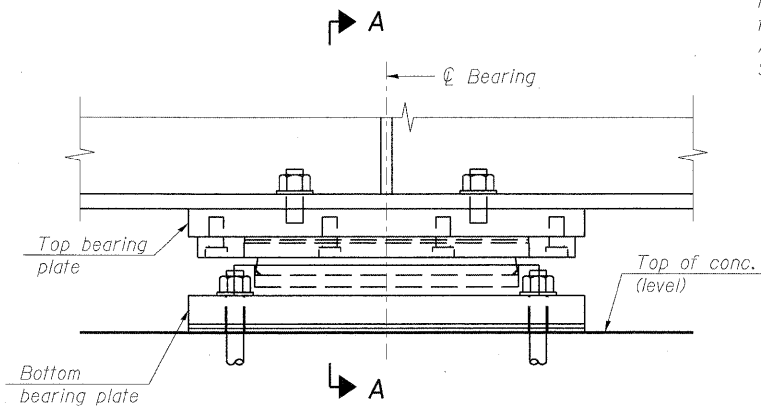


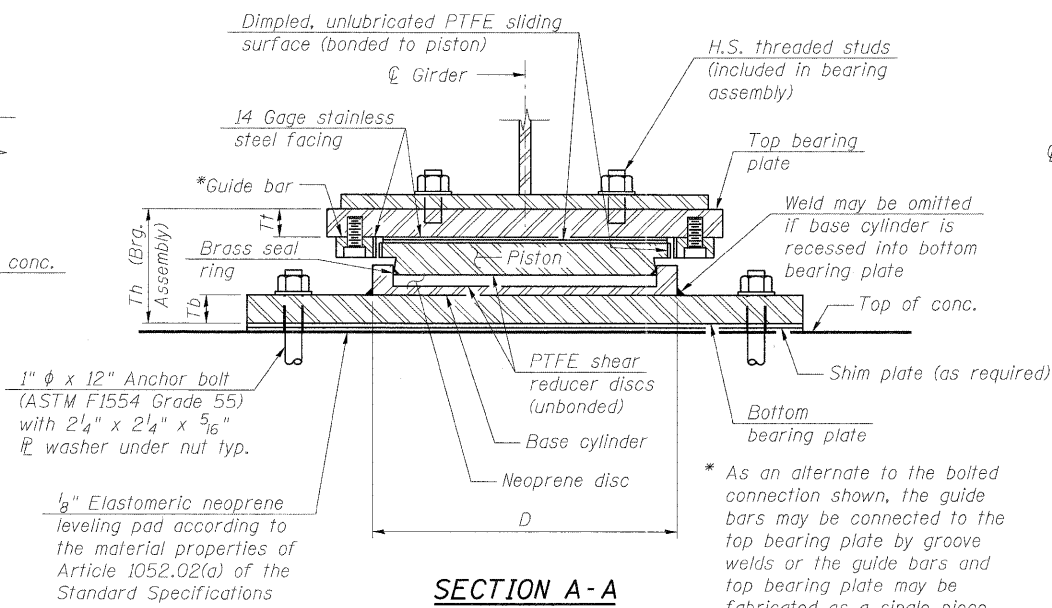
**ELEVATION**  
(At Abutment)



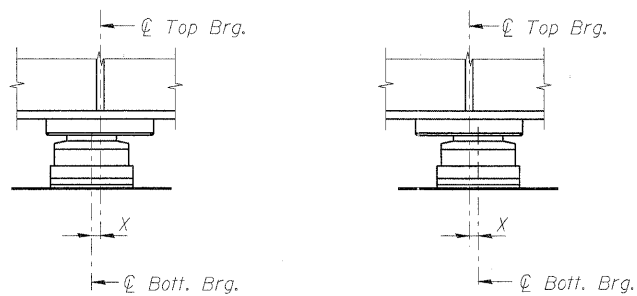
**ELEVATION**  
(At Pier)

