

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F.A.P. 717	SECTION 101B-1	COUNTY LOGAN	TOTAL SHEETS 49	SHEET NO. 27	SHEET NO. 11 23 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

Contract #72A04

	0.4 Sp. 1	Pier	0.5 Sp. 2
I_s	(in ⁴) 10926	18227	13797
I_c (n)	(in ⁴) 27333		31856
I_c (3n)	(in ⁴) 20641		24064
S_s	(in ³) 502	814	627
S_c (n)	(in ³) 703		834
S_c (3n)	(in ³) 645		769
Z	(in ³)		
ϕ	(k/ft.) 0.742	1.251	0.766
$M\phi$	('k) 72	-1275	582
$s\phi$	(k/ft.) 0.450		0.450
$Ms\phi$	('k) 72		402
$M\ddagger$	('k) 412	-492	735
M (Imp)	('k) 107	-113	147
$\ddagger_3[M\ddagger + M(\text{Imp})]$	('k) 865	-1008	1470
Ma	('k) 1312	-2968	3190
Mu	('k) 2888		4000
$fs\phi$ non-comp	(ksi) 1.7	-18.8	11.1
$fs\phi$ comp	(ksi) 1.3		6.3
$fs\ddagger_3(\ddagger + \text{Imp})$	(ksi) 14.8	-14.9	21.2
fs (Overload)	(ksi) 17.8	-33.7	38.6
fs (Total)	(ksi)	-43.8	
VR	(k) 47.0		42.0

	Abut.	Pier
$R\phi$	(k) 22	134
$R\ddagger$	(k) 32	53
Imp.	(k) 9	13
R (Total)	(k) 63	200

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload).

I_c and S_c are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

I_c and S_c are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)

VR is the maximum Live Load + Impact shear range in span.

Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.

Ma (Applied Moment) = $1.3[M\phi + Ms\phi + \ddagger_3(M\ddagger + M(\text{Imp}))]$.

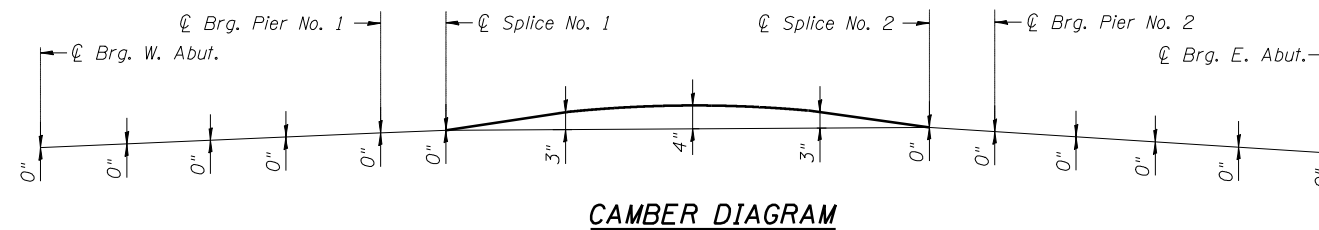
The Plastic Moment capacity (Mu) is computed according to AASHTO 10.48.1 and 10.50.1.1.

fs (Overload) is the sum of the stresses due to $M\phi + Ms\phi + \ddagger_3(M\ddagger + M(\text{Imp}))$.

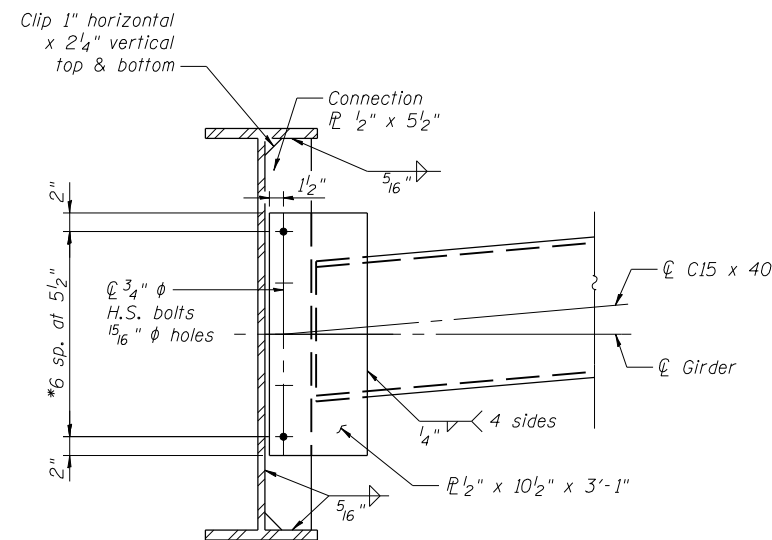
fs (Total) (Non-compact section) is the sum of the stresses due to $1.3[M\phi + Ms\phi + \ddagger_3(M\ddagger + M(\text{Imp}))]$.

