

SECTION 02570 – COMPOSITE BEARINGS

(Follow all instructions and make all edits with "Track Changes" turned on. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the Project. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)

Comply with Section 02570 of the Standard Specifications modified as follows:

02570.10 Elastomeric Compound - Replace the paragraph that begins "Provide Materials meeting..." with the following paragraph:

Furnish Materials meeting the following requirements:

Replace the paragraph that begins "**Elastomer** - Elastomer for elastomeric ..." with the following paragraph:

Elastomer - Furnish elastomer for elastomeric discs of pot bearings that are 100 percent virgin natural polyisoprene (natural rubber) or 100 percent virgin chloroprene (neoprene) meeting the following requirements:

Replace the paragraph that begins "When test specimens are cut..." with the following paragraph:

When test specimens are cut from the finished product a 10 percent variation in physical properties is allowed.

Replace the paragraph that begins "**Polyether Urethane** - The properties of polyether..." with the following paragraph:

Polyether Urethane - Ensure the properties of polyether urethane for polyether urethane discs of disc bearings meet the values of the following tests:

Replace the paragraph and bullets that begins "**Fabric Pads**..." with the following paragraph and bullets:

Fabric Pads - Make preformed fabric pads for fabric pad bearings of multiple layers of duck, impregnated and bound with high quality oil resistant synthetic rubber compressed into resilient pads of uniform thickness according to the following:

- Cotton duck reinforcement is either a two-ply cotton yarn or a single-ply 50-50 blend cotton polyester with a minimum of 8 ounces per square yard.
- The fabric has a minimum tensile strength of 150 pounds per inch width when tested by the grab method.

- The filling count of the duck is 40 ± 2 threads per inch.
- The warp count of the duck is 50 ± 1 threads per inch.
- The number of plies produce the specified thickness after compression and vulcanizing.
- Furnish the finished pads that withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 psi without any sign of distress after the load is removed. The tested pad is required to have a shape factor greater than 2.5. Furnish preformed fabric pads with a Shore A hardness of 90 ± 5 .

02570.20(a) Clearance Test - Replace this subsection, except for the subsection number and title, with the following:

Move the components of the bearing through their design displacements or rotations to verify that the required clearances exist. If the test is conducted on a rotational component that is not under simultaneous full vertical load, make allowance for the displacements that would be caused by that load.

02570.20(b) Long-Term Deterioration Test - Replace this subsection, except for the subsection number and title, with the following:

Conduct test on one full scale bearing per lot. Load the bearing in compression to a stress corresponding to 100 percent of the maximum dead plus live service load while subjected to plus and minus the design rotational displacement amplitude for 5,000 cycles. Test flat sliding systems by displacement through at least 1,000 cycles with an amplitude of at least ± 1.0 inch (2.0-inch peak to peak). The sliding may take place at up to 10.0 inch per minute, except when readings of the coefficient of friction are taken, when the sliding speed is 2.5 inches per minute.

Bearings are rejected when:

- There are visible cracks, splits, or excessive wear on disassembly of the bearing.
- The coefficient of friction exceeds two-thirds the value used in design.

02570.20(c) Friction Test - Replace this subsection, except for the subsection number and title, with the following:

Conduct test on one full scale bearing per lot. Ensure the coefficient of friction between the sliding surfaces is not greater than 0.06 when the maximum working stress for the polytetrafluoroethylene (PTFE) surface is 2,000 psi and is not greater than 0.045 when the maximum working stress for the PTFE surface is above 3,000 psi. Determine the coefficient of friction at 68 °F according to the requirements of section 18.3.4.3.2 of the AASHTO *LRFD Bridge Construction Specifications*.

02570.30(d)(1) Vertical Proof Load Test - Replace this subsection, except for the subsection number and title, with the following:

Apply a vertical load equal to 150 percent of the vertical design capacity of the tested bearing for 5 minutes, unload, then reapply for an additional 5 minutes. Place the bearing in a rotated position during the test. Ensure rotation is 0.015 radians or the design rotation, whichever is

greater. An acceptable test bearing does not show indication of failure or other defects such as weld cracking, plate distortion, extrusion of the elastomer or bearing material, or displacement of the elastomer seal while under load or subsequently upon disassembly and inspection.

The successful test of a bearing with a vertical design capacity of 50 Tons or less is accepted as qualification for all bearings of a similar design with a lesser design capacity.

02570.30(d)(2) Horizontal Proof Load Test - Replace the paragraph that begins "A horizontal proof load test..." with the following paragraph:

A horizontal proof load test is required when the design horizontal capacity exceeds 10 percent of the design vertical capacity and no engineer's calculations are submitted. Apply a horizontal load equal to 100 percent of the horizontal design capacity while also applying a vertical load equal to 100 percent of the dead load for a period of 2 minutes. The bearing does not need to be in the rotated position. An acceptable bearing does not show indication of failure or other defects such as weld cracking, plate distortion, extrusion of the elastomer or bearing material, or displacement of the elastomer seal while under load or subsequently upon disassembly and inspection.