

SECTION 03 15 15

ELASTOMERIC BEARING PADS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Plain elastomeric bearing pads.
- B. Fabric-reinforced laminated bearing pads.
- C. Steel-reinforced laminated bearing pads.

1.02 MEASUREMENT AND PAYMENT

- A. Measurement: Elastomeric bearing pads will not be measured separately for payment.
- B. Payment: Elastomeric bearing pads will be paid for as part of the indicated Contract unit price or lump-sum price for the associated concrete work as indicated in the Bid Schedule of the Bid Form.

1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M251 Standard Specifications for Plain and Laminated Elastomeric Bridge Bearings
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM A36/A36M Standard Specification for Carbon Structural Steel
 - 2. ASTM A1011/A1011M Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra High-Strength
 - 3. ASTM D395 Standard Test Methods for Rubber Property - Compression Set
 - 4. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
 - 5. ASTM D429 Standard Test Methods for Rubber Property - Adhesion to Rigid Substrates
 - 6. ASTM D573 Standard Test Method for Rubber - Deterioration in an Air Oven

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| 7. | ASTM D1149 | Standard Test Method for Rubber Deterioration - Cracking in an Ozone-Controlled Environment |
| 8. | ASTM D2240 | Standard Test Method for Rubber Property - Durometer Hardness |
| 9. | ASTM D4014 | Standard Specification for Plain and Steel-Laminated Elastomeric Bearings for Bridges |

1.04 DEFINITIONS

- A. As used in these Specifications, the word “elastomer” or “elastomeric” means “rubber”; the words are interchangeable.

1.05 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 product data of elastomeric bearing pads for review.
- C. Samples: Furnish one sample elastomeric bearing pad for each type of pad used in the Work. Samples will be selected by the Engineer at random from the lots delivered to the jobsite.
- D. Certificates of Compliance: Submit certificates of compliance certifying that materials and fabrication of elastomeric bearing pads comply with these Specifications as applicable.

PART 2 – PRODUCTS

2.01 TYPES OF BEARING PADS

- A. Plain Elastomer Type: Molded elastomeric compound, or cut from previously molded strips or slabs, or extruded and cut to length, with smooth surfaces and cut edges.
- B. Fabric-Reinforced Laminated Type: Laminated pads consisting of alternate layers of elastomeric compound and glass fabric reinforcement bonded together, with top and bottom layers of reinforcement uniformly covered with 1/8 inch of elastomer.
- C. Steel-Reinforced Laminated Type: Laminated pads consisting of alternating steel laminates and internal elastomer laminates bonded together, with top and bottom layers of steel reinforcement uniformly covered with 1/4 inch of elastomer. Exposed sides shall be covered with 1/8 inch of elastomer.

2.02 MATERIALS

- A. Elastomeric Compound/Elastomer: Virgin crystallization-resistant polychloroprene as the raw elastomer. Physical requirements of the elastomeric compound include the following:
1. Physical Properties:
 - a. Hardness: ASTM D2240, Type D durometer, 60, plus or minus 6.
 - b. Tensile Strength: ASTM D412, 2500 psi minimum.
 - c. Ultimate Elongation: ASTM D412, 350 percent minimum.
 2. Heat Resistance: ASTM D573, 48 hours at 212 degrees Fahrenheit.
 - a. Change in durometer hardness: plus 15 points maximum.
 - b. Change in tensile strength: minus 15 percent maximum.
 - c. Change in ultimate elongation: minus 40 percent maximum.
 3. Compression Set: ASTM D395, Method B, 22 hours at 212 degrees Fahrenheit: 35 percent maximum.
 4. Ozone Cracking: ASTM D1149, 100 pphm ozone in air by volume, 20 percent strain, 104 plus or minus 2 degrees Fahrenheit: no cracks.
 5. Adhesion: ASTM D429, Method B, bond made during vulcanization: 40 pounds per square inch.
- B. Fabric Laminates: Fabric reinforcement shall be woven from one-hundred percent glass fibers of "E" type yarn with continuous fibers. Minimum thread count in either direction shall be 25 threads per inch. Fabric shall have either a crow foot or an 8 Harness Satin weave. Each ply of fabric shall have a breaking strength of not less than 800 pounds per inch of width in each direction. Fabric reinforcement shall be single ply at top and bottom surfaces of the pad and double ply within the pad.
- C. Steel Laminates: Steel for internal reinforcement laminates shall conform with the following requirements as indicated:
1. Steel 3/16-inch Thick and Over: Steel plate conforming to ASTM A36/A36M
 2. Steel Under 3/16-inch Thick: Steel sheet conforming to ASTM A1011/A1011M.
- D. Adhesive: Adhesive for the installation of bearing pads to concrete and steel bearing surfaces shall be a solvent-free adhesive as appropriate for this particular installation.

2.03 FABRICATION

- A. Plain elastomer bearing pads and laminated steel bearing pads shall conform to the applicable requirements of ASTM D4014. Laminated fabric bearing pads shall conform to the applicable requirements of AASHTO M251.
- B. Pads 1/2 inch or less in thickness shall be either all elastomer or laminated. Pads over 1/2 inch thick shall be laminated. Stacking of individually laminated pads to attain thicknesses over 1/2 inch is not acceptable.
- C. Plain elastomer bearing pads shall be molded individually, or cut from previously molded strips or slabs, or extruded and cut to size. Cutting shall produce a smooth surface and no heating of the elastomer.
- D. Laminated pads shall have reinforcement every 1/2 inch through the entire thickness. Reinforcement shall be parallel to the top and bottom surfaces of the pad. Elastomer and reinforcement together shall not exceed 1/2 inch in thickness per lamination.
- E. Laminated bearing pads shall be molded as a single unit under pressure and heat. Bonding of elastomer to reinforcement laminates shall be carried out during molding. Elastomer at outer edges of bonds to external load plates shall be shaped to avoid stress concentrations.
- F. Internal steel laminates shall be free of sharp edges. Top and bottom steel laminates shall be covered uniformly with 1/4 inch of elastomer. Sides shall be covered uniformly with 1/8 inch of elastomer.
- G. External load plates shall be protected from rusting.
- H. Comply with ASTM D4014 for fabrication tolerances.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install elastomeric bearing pads at locations indicated in accordance with indicated details.
- B. Apply adhesive to clean concrete bearing surface to a minimum thickness of 1/8 inch, and set bearing pads on adhesive bed as indicated.

END OF SECTION 03 15 15