Girder	¢ Brg. W. Abut.	¢ Brg. Pier No. 1	¢ Splice 1	¢ Splice 2	¢ Brg. Pier No. 2	¢ Brg. E. Abut.
1	529.31	529.52	529.56	529.60	529.54	529.22
2	529.42	529.63	529.67	529.71	529.65	529.33
3	529.51	529.72	529.76	529.80	529.74	529.43
4	529.51	529.72	529.76	529.80	529.74	529.43
5	529.42	529.63	529.67	529.71	529.65	529.33
6	529.31	529.52	529.56	529.60	529.54	529.22

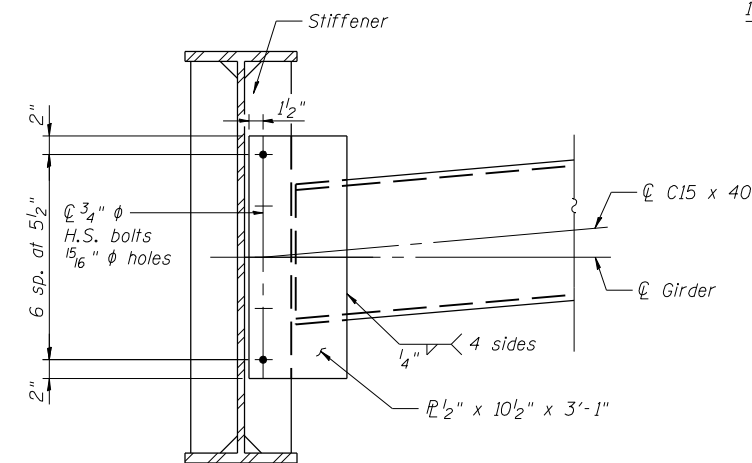
Top of web elevations at the splices have been adjusted for dead load deflection.
* For Fabrication Only



* $2\frac{3}{16}$ " vertical x $\frac{1}{16}$ " slotted holes in connection ϕ at south side of Girder 3 only. Provide $\frac{5}{16}$ " hardened washers for all slotted holes. The bolts for slotted holes shall only be finger tightened prior to pouring the Stage II deck then fully tightened after completion of the pour. The top of the slotted holes shall be located at the final diaphragm bolt locations.



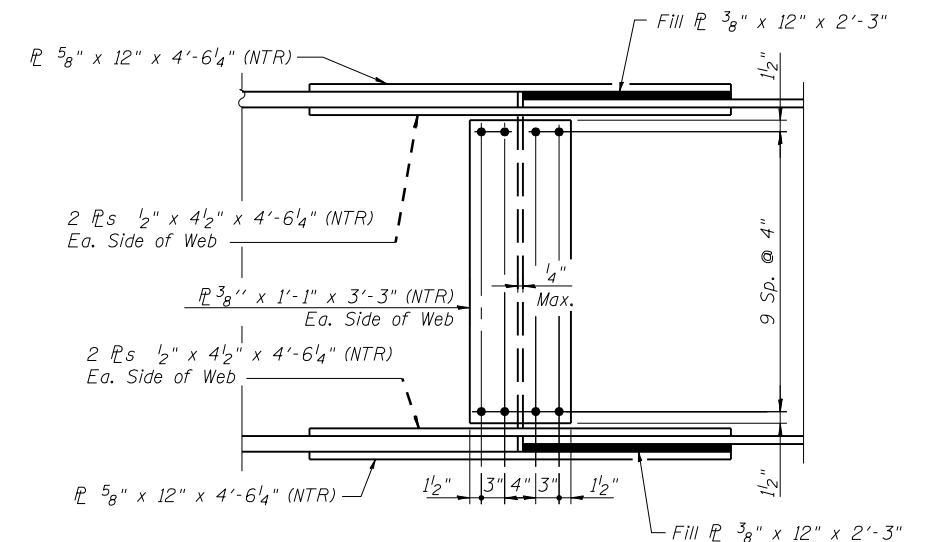
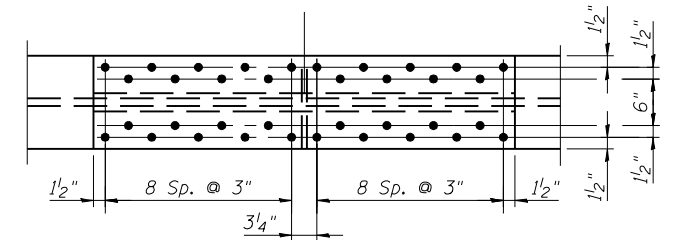
DIAPHRAGM D
55 Required



DIAPHRAGM D1
10 Required

Note:

Two hardened washers required for each set of oversized holes.
All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.



FIELD SPICE DETAIL
(Splice 1 shown
Splice 2 similar by rotation thru 180°)

DESIGNED	D.J.T. & S.D.S.
CHECKED	J.J.P. & S.D.S.
DRAWN	L.M.G. & D.L.H.
CHECKED	D.J.T. & S.D.S.

WHKS & CO.
ENGINEERS PLANNERS LAND SURVEYORS
MASON CITY, IOWA DUBUQUE, IOWA AMES, IOWA
E. DUBUQUE, ILLINOIS SPRINGFIELD, ILLINOIS ROCHESTER, MINNESOTA

STRUCTURAL STEEL DETAILS
IL ROUTE 10 OVER PRAIRIE CREEK
F.A.P. ROUTE 717 - SECTION 101B-1
LOGAN COUNTY
STATION 254+75.91
STRUCTURE NO. 054-0507