14.1 BRIDGE BEARINGS

14.1.1 GENERAL

This policy identifies the type of bearings allowed and provides design criteria for steel-reinforced elastomeric and polytetrafluoroethylene (PTFE) spherical bearings.

14.1.2 DEFINITIONS

Bearing – A structural device that transmits loads while facilitating translation and/or rotation

PTFE Spherical Bearing – A bearing consisting of a PTFE surfaced concave plate and a mating stainless steel convex plate that accommodates rotation through sliding of its curved surfaces

Multidirectional Sliding PTFE Spherical Bearings – A PTFE spherical bearing with an upper sliding plate added for translation allowing horizontal movements in any direction. Sliding contact surfaces are PTFE to stainless steel

Steel-Reinforced Elastomeric Bearing – A bearing made from alternating laminae of steel and elastomer, bonded together during vulcanization

14.1.3 POLICY

Bearings shall be designed in accordance with AASHTO-CA BDS, the *Caltrans Seismic Design Criteria (SDC)*, and additional requirements herein.

Steel-reinforced elastomeric bearing pads, multidirectional sliding PTFE spherical bearings, plain elastomeric bearing pads, and seismic isolation bearings are the only bearing types allowed. Thermal movements in the transverse direction of wide bridges shall be considered in bearing design. The effects of braking and centrifugal forces need not be considered in bearing design.

Bearings shall be set level. Bridge designs shall provide access to allow for bearing inspection. Shear keys shall be used to resist lateral loads and limit transverse movements.

For bridge widenings and new bridges, PTFE spherical bearings shall be specified at in-span hinges. Existing rocker bearings shall be replaced with elastomeric or PTFE spherical bearings.

14.1.4 Steel-Reinforced Elastomeric Bearings

The effects of skew and curvature shall be considered, including the potential for non-uniform distributions of bearing reactions. Individual bearings shall be oriented at zero skew relative to the superstructure of new bridges.

Bearings shall accommodate superimposed deformations in the superstructure. Where a greased plate is used to minimize shear transfer through an elastomeric bearing, the bearing shall be designed for 25 percent of the effects of prestressing, creep, and shrinkage.

14.1.5 PTFE Spherical Bridge Bearings

PTFE spherical bearings shall be designed with replaceable sliding surfaces. PTFE surfaces shall be woven fabric over a metallic substrate and shall be used on the top and bottom surfaces of the concave plate.

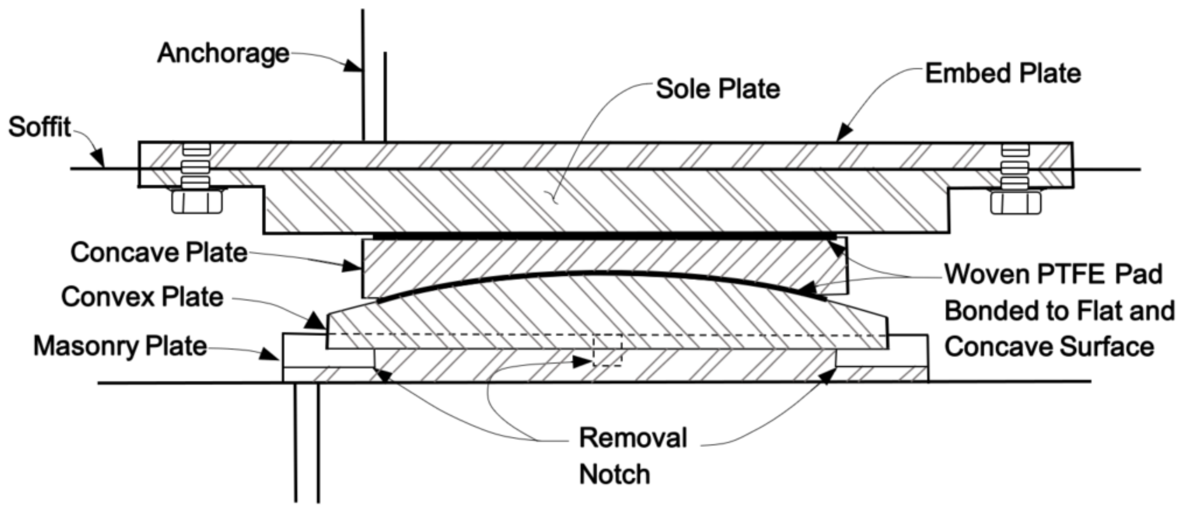

Figure 14.1.5.1 Example of Multidirectional Sliding PTFE Spherical Bearing with Replaceable Sliding Surfaces

14.1.6 REFERENCES

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