

		0.4 Sp. #1	Pier	0.5 Sp. #2
$I_s$	(in <sup>4</sup> )	3100	3100	3100
$I_{c(n)}$	(in <sup>4</sup> )	8635		8635
$I_{c(3n)}$	(in <sup>4</sup> )	6410		6410
$S_s$	(in <sup>3</sup> )	258	258	258
$S_{c(n)}$	(in <sup>3</sup> )	378		378
$S_{c(3n)}$	(in <sup>3</sup> )	343		343
$Z$	(in <sup>3</sup> )		289	
$DL$	(k/')	0.776	1.218	0.776
$M_{DL}$	(k)	160	339	85
$s_{DL}$	(k/')	0.442		0.442
$M_{sDL}$	(k)	100		71
$M_{LL}$	(k)	345	175	321
$M_{(Imp)}$	(k)	98	49	88
$5/3(M_{LL} + M_{(Imp)})$	(k)	738	374	682
$M_a$	(k)	1298	927	1090
$M_u$	(k)	1787	1204	1787
$f_s DL$ (non-comp)	(ksi)	7.4	15.8	4.0
$f_s DL$ (comp)	(ksi)	3.5		2.5
$f_s 5/3(M_{LL} + M_{(Imp)})$	(ksi)	23.4	17.4	21.7
$f_s$ (Overload)	(ksi)	34.4	33.2	28.1
$f_s$ (Total)	(ksi)			
$VR$	(k)	48.2		35.5

\* Compact, Braced section.  
\*\* Non-Compact Section

		Abut.	Pier
$R_{DL}$	(k)	25.2	72.9
$R_{LL}$	(k)	34.7	41.0
$Imp.$	(k)	9.8	11.6
$R$ (Total)	(k)	69.7	125.4

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

$I_{c(n)}$  and  $S_{c(n)}$  are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

$I_{c(3n)}$  and  $S_{c(3n)}$  are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads.

$VR$  is the maximum LL + impact shear range within the composite portion of the span.

$Z$  is the plastic section modulus used to determine the Fully Plastic Moments in the non-composite areas.

The Plastic Moment Capacity ( $M_p$ ) is computed according to AASHTO 10.48.1 and 10.50.1.1.

$M_{DL}$  - moment due to dead loads on non-composite section

$M_{sDL}$  - moment due to dead loads on composite section

$M_{LL}$  - moment due to live loads on non-composite or composite section

$M_{(Imp)}$  - moment due to live load impact on non-composite or composite section

$M_a$  (Applied Moment) =  $1.3[M_{DL} + M_{sDL} + \frac{5}{3}(M_{LL} + M_{(Imp)})]$ .

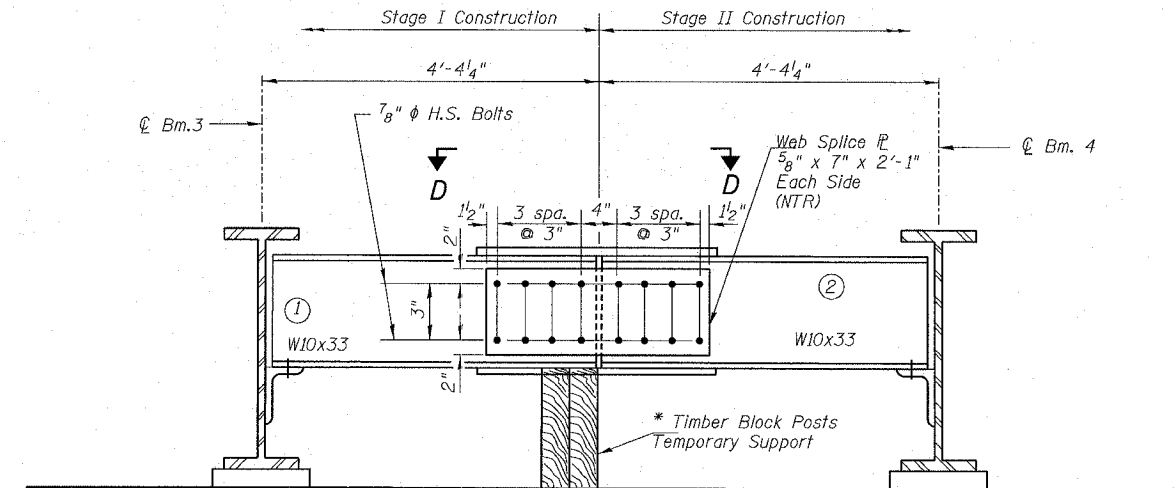
$f_s$  (Overload) is the sum of the stresses due to  $M_{DL} + M_{sDL} + \frac{5}{3}(M_{LL} + M_{(Imp)})$ .

$f_s$  (Total) is the sum of the stresses due to  $1.3[M_{DL} + M_{sDL} + \frac{5}{3}(M_{LL} + M_{(Imp)})]$ .

