TABLE OF CONTENTS – BEARINGS

CHAPTER 13

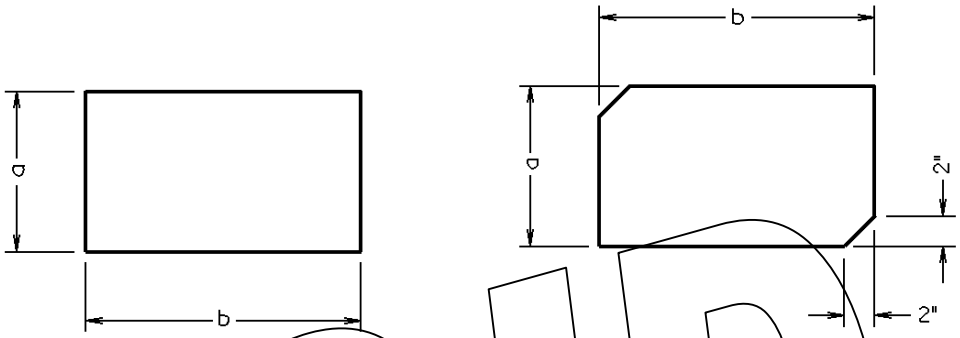
This chapter is under development and will be revised at a later date.

Data in this chapter is provided for use until revisions are complete.

NEOPRENE BEARING PAD DESIGN

The information contained herein and the attached curves are useful in conjunction with the requirements of AASHTO Standard Specifications for Highway Bridges for the design of neoprene bearing pads.

Computer output is available for rectangular plain pads (Type I) of various sizes and a program is available for retangular plain pads with 2" x 2" corner cuts (Type III) and other shapes not currently used. Hardness ranges from 50 to 70 in 10-point increments. The design formulas shown are those used in the computer program and are based on information in DuPont's "Design of Neoprene Bridge Bearing Pads" and the AASHTO Specifications.



(1) Area, sq. in. - I : $A = ab$

III : $A = ab - 2 \times \frac{1}{2} \times 2.0 \times 2.0 = ab - 4.0$

(2) Shape Factor - I : $SF = \dfrac{ab}{2t\,(a + b)}$

III : $SF = \dfrac{ab - 2 \times \frac{1}{2} \times 2.0 \times 2.0}{(2t\,(a - 2.0 + b - 2.0) + 2t\,(1.4 \times 2.0))}$

$= \dfrac{ab - 4.0}{2t\,(a + b - 1.2)}$

(3) Maximum span length (one end fixed)

Steel: $L = \dfrac{t}{2 \times 0.0000065 \times 12 \times 120}$

Concrete: $L = \dfrac{t}{2 \times 0.000006 \times 12 \times 70}$

(4) Maximum dead load, pounds -

$P_d = 500\ A$ (but not to exceed total load deflection limit)

(5) Maximum total load, pounds -

$P_t = A \times {}^{*}f_t$ (800 psi max.)

*From stress-strain curves at maximum deflection limits (for plain pads: 7% for DL + LL without impact).

(6) Minimum dead load, pounds -

$P = 200\ A$

This formula gives the minimum dead load required to prevent slippage at full shear movement. For a given pad, this load may be reduced in the proportion of actual span length to the maximum allowable span length given by formula (3).