

SECTION 07615

PROTECTED LEAD MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Continuous, welded lead sheet membrane roofing.
- B. Insulation.
- C. Insulation ballast.
- D. Counterflashings for lead roofing.
- E. Penetration flashings and perimeter flashings for lead roofing.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.
- B. Section 06100 - Rough Carpentry.
- C. Section 07152 - Lead Membrane Waterproofing.
- D. Section 07600 - Flashing and Sheet Metal.

1.3 REFERENCES

- A. ASTM A 167 - Standard Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet, and Strip.
- B. ASTM A 666 - Standard Specification for Austenitic Stainless Steel, Sheet, Strip, Plate, and Flat Bar.
- C. ASTM B 749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
- D. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- E. ASTM D 226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and Waterproofing.
- F. Flat Roofing Brochure - Lead Industries Association, Inc. (LIA).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide manufacturer's standard details and catalog data demonstrating compliance with referenced standards. Provide installation instructions.
- C. Samples:
 - 1. 6 x 6 inch samples of sheet lead.
 - 2. Samples of insulation board.
 - 3. Ballast samples.
 - 4. Stainless steel strip for insulation ballasting.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Employ only qualified journeymen lead burners to join sheets of lead.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Handle, store, and protect lead from deformation, construction traffic, and damage.
- B. Handle, store and protect insulation in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 MEMBRANE MATERIALS

- A. Sheet Lead:
 - 1. Comply with ASTM B 749.
 - 2. Weight: 5 psf (5/64-inch thick) minimum.
 - 3. Furnish in 8 x 25 foot rolls, unless otherwise required or approved.
- B. Burning Rods: Same composition as sheet lead.
- C. Underlayment: 15 lb. asphalt-impregnated felt; ASTM D 226, Type I.
- D. Slip Sheet: Reinforced plastic or paper such as "Tyvek," "Visquine," etc.

- E. Temporary Protection Board: At least one, 1/2-inch thick layer of any suitable particle board or plywood.

2.2 COUNTERFLASHING MATERIALS

- A. Stainless Steel: ASTM A 167, Type 304, 28 gage unless otherwise indicated.
- B. Lead-Coated Stainless Steel: ASTM A 167, Type 304, 28 gage prior to coating unless otherwise indicated.

2.3 INSULATION MATERIALS

- A. Insulation: Extruded polystyrene, ASTM C 578, Type VI.
- B. Compressive strength: 40 psi minimum.
 - 1. Tongue and grooved edges on two sides.
 - 2. Drainage channels on surface in contact with roofing membrane.
 - 3. Bottom layer foam thickness: 2 inches.
 - 4. Top layer foam thickness: 1-1/2 inches.
 - 5. Foam thickness: 3 inches.
 - 6. Integral mortar facing: Latex-modified Portland cement mortar weighing 4.5 psf.
 - a. Facing thickness: 3/8 inch mortar facing (in addition to foam thickness).
- C. Separation Sheet: As recommended by insulation manufacturer.
- D. Ballast:
 - 1. Aggregate: Sound, hard, durable stone; ASTM D 448, No. 4, free of dirt, debris, and other deleterious matter.
 - 2. Select aggregate: As above, except screened to 1 inch minimum to 1-1/2 inch maximum.
 - 3. Pavers: Normal weight concrete paver units manufactured for use as roof ballast.
 - a. Weight: At least 15 psf.
 - b. Compressive strength: At least 7,500 psi.
 - c. Color: _____.
 - d. Size: 24 x 24 inches.
 - e. Size: 18 x 18 inches.
 - f. Size: 12 x 18 inches.
 - g. Size: 12 x 12 inches.

2.4 MISCELLANEOUS MATERIALS

- A. Cants: Concrete cants specified in Division 3.