TOP OF BEAM ELEVATIONS BEFORE DEFLECTIONS \*\*\*

	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6
CL. Brg. N. Abut	647.570	647.710	647.820	647.830	647.730	647.610
CL Splice 1	647.580	647.720	647.820	647.820	647.720	647.590
CL Brg. Pier 1	647.575	647.713	647.812	647.811	647.708	647.577
CL Brg. Pier 2	647.545	647.667	647.758	647.749	647.632	647.493
CL Splice 2	647.540	647.660	647.750	647.740	647.620	647.480
CL. Brg. S. Abut	647.480	647.590	647.670	647.650	647.520	647.370

\*\*\* For Fabrication Only



**DIAPHRAGM D2**

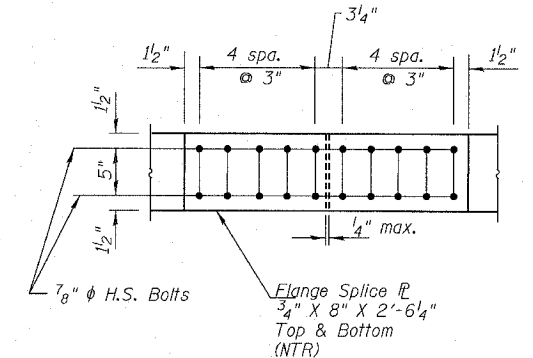
2 Required  
(looking South)

For details of connections to beams see diaphragm D

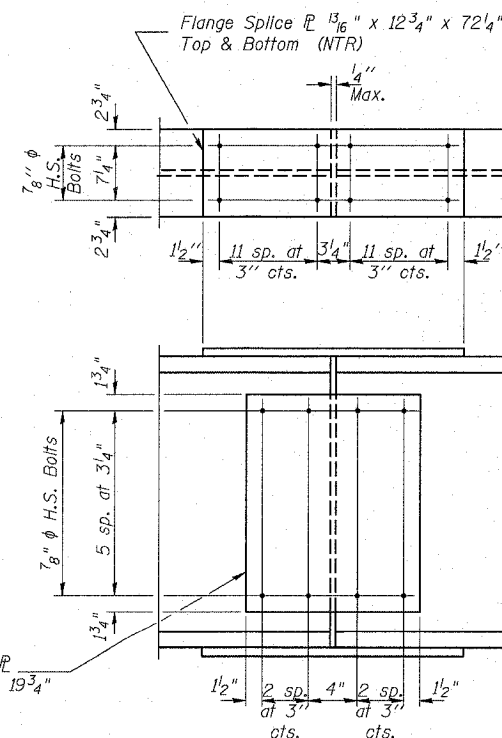
\* Cost of Timber Block Posts included with "Furnishing and Erecting Structural Steel".

**DIAPHRAGM D2 CONSTRUCTION SEQUENCE**

- 1.) Order Diaphragm D2 in two sections with lengths of 4'-3 3/4" and 4'-3 3/4".
- 2.) Attach section ① of Diaphragm to Beam 3 and top flange splice during Stage I Construction.
- 3.) Place Timber Block Posts between section ① of diaphragm and abutment bearing seat.
- 4.) Attach section ② of diaphragm to both Beam 4 and section ① of diaphragm during Stage II Construction.
- 5.) Attach web splice plates to sections ① and ② of diaphragms.
- 6.) Remove Timber Block Posts.
- 7.) Attach bottom flange splice plate to sections ① and ② of diaphragms.

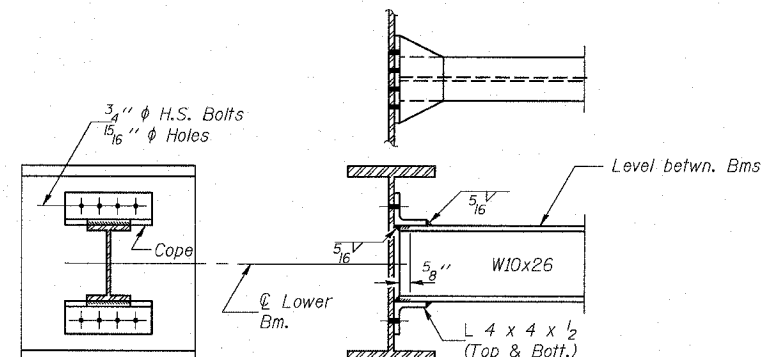


VIEW D-D



**SPLICE**

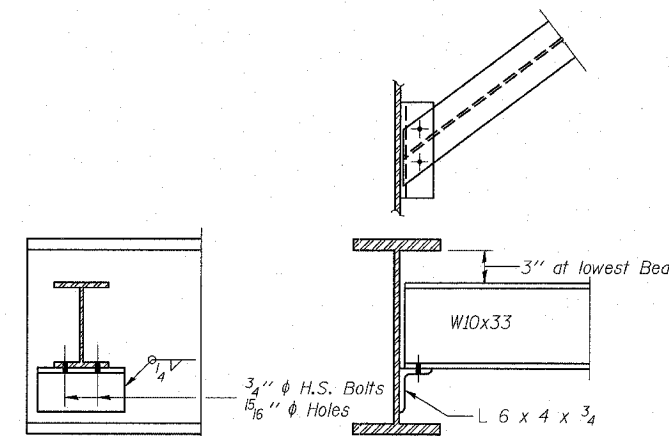
12 Required



**DIAPHRAGM D1**

40 Required

Note:  
Two hardened washers shall be required over all oversize holes for diaphragms.



**DIAPHRAGM D**

8 Required

Note: NTR denotes Notch Toughness Requirements

**DIAPHRAGM & SPLICE DETAILS**  
IL RTE 40 OVER WINNEBAGO DITCH  
F.A.P. 646 SECTION (102)BR-3  
WHITESIDE COUNTY  
STATION 558+38  
S.N. 098-0109

DESIGNED	DDB		FILE NUMBER	136.110
CHECKED	AMPH		DATE	Aug. 2005
DRAWN	JDB			
ENGINEER	DDB			

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