

ITEM 565.63nnnn25 - BASE ISOLATION BEARING SYSTEMS

1. DESCRIPTION:

- 1.01 This work shall consist of furnishing and installing base isolation bearings of the type required, at the locations indicated on the plans.

2. MATERIALS:

- 2.01 **General:** Material shall meet the requirements of the attached Material Specification 25716-09 – Base Isolation Bearing Systems.
- 2.02 **Fabrication:** The systems shall be complete, factory-produced assemblies. Steel components of bridge bearings shall be fabricated in accordance with the applicable requirements of the N.Y.S. Steel Construction Manual (SCM). In addition, where applicable, component parts of the individual bearings shall meet the Fabrication details shown in the Contract Documents.
- 2.03 **Submittals:** At the time of the pre-construction conference, the Contractor is required to identify his/her intended isolation system supplier and to provide the Chief Engineer with a certification of compliance listing all materials in the system. The certificate shall certify that the system conforms to the design and material requirements.
- A. Submittals shall also include:
1. Product literature, including produce description, reference standards and performance test data.
 2. A list of previous installation dates and locations, with contact names and phone numbers.
 3. A detailed description of maintenance requirements, including sources of replacement materials.
- B. The Assistant Division Director, Engineering Services will notify the Contractor of approval/disapproval within 30 days from the date of submittal. Submittals with insufficient test data and supportive certifications will be rejected.
- C. Shop drawings will be required for all bearings. They shall be furnished in accordance with the SCM, Section 2. The Contractor shall supply five (5) copies of the approved shop drawings to the Engineer. These will be used to implement the quality assurance process.
- D. The Contract Plans contain the design requirements and are supplied as a means of specifying the required performance characteristics for the isolation system.
- E. Calculations showing system compliance with all relevant provisions of the AASHTO 1998 Guide Specifications for Seismic Isolation Design, shall be submitted to the Assistant Division Director, Engineering Services, along with the shop drawing submittals for review and approval.
- 2.04 Factors of safety for the maximum dead load, live load and seismic lateral load demand, shown on the Contract Plans shall satisfy the AASHTO 1998 Guide Specifications for Seismic Isolation Design. The longitudinal and transverse force and the transverse displacement demands shown on the plans are the maxima of the lateral service loads for AASHTO Load Groups II through VI, to be used for service load design of isolators. Other conditions may control substructure design.

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2. MATERIALS: (cont'd)

- 2.05 **Alternate Isolation Bearing Systems:** The bearing details, dimension and seismic requirements given on the Contract Documents are based on any isolation bearing system. The use of other types of isolation bearings that provide equivalent or better seismic isolation characteristics to meet the service load and seismicity requirements given on the design plans and Special Provisions are permissible and must conform to Material Specification 25716-09. The beam-seat elevations, as detailed, are computed based on the dimensions given. Any change in the height of the isolators shall be made up in adjustments first to masonry and sole plates (minor changes), and second to the beam seat elevations if absolutely necessary. Changes in the plan dimensions (i.e., width and length) shall take into consideration the physical limits of the beam seats and all isolators shall be centered directly beneath bearing stiffeners and girder webs as detailed on the plans.

Any alternative base isolation bearing system should not necessitate re-design of the substructure. Full seismic analysis results of the structure with the proposed alternative type of bearing should be submitted by the Contractor for the Chief Engineers review and approval at the time of the preconstruction conference.

- 2.06 **Shipment and Storage:** Each bearing shall be assembled together with all necessary plates at the place of manufacture. Each bearing shall be shipped in strong protective packaging as an assembled unit. Assembly shall be such that the assembled bearing remains intact when unpackaged and installed. All bearings shall be stored under cover, in their original packaging, above ground, until installation.

3. CONSTRUCTION DETAILS:

- 3.01 The following applicable Subsections of Section 565 shall apply: 565-3.02; 565-3.03, 565-3.04; 565-3.06, 565-3.07; and 565-3.08. In addition the following shall apply:
- A. The elevation of the concrete bearing surface for all types of bearings shall be given on the plans. The elevation of the concrete bearing surface may vary from that given on the plans depending on the vertical dimension of the bearing supplied. The Contractor shall notify the Engineer of all required elevation changes. Changes to the roadway profile will not be allowed, and all elevation adjustments necessary to maintain the profile shall be made to the concrete bearing surfaces. All adjustments will be made at no additional cost to the Authority.
 - B. The centerline of the bearing shall not be offset from the centerline of bearing stiffeners, or diaphragm connection plates by more than one-half the thickness of the flange at that location, or the thickness of the bearing stiffener, or connection plate, whichever is the lesser distance.
 - C. Bearings shall be installed only when ambient temperature is within the temperature range of 398°F to 908°F inclusive, unless otherwise shown on the Contract Plans.
 - D. Bearings may vary from perfect vertical alignment. The maximum variation from perfect vertical alignment under full dead load shall not exceed 1/8 inch in any direction. The variation will be measured as the horizontal distance between the centerline of the highest bearing surface and the centerline of the lowest bearing surface.
 - E. All bearings shall be installed level. All grade corrections shall be accomplished by means of beveled shim plates.

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3. CONSTRUCTION DETAILS: (cont'd)

3.01 (cont'd)

- F. Unless otherwise permitted by the plans or the Engineer, no field welding will be permitted.
- G. After bearing installation has been completed, the Contractor shall ensure that each bearing is free to deform horizontally in all directions and is free to rotate about all axes, unless otherwise indicated on the Contract Plans.

4. METHOD OF MEASUREMENT:

4.01 Measurement will be take as each bearing furnished and installed as required.

5. BASIS OF PAYMENT:

5.01 Base Isolation Bearing Systems, furnished and installed, as specified shall be paid for at the contract unit price for each Base Isolation Bearing of the type designated. Such price shall include all costs associated with the design of the bearings, shop drawings, testing and all work incidental to and associated with the furnishing and installation of the bearings as specified herein. The unit bid price for each bearing shall include the cost of all labor, materials, equipment necessary to complete the work.

5.02 **Progress Payments:** The requirements of Subsection 565-5.01 shall apply.

NOTE: nnnn denotes serialized pay item.