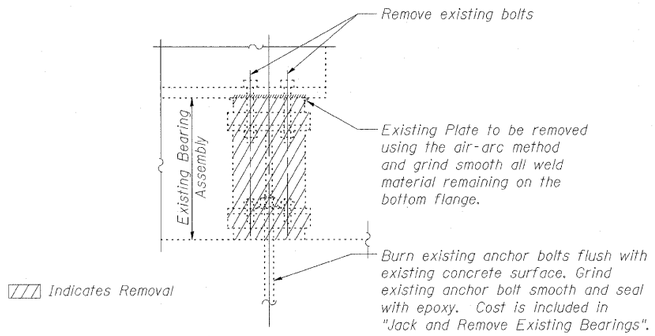
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



EXISTING BEARING REMOVAL DETAIL

(18 Required)
6 at each Abutment & 6 at Pier 2

PROCEDURE TO JACK AND REMOVE EXISTING BEARINGS

(North & South Abutments & Pier No. 2, Span 2 only)
(Minimum Jack Capacity Required 60 tons at the Abutments and 110 tons at Pier 2)

1. Jack and Remove Existing Bearings shall be conducted according to the Bridge Special Provision "Jack and Remove Existing Bearings. See Interior Beam Reaction Table for loads.
2. Jacking and removing existing bearings shall be done after partial deck concrete removal and before new deck concrete is poured.
3. Three beams may be lifted simultaneously, as outlined in the stage construction layout.
4. The existing anchor bolts shall be cut off flush with the existing bridge seat, the rockers, top and bottom plates shall be removed.
5. Formwork and bearing seat construction shall occur.
6. The new elastomeric bearings shall be placed and the jacks shall be lowered.
7. The new holes for the side retainers shall be drilled at the locations specified.
8. No Bearing Replacement is required at Pier 1 and (Pier 2 - Span 3). Clean and paint as specified for Structural Steel.

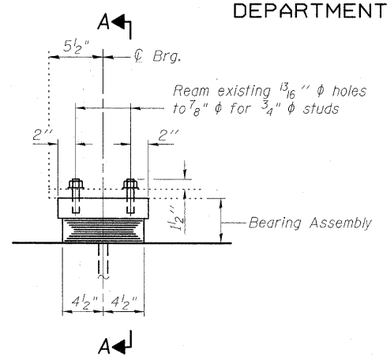
Notes:

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.

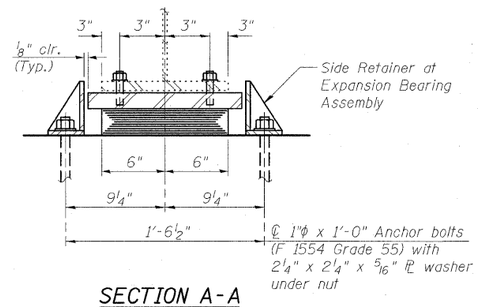
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

Side retainers and other steel members required at the expansion bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.
See Sheet 16 of 27 for Anchor Bolt location Details at South Abutment.
See Sheet 19 of 27 for Anchor Bolt location Details at North Abutment.
See Sheet 22 of 27 for Anchor Bolt location Details at Pier 1.
See Sheet 25 of 27 for Anchor Bolt location Details at Pier 2.
Side retainers, anchor bolts, nuts, washers and bearing plates may be galvanized according to AASHTO M111 or M232 (as applicable).
Side Retainers at the Encased Fixed Bearings shall be paid for as Furnishing & Erecting Structural Steel.



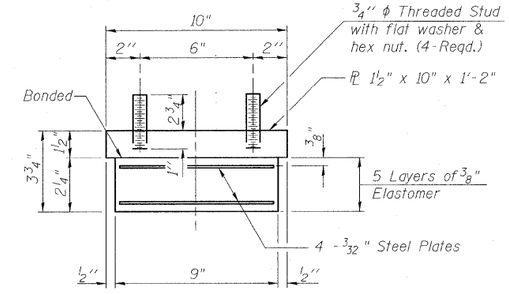
ELEVATION



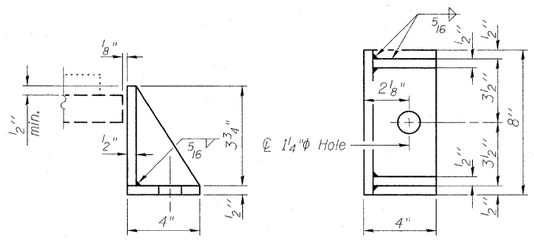
SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