**BILL OF MATERIAL**

Item	Unit	Total
HLMR Bearings, Guided Expansion, 200 kips	Ea.	10
HLMR Bearings, Guided Expansion, 450 kips	Ea.	25
Anchor Bolts, 1"	Ea.	140



**SECTION A-A**

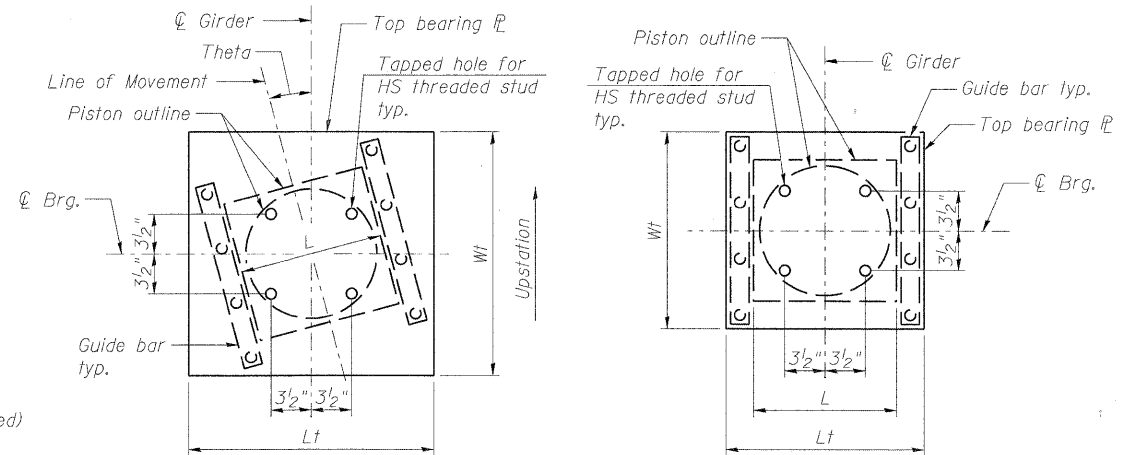


**SETTING ANCHOR BOLTS AT EXP. BRG.**  
 X = 1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50° F.

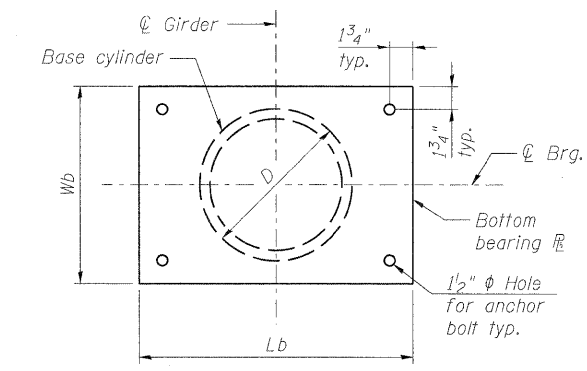
**BEARING DIMENSIONS**

Location	Pay Item Designation (kips)	Vert. Design Load** (kips)	Horiz. Design Load** (kips)	Required Rotation Range*** (radians)	Max. Theor. Thermal Movement @ 50 °F	Top Plate				Bearing Assembly		Bottom Plate		Total Ht.	
						Wt	Lt	Tt	Theta	L	D	Wb*	Lb*		Tb
W. Abut.	200	177	13	0.02	3 1/8"	1'-11"	1'-9 1/4"	1 1/2"	19°31'0"	11 1/4"	11 3/4"	1'-11"	2'-6 1/4"	1 1/4"	6 3/4"
Pier 1	450	440	48	0.02	2 3/8"	2'-2"	2'-3"	2 1/4"	11°51'39"	1'-5 1/2"	1'-6 3/8"	2'-2"	3'-0"	2 1/8"	10 3/8"
Piers 2, 5	450	440	48	0.02	1 1/2"	1'-8"	1'-11"	2 1/4"	-	1'-5 1/2"	1'-6 3/8"	1'-10 3/4"	2'-8"	2 1/8"	10 3/8"
Pier 6	450	440	48	0.02	2 3/8"	1'-9 3/4"	1'-11"	2 1/4"	-	1'-5 1/2"	1'-6 3/8"	1'-10 3/4"	2'-8"	2 1/8"	10 3/8"
Pier 7	450	440	48	0.02	3 3/8"	1'-11 3/4"	1'-11"	2 1/4"	-	1'-5 1/2"	1'-6 3/8"	1'-11 3/4"	2'-8"	2 1/8"	10 3/8"
E. Abut.	200	177	13	0.02	4 1/8"	1'-10 1/2"	1'-6"	1 1/2"	6°16'48"	11 1/4"	11 3/4"	1'-10 1/2"	2'-3"	1 1/4"	6 3/4"

