

1.05 SUBMITTALS

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, Samples, for submittal requirements and procedures.
- B. Samples: Submit representative samples of the polyvinyl chloride vapor barrier material, adhesive, and tape.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Vapor Barrier Sheeting: Polyvinyl chloride plastic membrane sheeting, meeting requirements of ASTM D1593 or ASTM D3083, 10 mils thick.
- B. Adhesive: Synthetic rubber base cement, manufactured specifically for use with poly-vinyl chloride membrane material for cold application.
- C. Tape: Pressure-sensitive neoprene or vinyl-chloride rubber adhesive tape as recommended by the manufacturer of the vapor barrier material or a heavy-duty cloth masking tape, minimum 3" wide; for sealing of laps and joints in vapor barrier sheets.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Lay vapor barrier sheets directly over compacted aggregate drainage fill (between compacted aggregate drainage fill and sand cushion) without damaging the sheets. Repair punctures and tears in vapor barrier sheets occurring during subsequent operations. Vapor barrier shall be continuous between footings or foundation walls, without voids.
- B. Lap edges not less than 4 inches and ends not less than 6 inches, with all laps sealed continuously with adhesive and tape.
- C. Turn up membrane a minimum of 2 inches or to within 1/2 inch of top of slab at edges and secure to wall foundations or footings with specified adhesive and tape.
- D. Fit and seal vapor barrier tightly around pipes and conduits that penetrate the fill.

END OF SECTION 07 26 00

SECTION 07 52 16

MODIFIED BITUMEN ROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Base sheet
- B. Cap Sheet
- C. Base flashing
- D. Cold Application Adhesive
- E. Flashing cement
- F. Cants

1.02 MEASUREMENT AND PAYMENT

- A. General: Measurement and payment for modified bitumen 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 modified bitumen roofing indicated in the Bid Schedule of the Bid Form.
- B. Lump Sum: If the Bid Schedule indicates a lump sum for modified bitumen roofing, the lump-sum method of measurement and payment will be in accordance with Section 01 20 00 – Price and Payment Procedures.
- C. Unit Price: If the Bid Schedule indicates a unit price for modified bitumen roofing, the unit-price method of measurement and payment will be as follows:
 - 1. Measurement
 - a. Modified bitumen 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, installation accessories, flashings, 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: Modified bitumen 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. American Society for Testing and Materials (ASTM):

MODIFIED BITUMEN ROOFING

1. ASTM D 41 Asphalt Primer Used In Roofing, Dampproofing and Waterproofing
2. ASTM D 312 Specification for Asphalt Used in Roofing
3. ASTM D 2822 Specification for Asphalt Roof Cement
4. ASTM D 3019 Specification for Lap Cement used in Asphalt Roll Roofing
5. ASTM D 4586 Specification for Asphalt Roof Cement, Asbestos Free
6. ASTM D 5147 Standard Test Methods for Sampling and Testing Modified Bituminous Materials
7. ASTM D 6162 Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester & Glass Fiber Reinforcements
8. ASTM D 6163 Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements

1.04 REGULATORY REQUIREMENT

- A. In addition to the reference standards, the regulatory requirements that govern the work of this Section include the following governing code:
- B. California Code of Regulations (CCR), Title 24, California Building Code, Chapter 15, "Roofs and Roof Structures."

1.05 ROOF SYSTEM DESCRIPTION

- A. Modified bitumen roofing membranes, base flashing, insulation, and flashing at metalwork and roof penetrations shall meet or exceed the requirements of a three-ply cold applied modified bitumen roofing system for which an approved single manufacturer can issue a 15-year guarantee.

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. Product Data: Submit manufacturer's specifications for materials and installation of the appropriate roofing system and related flashing, for review. Work shall not proceed until the manufacturer's specifications have been approved by the Engineer and returned to Contractor.
- C. Samples: Submit sample square 8-inch by 8-inch for base, intermediate, and cap felts, and base flashing.
- D. Shop Drawings: Within 20 calendar days of the effective date of the Notice to Proceed, submit the following for approval:
 1. Shop drawings showing setting plan for the insulation including tapered insulation, layout of felts and flashing details.

1.07 QUALITY ASSURANCE

A. Performance Requirements:

1. Roofing materials shall be furnished by a manufacturer specializing in the manufacture of roofing materials
2. Roofing work and related flashings shall be installed by a licensed contractor approved by the manufacturer who furnishes the material. Contractor shall submit a valid "Certificate of Eligibility" from the selected roofing materials manufacturer.
3. Contract Drawings and Specifications for roofing and flashings are diagrammatic and of a general nature only. Therefore, the manufacturer's specifications and flashing details shall govern as fully as if set forth herein, except as specifically indicated otherwise. All work shall be completed as required to obtain the required warranty and guaranty.
4. The Contractor shall review the Contract Drawings and Specifications with the roofing materials manufacturer and shall obtain manufacturer's concurrence that the selected roofing, insulation and its installation procedures, and flashing system are proper, compatible, and adequate for this application, and that the conditions and details indicated do not conflict with the recommendations of the 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.

