
  - 8. Single-Ply Roof Membrane Sealants: 450 g/L.
  - 9. Nonmembrane Roof Sealants: 300 g/L.
  - 10. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 11. Sealant Primers for Porous Substrates: 775 g/L.
- D. Flashing Sheet:
  - 1. Manufacturer's standard sheet flashing of same material, type, reinforcement, and color as PVC sheet membrane.
- E. PVC Coated Metal:
  - 1. Galvanized steel sheet coated with a layer of non-reinforced PVC membrane intended for direct welding of roof membrane.
  - 2. Thickness: 24 gauge.
  - 3. Color: To match membrane color.
  - 4. Fabrication: Reference Section 076200 "Sheet Metal Flashing and Trim."
- F. Bonding Adhesive:
  - 1. Manufacturer's standard.
- G. Metal Termination Bars:
  - 1. Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8-inch thick; with anchors.
- H. Metal Battens:
  - 1. Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1-inch wide by 0.05-inch thick, prepunched.
- I. Fasteners:
  - 1. Factory-coated steel fasteners and barbed metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
  - 2. Fastener length shall not penetrate bottom flute of metal deck.
- J. Miscellaneous Accessories:
  - 1. Preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, PVC safety strip, and other accessories.

## 2.3 ROOF INSULATION

### A. General:

1. Preformed roof insulation boards manufactured or approved by PVC membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.

### B. Substrate Board / Thermal Barrier:

1. ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2-inch thick, factory primed - for replacement of existing damaged substrate board
2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Georgia-Pacific Corporation; Dens Deck
  - b. Or approved

### C. Molded-Polystyrene Board Insulation:

1. Flat, unfaced, rigid, closed cell, expanded polystyrene (EPS) boards, UL certified, complying with ASTM C 578.
2. Minimum Density: 1.35 lb. / cu. ft.
3. Compressive Strength: 15 psi
4. Thickness: 3-inches
5. Board Edges: Square

### D. Polyisocyanurate Board Insulation:

1. Rigid cellular foam, complying with ASTM C1289, Type II, Class1, cellulose felt or glass fiber mat both faces; Grade 2.
2. Compressive Strength: 20 psi.
3. Board Size:
  - a. Provide 48-inches x 48-inches sheets for adhered applications unless otherwise approved by membrane manufacturer.
  - b. Provide 48-inches x 96-inches for mechanically fastened applications unless otherwise approved by membrane manufacturer.
4. Minimum thickness of board stock shall not be less than 1.5-inches.
5. Maximum thickness of board stock shall not exceed 2.5-inches.
6. Board Edges: Square.
7. Provide tapered insulation systems and tapered cricket materials where indicated.

## 2.4 TAPERED INSULATION CRICKETS

### A. Tapered Insulation Crickets:

1. Provide preformed roof level rigid insulation tapered boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes.
2. ASTM C 1289, Type II; Rigid closed-cell polyisocyanurate foam board, felt or glass-fiber mat facer on both major surfaces.
3. Units shall be 4-foot by 4-foot, 1/2-inch minimum thickness at the start-point of the tapered insulation system.
4. Units shall be tapered to provide a finish slope of no less than 1/2-inch per foot on upslope sides of curbs 36" or greater in width
5. Units shall be installed in adhesive.

## 2.5 INSULATION ACCESSORIES

- A. General:
  - 1. Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Fasteners:
  - 1. Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Insulation Adhesive:
  - 1. Two (2) component low rise polyurethane adhesive applied in bead form from either dual cartridges or specialized dispensing machine.
  - 2. Available products that may be incorporated into the Work include:
    - a. OMG Roofing Products; OlyBond 500.
    - b. Or approved.
- D. Cover Board:
  - 1. ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2-inch thick, factory primed.
  - 2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Georgia-Pacific Corporation; Dens Deck Prime.
    - b. USG Securock Roof Board.
    - c. Or approved.

## 2.6 WALKWAYS

- A. Flexible Walkways:
  - 1. Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16-inch thick, and acceptable to membrane roofing system manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
- B. Verify that roof openings and penetrations are in place and curbs are set and braced.
- C. Verify that wood blocking and nailers are securely anchored to roof deck at penetrations and terminations and those nailers match thicknesses of insulation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and obstructing 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.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

### 3.3 INSULATION INSTALLATION

- A. Where existing insulation and / or substrate board / thermal barrier is damaged, remove and re-install new insulation and or substrate board in accordance with requirements of this section,
- B. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- D. Install tapered insulation under area of roofing to conform to slopes indicated.
- E. Install insulation under area of roofing to achieve required thickness.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4-inch with insulation.
- G. Cut and fit insulation within 1/4-inch of nailers, projections, and penetrations.
- H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6-inches in each direction. Loosely butt cover boards together and adhere in ribbons of bead applied insulation adhesive.
- I. Adhere cover boards to resist uplift pressure at corners, perimeter, and field of roof.

### 3.4 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.
  - 1. Install sheet according to ASTM D 5036.
- B. Around roof penetrations, seal penetrations with pre-molded/prefabricated accessories where practical.

- C. Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

### 3.5 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing. Use pre-molded accessories at all locations where physically permissible, limit field fabricated flashings.
- C. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- D. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

### 3.6 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.
  - 1. Provide weep holes 4-inches long spaced at 3-feet on center at all low sides edges.

### 3.7 FIELD QUALITY CONTROL

- A. Owner will engage a qualified Consultant to perform tests and inspections.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.8 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition



free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 19