- B. Cants: Pressure-preservative-treated wood specified in Division 6.
- C. Insulation Securement: ASTM A 666 stainless steel straps and securement devices, as recommended by insulation manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive sheet lead roofing.
 - 1. Verify that surfaces are smooth and even, free of projections, protrusions, or other irregularities.
 - 2. Verify that angles and edges over which lead will be turned are chamfered or eased.
 - 3. Verify that cants are securely installed.
 - 4. Do not begin roofing operations until surrounding or abutting construction and penetrations through roofing are completed and approved.
- B. Cementitious Substrates:
 - 1. Verify that concrete is sound, clean, and free of dirt, dust, debris, or other contaminants.
 - 2. Verify that concrete surfaces have been screeded and floated to a smooth surface without projecting stones or other aggregate.
 - 3. Verify that brick or other masonry substrates are laid true and straight, with joints struck flush or tooled with half-round tool.
- C. Notify the Architect in writing of any defective conditions encountered.
- D. Correct defective conditions before beginning waterproofing work. Starting of work shall constitute acceptance of such conditions.

3.2 SURFACE PREPARATION

- A. Grind down high spots.
- B. Fill low spots with Portland-cement-based patching compound approved by the Architect.
- C. Parge irregular substrates with acrylic-latex modified Portland-cement-based mortar approved by the Architect.

- D. Install 1 layer of underlayment over entire surface to be waterproofed. Install 1 layer of slip sheet over underlayment.

3.3 MEMBRANE INSTALLATION

- A. Lay out sheet to minimize joints.
- B. Lap joints between adjoining sheets 1-1/2 inches minimum.
- C. Tools, brakes, tongs, etc., shall be such as to bend and work lead to easy curves and to prevent scoring or damaging the material. Only proper lead working tools (wooden mallets, dressers, etc). are acceptable to form the lead.
- D. Allow room for expansion between rigid members.

3.4 JOINTS

- A. Clean by shave hook, lead scraper, or wire brush, sections of lead that are to become a part of the joint.
- B. Join adjacent pieces of lead sheet by burning (welding of lead to lead).
 - 1. Use only the smallest size tip on burning torch.
 - 2. Use only hydrogen and oxygen gases only.
 - 3. Take extreme care to avoid burning through or reducing the thickness of the lead sheet being joined.

3.5 FLASHINGS

- A. Install lead sheet base flashings integrally with roofing membrane.
 - 1. Extend to top of and across parapets, unless otherwise indicated.
 - 2. Where membrane terminates at vertical walls, terminate flashing in reglet.
- B. Install stainless steel counterflashings as indicated.
- C. At penetrations, install lead sheet flashings and burn same to membrane.
 - 1. Comply with details and recommendations of LIA Flat Roofing Brochure, unless otherwise indicated.

3.6 INSULATION

- A. Install insulation in accordance with insulation manufacturer's instructions for protected membrane roofing.
- B. Cut neatly to fit around projections and penetrations and at perimeter.
- C. Secure perimeters of and penetrations through mortar-faced insulation with pavers.
- D. Mechanically fasten mortar-faced insulation with stainless steel securement devices in accordance with manufacturer's instructions.

3.7 BALLAST

- A. Install separation sheet in accordance with insulation manufacturer's instructions.
- B. Install roof pavers over entire surface. Cut neatly to fit around projections and penetrations and at perimeter.
- C. Install roof pavers in the locations indicated on the drawings. Cut neatly to fit around projections and penetrations and at perimeter.
- D. Install aggregate ballast at the rate so as to ensure complete coverage of foam, and blockage of U.V. light.
 - 1. Use at least 10 pounds of aggregate per square foot.
 - 2. Within 4 feet of perimeter, penetrations, and drains, use at least 20 pounds of aggregate per square foot.
 - 3. Use select aggregate around drains.

3.8 PROTECTION

- A. Protect material and work in place from damage. Repair any damage that may occur.
- B. Provide temporary water cut-offs to prevent penetration of water underneath the membrane when work is interrupted, at end of day, or during inclement weather. Remove and discard temporary cut-offs before proceeding.
- C. Temporary Protection: Do not permit construction traffic directly on top of lead sheet. Install suitable protection board as installation proceeds to guard against occasional, essential light traffic and against excessive temperature changes until permanent covering has been installed.

END OF SECTION