(18 Required)
6 at each Abutment & 6 at Pier 2

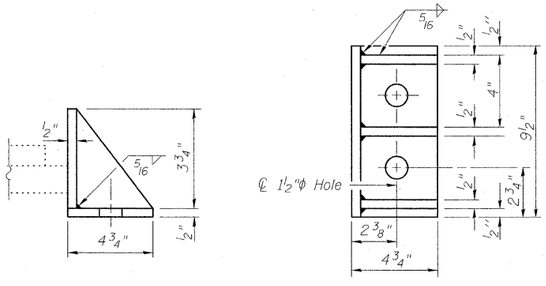


BEARING ASSEMBLY



SIDE RETAINER AT EXPANSION BEARING ASSEMBLY

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



SIDE RETAINER AT ENCASED FIXED BEARINGS

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

INTERIOR GIRDER MOMENT TABLE		
		0.5 Span
I_s	(in^4)	9750
$I_c(n)$	(in^4)	21790
$I_c(3n)$	(in^4)	16008
S_s	(in^3)	542
$S_c(n)$	(in^3)	734
$S_c(3n)$	(in^3)	664
$\mathcal{D}$	(k/')	0.701
$M\mathcal{D}$	('k)	315.5
$s\mathcal{D}$	(k/')	0.287
$M_s\mathcal{D}$	('k)	129.2
$M\ell$	('k)	439.0
$M\,IM$	('k)	118.5
$\frac{5}{3}[M\ell + I]$	('k)	929.2
M_a	('k)	1786.1
M_u	('k)	2857
f_s $\mathcal{D}$ non-comp	(ksi)	6.99
f_s $\mathcal{D}$ (comp)	(ksi)	2.33
f_s $\frac{5}{3}[M\ell + M_I]$	(ksi)	15.19
f_s (Overload)	(ksi)	24.77
f_s (Total)	(ksi)	31.90

I_s, S_s: Non-composite moment of inertia and section modulus of the steel section used for computing f_s(Total and Overload) due to non-composite dead loads (in.^{4}and in.^{3}).

$I_c(n)$, $S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s(Total and Overload) due to short-term composite live loads (in.^{4}and in.^{3}).

$I_c(3n)$, $S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s(Total and Overload) due to long-term composite (superimposed) dead loads (in.^{4}and in.^{3}).

$\mathcal{D}$: Un-factored non-composite dead load (kips/ft.).

$M\mathcal{D}$: Un-factored moment due to non-composite dead load (kip-ft.).

$s\mathcal{D}$: Un-factored long-term composite (superimposed) dead load (kips/ft.)

$M_s\mathcal{D}$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

$M\ell$: Un-factored live load moment (kip-ft.).

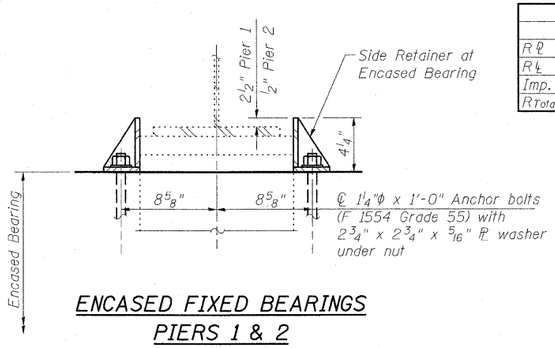
M_I: Un-factored moment due to impact (kip-ft.).

M_a: Factored design moment (kip-ft.).
$1.3\,[M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\ell + M_I)]$

M_u: Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).

f_s (Overload): Sum of stresses as computed from the moments below (ksi).
$M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\ell + M_I)$

f (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\,[M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\ell + M_I)]$



ENCASED FIXED BEARINGS
PIERS 1 & 2

INTERIOR BEAM REACTION TABLE					
		S. Abut.	Pier 1	Pier 2	N. Abut.
$R\mathcal{D}$	(k)	29.6	59.0	58.2	28.7
$R\ell$	(k)	37.0	68.3	68.2	36.8
Imp.	(k)	10.0	18.4	18.4	9.9
R_{Total}	(k)	76.6	145.8	144.7	75.5

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	18
Anchor Bolts, 1"	Each	36
Anchor Bolts, 1¼"	Each	72
Jack & Remove Existing Bearings	Each	18
Furnishing & Erecting Structural Steel	Pound	540

BEARING DETAILS
STRUCTURE NO. 025-0001

DESIGNED	B.B.
CHECKED	C.J.F.
DRAWN	W.J.S.
CHECKED	C.J.F. & B.B.

BERNARDIN LOCHMUELLER & ASSOCIATES, INC.
3 Oak Drive
Maryville, IL 62062-5635
Local-(618) 288-4665
Fax 618-288-4666

SHEET NO. 14	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
27 SHEETS	57	(25-3HB)I-2	EFFINGHAM	1416	1368
	SN 025-0001		CONTRACT NO. 74296		
	FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		