

SECTION 07 53 23

ETHYLENE PROPYLENE DIENE MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Single ply EPDM membrane
- B. Adhesive and cement
- C. Fasteners and Accessories

1.02 MEASUREMENT AND PAYMENT

- A. General: Measurement and payment for single-ply membrane roofing will be either by the lump-sum method or by the unit-price method as determined by the listing of the bid item for single-ply membrane roofing indicated in the Bid Schedule of the Bid Form.
- B. Lump Sum: If the Bid Schedule indicates a lump sum for single-ply membrane roofing, the lump-sum method of measurement and payment will be in accordance with Section 01 20 00 - Price and Payment Procedures, Article 1.03.
- C. Unit Price: If the Bid Schedule indicates a unit price for single-ply membrane roofing, the unit-price method of measurement and payment will be as follows:
 - 1. Measurement
 - a. Single-ply membrane roofing, will be measured for payment by the square foot or square yard, as indicated in the Bid Schedule of the Bid Form, acceptably furnished and installed.
 - b. Substrate preparation, flashings, installation accessories, protection of non-roofed areas from moisture, and protection of completed surfaces will not be measured separately for payment, but will be considered included with the measurement specified above.
 - 2. Payment: Single-ply membrane roofing, will be paid for at the Contract unit price for the computed quantities as determined by the measurement method specified in Article 1.02.C.1.

1.03 REFERENCES

- A. Underwriters Laboratories Inc. (UL):
 - 1. UL 580 Tests for Uplift Resistance of Roof Assemblies
 - 2. UL 790 Tests for Fire Resistance of Roof Covering Materials

1.04 SYSTEM DESCRIPTION

- A. Roofing system shall be a single-ply, Ethylene Propylene Diene Monomer (EPDM) synthetic-rubber sheet elastomeric membrane, installed in unbroken sheet form and fully adhered to the roof deck.
- B. This Section also includes protection of the station structures and buildings to be roofed from moisture and rain until completion and acceptance of the roofing work.

1.05 REGULATORY REQUIREMENTS

- A. In addition to the foregoing referenced standards, the regulatory requirements which govern the work of this Section include the following governing code:

California Code of Regulations (CCR), Title 24, Part 2, California Building Code, Chapter 15, "Roofs and Roof Structures."

1.06 SUBMITTALS

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.
- B. Shop Drawings and Product Data: Submit manufacturer's product data and installation specifications of the membrane roofing system and related flashings, including pertinent flashing details.
- C. Samples:
 - 1. Submit sample square, 8 by 10 inches in size, of the EPDM synthetic rubber sheet. Where rubber roofing material is exposed to public view, it requires approval of the Engineer before it may be used in the work.
 - 2. Submit sample 1/2-pint can of adhesive.
 - 3. Submit samples of mechanical fasteners proposed for use.
- D. Manufacturer's Certification: At completion of the installation, submit written certification, signed by the roofing materials' manufacturer or its authorized representative, that the materials used in the work were in accordance with these Specifications, and that they were installed properly in accordance with these Specifications and the manufacturer's installation instructions and recommendations.

1.07 QUALITY ASSURANCE

- A. Roofing shall meet Underwriter's Laboratories requirements for Class A roofing assembly and Class 60 wind uplift resistance in compliance with UL 790 and UL 580.
- B. Performance Requirements:
 - 1. Roofing materials shall be furnished by a manufacturer specializing in the manufacture of single-ply, EPDM synthetic-rubber sheet roofing materials.

2. Roofing work and related flashings shall be installed by a licensed applicator approved by the manufacturer who furnishes the materials.
3. Contract Drawings and Specifications for roofing and flashings are diagrammatic and of a general nature only. Therefore, manufacturer's specifications for roofing and related flashings shall govern the work as fully as if set forth herein, except as specifically indicated otherwise. All work shall be performed and completed as required to obtain the required warranty and guaranty.
4. The Contractor and the Contractor's membrane roofing, roof deck insulation, and sheet metal installers shall review the Contract Drawings and Specifications jointly with the membrane roofing materials manufacturer and shall obtain the manufacturer's agreement that the selected roofing, insulation, and flashing systems are proper, compatible, and adequate for this application, and that the conditions and details indicated do not conflict with the recommendations of the membrane roofing materials manufacturer.
5. The Contractor and roofing materials manufacturer shall determine the probability of thermal and structural movement in the roofing system and shall provide for expansion and contraction in the roofing system as required to provide a serviceable roof without failures.