B. Roofing Manufacturer's Approval and Inspections:

1. Pre-roofing Conference: Contractor, roofing materials manufacturer's representative and the Engineer shall meet at the project site well in advance of the time schedules for roofing and other related work, and review requirements for the work and conditions which could possibly interfere with successful performance of the work.
2. Contractor shall arrange for the roofing materials manufacturer to render work-in-progress inspections to make certain that the materials used in the work are in accordance with these specifications, and they are being installed in accordance with this specification and the manufacturer's installation instructions and recommendations. Roofing materials manufacturer's inspector shall be present during the initial installation of insulation and placement of plies and intermittently thereafter at the inspector's discretion to assure the proper installation of roofing. At the completion of the job, promptly conduct final inspection with roofing materials manufacturer's representative and the Engineer. Manufacturer's inspector shall submit all field reports and manufacturer's certification to the Engineer.

1.08 GUARANTY OF ROOFING MATERIALS MANUFACTURER

- A.** Modified bitumen roofing and related flashing installations, including related metalwork, shall be guarantied 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 expense to the District. Bulging or wrinkling of modified bitumen 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 fifteen (15) year roofing system guaranty. Contractor will ensure that the District receives a proper transfer and assignment of the manufacturer's fifteen (15) year roofing guarantee. The terms of this guarantee shall include provision that it is a "no dollar limit" guarantee, that it covers all the manufacturer's materials comprising the roof, and that the manufacturer will promptly repair the roof to a watertight condition in the event of (1) normal wear and tear, (2) any deficiencies in the component materials or (3) any deficiencies in the workmanship of the Contractor in the application of the roof.

1.09 OTHER REQUIREMENTS

- A. Manufacturer shall submit proof of the following tests and requirements:
 1. Fire Testing: Materials shall be tested to a minimum of Class A fire rating in compliance with UL 790 and must bear testing agency's (Underwriter's Laboratories, etc.) mark.
 2. Wind Uplift: Roofing system shall be classified as Class I-90 in compliance with UL 580.

1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Roofing materials shall be delivered to the job-site in new, dry, unopened containers clearly showing catalog number, product description, manufacturer's name and location. Delivered quantities should be sufficient to assure continuous work.
- B. Materials shall be kept clean and protected from exposure to excessive heat or cold. Materials shall be stored in an enclosed area where the temperature is above 50 degrees or below 90 degrees Fahrenheit. Materials shall not be set directly on the ground. Labels shall not be removed nor protective covering torn-off until ready for application.
- C. Materials shall be protected from exposure to moisture in any form before, during, or after delivery to the site. Delivered materials showing evidence of contact with moisture shall be rejected.
- D. Materials shall not be double stacked nor stacked in a manner that could overload the roof structure.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Roofing Membranes:
 1. Base and Intermediate felts shall be premium fiberglass mat reinforced SBS (Styrene-Butadiene-Styrene) modified bitumen sheets conforming to or exceeding the requirements of ASTM D 6163, Grade S. These sheets shall be an elastomeric, asphaltic-blend product with a minimum thickness of 80 mils and roll weight of not less than 90 pounds (roll size=1.5 squares).

2. Cap shall be fire-resistant, premium fiberglass and polyester mat reinforced, white granular surfaced SBS (Styrene-Butadiene-Styrene) modified bitumen cap sheet conforming to or exceeding the requirements of ASTM D 6162, Grade G. Weight shall be at least 105 pounds per 100 square feet. The modified bitumen cap sheet has an emittance of .92 and an SRI of 28.
3. Base flashing shall be an elastomeric SBS modified bitumen sheet surfaced with factory applied white roofing granules. Base flashing shall meet or exceed the product specification of the cap.

B. Associated Materials: The contractor shall obtain in writing the approval from the roofing materials manufacturer on the use of any of the following associated materials if other than those supplied by the roofing materials manufacturer.

1. Cold Application Adhesive for the Field of the Roof: Mastic-type, one-part adhesive as recommended by the roofing materials manufacturer of the roofing system approved for this work, compatible with the materials and substrate to which the membranes are to be bonded.
2. Cold Application Adhesive for the Terminations and Base Flashing: Mastic-type, one-part adhesive as recommended by the roofing materials manufacturer of the roofing system approved for this work, compatible with the materials and substrate to which the membranes are to be bonded.
3. Flashing cement shall be asbestos-free adhesive specifically formulated for the SBS modified bitumen base flashing.
4. Cants shall be fire-resistant manufactured of compressed fiberglass or perlite board and/or fabricated of pressure treated Douglas Fir "Construction" or "No. 1" grade, as indicated on the Contract Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine roof deck insulation and other surfaces to receive roofing. These surfaces must be clean, smooth, flat, dry, and free from defects or irregularities, which can jeopardize the quality of the work. No roofing work shall be performed on defective areas until suitable corrections have been made.
- B. Inspect and approve the installation of roof deck insulation, sheet metalwork, wood nailers, metal framing members, roof specialties and accessories in connection with the roofing work. Refer to Section 07 22 00, Roof Deck Insulation, for roof deck insulation, refer to Section 07 60 00, Flashing and Sheet Metal, for metal flashing and sheet metalwork, refer to Section 07 70 00, Roof and Wall Specialties and Accessories, for roof specialties and accessories are in.

3.02 INSTALLATION

- A. Membrane Application: Installation of roofing membranes shall be in accordance with the materials manufacturer's specifications, instructions and recommendations for one-part cold adhesive application using only workers skilled and experienced in the installation of the type of work involved. Prior to application, Contractor shall review the specifications and the