\* To be verified by the contractor for proper access of the drilling tool.  
 \*\* Design Loads are the governing service loads.  
 \*\*\* Rotation allowances for fabrication tolerances (0.005 radians) and installation uncertainties (0.005 radians) excluded.



**TOP BEARING PL AND PISTON PLAN**



**BOTTOM BEARING PL AND POT PLAN**

**NOTES:**

- All steel for bearings shall conform to the requirements of AASHTO M270 Grade 50, unless otherwise noted.
- Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554. Anchor bolts may be either cast in place or installed in holes drilled after the member is in place. Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
- Threaded studs shall conform to the requirements of AASHTO M 164.
- PTFE and stainless steel materials shall conform to AASHTO requirements and the Special Provision for High Load Multi-Rotational Bearings.
- Anchor bolts shall be hot-dipped galvanized in accordance with AASHTO M232 (ASTM A153). Studs, nuts, and washers shall be mechanically galvanized in accordance with AASHTO M298.
- Bearings shall be assembled at the plant and delivered to the site as a complete unit. All bearings shall be marked prior to shipping. The marks shall include the bearing location on the bridge, an arrow indicating orientation, and the normal position of the bearing. All marks shall be permanent and be visible after the bearing is installed. All components of the bearing, including anchor bolts and sockets, shall be provided by a single manufacturer.
- Disk bearings will be permitted as a substitute at no additional cost. Inverted pot bearings are not allowed.
- Total bearing height (Th) is estimated based on manufacturer data. Actual bearing height may differ from contract plans. The Contractor shall be responsible verifying bearing heights and adjusting seat elevations, if required, prior to placing pier or abutment concrete. Modifications to the Wt dimension for bearings at abutments shall take into account the location of the backwall and required expansion length if exceeding the end of the girder.
- Bearing assemblies shall be designed and assembled to allow for replacement by jacking the superstructure.
- Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

**benesch**  
 engineers · scientists · planners  
 Alfred Benesch & Company  
 205 North Michigan Avenue, Suite 2400  
 Chicago, Illinois 60601  
 312-565-0450 Job No. 10092

FILE NAME = 0456024\_036\_HLMRBrg.dgn  
 USER NAME = akoeschall  
 DESIGNED - MFH  
 CHECKED - AJK  
 DRAWN - MFH  
 CHECKED - HMA  
 PLOT SCALE =  
 PLOT DATE = 11/9/2011

REVISIONS  
 REVISED -  
 REVISED -  
 REVISED -  
 REVISED -



**CITY OF ST. CHARLES**

**HLMR GUIDED EXPANSION BEARING DETAILS**  
**STRUCTURE NO. 045-6024 RED GATE ROAD OVER THE FOX RIVER**  
 SHEET NO. S36 OF 556 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	04-00092-00-BR	KANE	440	258
				CONTRACT NO. 63650
ILLINOIS FED. AID PROJECT				

11/9/2011 5:04:04 PM x:\10000s\10092\engineering\documents\redgatephaseau\groverfoxriver\final\plans\0456024\_036\_HLMRBrg.dgn