Effect Of Elastomeric Bearing Modeling Parameters On The

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Effect Of Elastomeric Bearing Modeling

Although numerical investigations reveal that elastomeric pads may positively affect the seismic response of such bridges, this effect highly depends on geometry of bridge, especially the pier...

(PDF) Effect of elastomeric bearing modeling parameters on ...

The application of the hyperelasticity constitutive relationships for modelling of elastomeric bridge bearings is presented. Elastomers which are used

for bridge bearings are nearly incompressible materials. Consequently, two models of hyperelasticity for rubber-like materials, i.e. neo-Hookean and Yeoh models are considered.

Modelling of Elastomeric Bearings with Application of Yeoh ...

Past studies have shown that the lateral behavior of a laminated elastomeric bearing is affected by axial load, and various mechanical models that consider the effect of horizontal–vertical ...

(PDF) FINITE ELEMENT MODELLING OF ELASTOMERIC BEARINGS

value problems relevant to elastomeric bridge bearings. The method incorporates polynomial shape functions of the hierarchic type for the modeling of large-deformations rubber elasticity. ·In addition, a frictional-contact algorithm based on a penalty formulation and suitable for the interaction of the pad

Analysis of Elastomeric Bridge

Bearings

Phenomenological models are presented to describe the behavior of elastomeric isolation bearings in tension, including the cavitation and post-cavitation behavior. The elastic mechanical properties make use of the two-spring model. Strength degradation of LR bearing under cyclic shear loading due to heating of lead core is incorporated.

An advanced numerical model of elastomeric seismic ...

The results indicate that the model accurately captures material self-heating, as well as low-temperature stiffening and high-temperature softening effects. Simulations using an increased material shear thickness show the ability of the model to predict increased local temperatures and strains.

Thermomechanical modeling of elastomeric materials ...

I am tying modeling an elastomeric

bearing for horizontal forces simulation. I am usin the following formulae: a-Dimension of bearing in direction paralel to beam axis b-Dimension of bearing in direction Normal to beam axis h- total hight of bearing hc-total height of elastomer layers

Modeling elastomeric Bearings - Bridge engineering - Eng-Tips

Elastomeric bearing overview Shore A Durometer hardnesses of 60–5 are common, and they lead to shear modulus values in the range of 80 to 180 psi. The shear stiffness of the bearing is its most important property since it affects the forces transmitted between the superstructure and substructure.

Design Step 6 – Design of Bearings Prestressed Concrete ...

been common practice to use elastomeric bearing pads, a yielding bearing, to widen structures supported on steel rocker bearings, an unyielding

bearing. While this practice has worked satisfactorily on short to moderate length structures, it has created problems when thick elastomeric bearing pads have been used on structures with long spans.6 P. age

Bridge Bearings - Caltrans

Damage associated with yielding of the reinforcing steel shims in seismic isolation elastomeric bearings has received limited attention in the literature. In this context, this paper investigates the effect of the steel reinforcement characteristics on the behavior of rubber bearings under combined axial load, shear displacement, and rotation.

Influence of Steel Reinforcement on the Performance of ...

Precast AASHTO concrete bridge I-beams are often supported at the ends by elastomeric bearing pads. The bearing pad-bridge beam interface defines support boundary conditions

that may affect the performance of the bridge. In this study, finite-element modeling was used to validate AASHTO bearing stiffness specifications.

Effect of Bearing Pads on Precast Prestressed Concrete ...

elastomeric bearing pad whenever possible, provided adverse effects such as excessive force transfer to the substructure does not occur. Where a fixed bearing is required with greater rotational capacity, steel fixed bearings can be utilized. Laminated elastomeric bearings are .

WisDOT Bridge Manual Chapter 27 – Bearings

Abstract Past studies have shown that the lateral behavior of a laminated elastomeric bearing is affected by axial load, and various mechanical models that consider the effect of horizontal–vertical coupling have been proposed.

Simple mechanical models for the horizontal behavior of ...

As a result, less ball slip and spin are generated. Modeling with a bearing surface dent showed that vibrations due to surface abnormalities can be significantly reduced using elastomeric bushing support. It has also been shown that choosing a proper bushing is an efficient way to tuning bushing vibration frequencies.

An Explicit Finite-Element Model to Investigate the ...

Kim, D. K., Mander, J. B. and Chen, S. S., " Temperature and Strain Rate Effects on the Seismic Performance of Elastomeric and Lead-Rubber Bearings," Proceedings of the Fourth World Congress on Joint Sealants and Bearing Systems for Concrete Structures, California, 1, pp. 309 – 322 (1996).

Analytical Simulations of the Steel-Laminated Elastomeric ...

Precast AASHTO concrete bridge I-

beams are often supported at the ends by elastomeric bearing pads. The bearing pad-bridge beam interface defines support boundary conditions that may affect the performance of the bridge. In this study, finite-element modeling was used to validate AASHTO bearing stiffness specifications.

EFFECT OF BEARING PADS ON PRECAST PRESTRESSED ... - TRID

The 3D continuum geometry of an elastomeric bearing is modeled as a 2-node, 12 DOF discrete element. This elements extends the formulation of Elas tomeric_Bearing_(Bouc-Wen)_Element element. However, instead of the user providing material models as input arguments, it only requires geometric and material properties of an elastomeric bearing as arguments.

ElastomericX - OpenSeesWiki

MNDOT bearing Girder Steel rocker Elastomeric pad Welded studs Concrete pier cap . MNDOT bearing . MNDOT

bearing . ... • Quantify the effects of the various parameters on ... • Use the measured friction coefficients in the analytical model to compare predicted and measured compression stiffnesses. Data Analysis Contact Surface (Concrete ...

Behavior of Plain Elastomeric Pads

Separating the earthquake vibration from the structure is one of the best possible methods. The separation method is performed by an elastomeric bearing. These supports cause the spectrum acceleration to decrease dramatically by increasing the natural period of structure and also cause the base shear to be reduced up to fifty percent.

Evaluating the Effect of Support Rotation on the Buckling ...

LR ELASTOMERIC BEARING Resists vertical load and provides horizontal movements and rotations. Caters for vertical load where movement is

controlled by shear deflection and rotation is by angular deformation.