C. Roofing Manufacturer's Approval and Job Service:

1. The Contractor shall make all necessary arrangements with the manufacturer or distributor of the materials to be installed to provide on-site consultation and inspection service to ensure the proper installation of the membrane roof and related flashings.
2. The manufacturer's representative shall be present at the time any phase of the work is performed. Membrane roofing shall be applied only over surfaces previously approved by the manufacturer's representative.

1.08 ENVIRONMENTAL CONDITIONS AND PROTECTION

- A. Provide protection of the building roof deck areas from moisture and rain. Provide temporary water-repellent coverings as required. Leave no unroofed deck areas exposed to moisture and rain at any time.

1.09 GUARANTY

- A. Membrane roofing and related flashing installations, including related metalwork, shall be guaranteed against leakage, defective materials, and defective installation of the completed roofing work. Any such defects or leakage occurring during the period of the guaranty shall be promptly and completely corrected, including all affected work, at no additional cost to the District. Bulging or wrinkling of membrane roof surfaces will also be interpreted as defects requiring correction.
- B. In addition to the guaranty requirements specified in General Conditions Article GC4.9, provide the roofing manufacturer's 15-year roofing system guaranty, which shall state in essence that the roofing materials manufacturer shall, at its expense, make or cause to be made any repairs

necessary to maintain the applied roof and related flashings in a watertight condition for a period of 15 years. The guaranty shall be effective from the date of the Certificate of Substantial Completion issued by the District, and shall be signed by the roofing applicator and countersigned by the Contractor, and shall be submitted to the Engineer as specified in Section 01 77 00 - Closeout Procedures.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. **Materials' Standards:** Materials shall conform with the roofing materials manufacturer's specifications for the proposed and approved roofing system.
- B. **Roof System Materials:** Materials for the single-ply roof membrane and related flashings shall conform with an approved manufacturer's roofing system, using EPDM synthetic-rubber sheet, minimum 0.060 inch thick. Color of roof membrane and flashing material shall be white, unless otherwise indicated. Color shall be a solid color throughout the thickness of the material.
- C. **Adhesives and Cements:** As recommended by the roofing materials manufacturer of the roofing system approved for this work, compatible with the materials and substrate to which the membrane and flashings are to be bonded.
- D. **Fasteners and Accessories:** As recommended by the roofing materials manufacturer of the roofing system approved for this work. Mechanical fasteners, if used, shall not damage the concrete substrate or penetrate the concrete more than one inch where concrete is the deck or substrate.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION OF SUBSURFACES

- A. **Examination of Roof Deck Surfaces:** Before starting the installation of any membrane roofing work, examine all surfaces on which the membrane and flashings are to be applied. Examination includes bond, moisture, and alkali testing of concrete, when applicable, as required or recommended by the manufacturer of the membrane roofing system components.
- B. **Cleaning and Preparation of Subsurfaces:** Surfaces on which the membrane roofing and flashings are to be applied shall be dry, clean of dirt and dust, paint, grease, and bond-breaking and curing compounds. Surfaces shall also be free from sharp protrusions and defective surfaces which will prevent a level and plane installation. Fill all joints, cracks, or depressions in subsurfaces with patch or underlayment material recommended by the manufacturer of the membrane system components, as required. Substrate surfaces shall be level and sloped for drainage as indicated and required.
- C. **Responsibility:** Nothing specified herein shall be construed as relieving the Contractor of full responsibility for the waterproof quality of the finished installation. Surfaces on which the roofing membrane and flashings are to be applied shall be in satisfactory condition in every respect.

3.02 INSTALLATION

- A. The single-ply membrane roofing system and related flashings shall be installed as indicated and in accordance with the specifications, installation instructions, and recommendations of the roofing materials manufacturer for a fully adhered roof system, using only workers skilled and experienced in the installation of the type of work involved.
- B. All work shall be performed and completed as required to obtain the required guaranty.

3.03 FIELD QUALITY CONTROL

- A. After completion of roofing and related work, a water ponding test shall be performed for all roof areas, parapets, curbs, penetrations, and accessories by applying a flood coat of water along the high areas so that water at least 1/4-inch deep flows over the areas. The test shall be performed under the Engineer's observation.
- B. Roof drains shall be temporarily plugged, and at least one inch of water shall be allowed to stand on the roof for one hour.
- C. Should a leak or low spot appear, it shall be repaired, and the roof areas shall be retested as specified above until all work is watertight and acceptable.

END OF SECTION 07 53 23