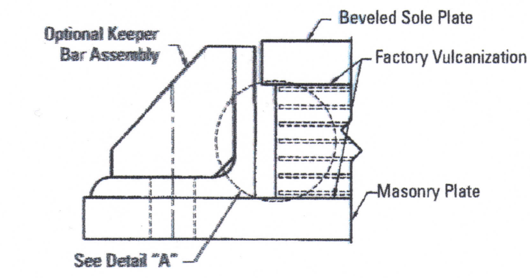
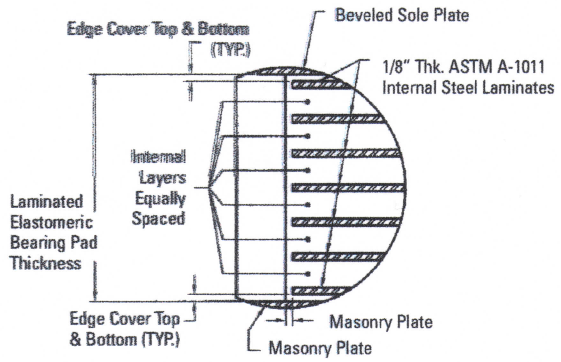
NEOPRENE BRIDGE BEARINGS

ELEVATION VIEW



DETAIL "A"



Description: Neoprene Bearing Pads are molded or cut from a molded sheet of high-grade, new neoprene synthetic rubber compounds.

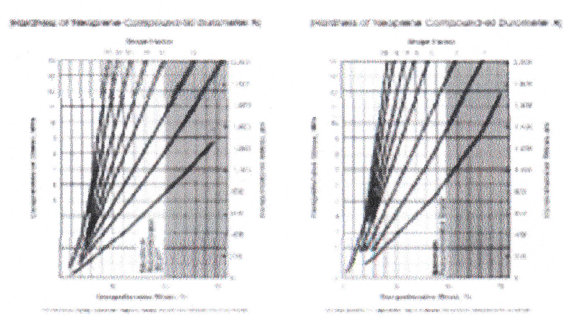
Use: As economical efficient bearing plates for pre-cast, pre-stressed concrete or steel beams in bridges and buildings. Neoprene Pads permit a smooth and uniform transfer of load from the beam to the substructure and allow beam rotation at the bearing due to deflection of the beam under load. They further allow lateral and longitudinal movement of the beam caused by thermal forces. Neoprene Pads have no movable parts and thermal expansion and contraction are absorbed by the pad's ability to give and take in shear. There is no sliding motion between pad and beam or between pad and abutment.

Materials: The material specification for the elastomeric bearing shall meet the requirements of the current AASHTO M 251 (Standard specifications for laminated elastomeric bridge bearings) as listed under subsections "Materials" and "Test."

Fabrication: Elastomeric bearings shall be composed of multiple laminates of elastomeric material separated by steel reinforcing. Bearings have steel plates as the reinforcement shall be cast as a unit in a mold under pressure and heat and the steel plates separating the elastomeric layers shall be completely bonded by vulcanization to the elastomeric material on all surfaces. An external load bearing steel plate(s) shall be factory vulcanized to the elastomeric bearings during the primary molding process.

NEOPRENE IN COMPRESSION

Compressive Stress/Strain of Steel-Reinforced Neoprene Bearings.



DESIGN RECOMMENDATIONS

Bearing Length, in. = beam width, in.

Bearing Width, in. = $\frac{\text{(dead + live loads, lb.)}}{\text{(800) (bearing length, in.)}}$
or = (5) (bearing thickness, in.)
or = Your personal psychological miniumum.
} Whichever is largest.

Bearing Thickness, in. = (0.012) (beam length, ft.) or = No less than 1/2 in.

Bearing Hardness: Compressive Stress, psi = $\frac{\text{(dead + live loads, lb.)}}{\text{(bearing length x width, in.)}}$

Shape Factor = $\frac{\text{(bearing length x width, in.)}}{\text{2 (bearing length + width, in.) (bearing thichness, in.)}}$

Recommended shape factor for design should be minimum of 5 to maximum of 12.

Check Slippage: Beam travel bearing can absorb without slip = $\frac{\text{(dead load,lb.) (bearing thickness, in.)}}{\text{(5) (bearing length x width, in.)}}$ ÷

1.9 if lowest temp. is 20°F. | 110 if hardness is 50
1.8 if lowest temp. is 0°F. | 160 if hardness is 60
1.5 if lowest temp. is -20°F. | 215 if hardness is 70

Beam travel that will occur, in. = (0.00006) (temp. range °F) (beam length, ft.)

AASHTO SPECIFICATION - M251

		50 Duro	60 Duro	70 Duro
ASTM Standard	**PHYSICAL PROPERTIES** Hardness ASTM D2240 Tensile strength, min. psi ASTM D 412 Ultimate elongation, min. %	 50 + 5 2500 400	 60 + 5 2500 350	 70 + 5 2500 300
D573 70 hr. 212°F	**HEAT RESISTANCE** Change in durometer hardness, max. points Change in tensile strength, max. % Change in ultimate elongation, max. %	 +15 -15 -40	 +15 -15 -40	 +15 -15 -40
D395 Method B	**COMPRESSIVE SET** 22 hours, 212°F, max. %	35	35	35
D1149	**OZONE** 100 pphm ozone by air in volume 20% strain 100°F + 2°F, 100 hour mounting procedure D518, Procedure A	No Cracks	No Cracks	No Cracks
D429, B	**ADHESION** Bond made during vulcanization lbs. per inch	40	40	40
ASTM D746 Procedure B	**LOW TEMPERATURE TEST** Brittleness at -40°F	No failure	No failure	No failure