

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 595	5HBR	Rock Island	139	71
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract #64931

SHEET NO. 21  
33 SHEETS

INTERIOR GIRDER MOMENT TABLE			
	0.4 Sp. 1	Pier	0.6 Sp. 2
$I_s$	(in <sup>4</sup> ) 7450	7450	7450
$I_c$ (n)	(in <sup>4</sup> ) 19447		19447
$I_c$ (3n)	(in <sup>4</sup> ) 14357		14357
$S_s$	(in <sup>3</sup> ) 448	448	448
$S_c$ (n)	(in <sup>3</sup> ) 647		647
$S_c$ (3n)	(in <sup>3</sup> ) 587		587
$\rho$	(k/ft.) 0.870	1.361	0.870
$M\rho$	(k) 365.9	725.4	177.9
$s\rho$	(k/ft.) 0.491		0.491
$M_s\rho$	(k) 225.7		119.5
$M_L$	(k) 600.6	304.3	461.0
$M$ (Imp)	(k) 151.3	79.4	124.6
$S_3[M_L + M(\text{Imp})]$	(k) 1253	640	976
$M_a$	(k) 2398	1774	1655
$M_u$	(k) 2576	-	2687
$f_s\rho$ non-comp	(k.s.i.) 9.8	19.4	4.8
$f_s\rho$ (comp)	(k.s.i.) 4.6		2.4
$f_s S_3(L + \text{Imp})$	(k.s.i.) 23.2	17.1	18.1
$f_s$ (Overload)	(k.s.i.) 37.7	36.6	25.3
$f_s$ (Total)	(k.s.i.) -	47.5	-
VR	(k) 56.0	-	56.5

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

INTERIOR GIRDER REACTION TABLE			
	S. Abut.	Pier	N. Abut.
$R\rho$	(k) 40.1	112.8	28.7
$R_L$	(k) 41.4	51.9	39.8
Imp.	(k) 10.4	13.5	10.8
$R$ (Total)	(k) 91.9	178.2	79.3

$I_s$  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.

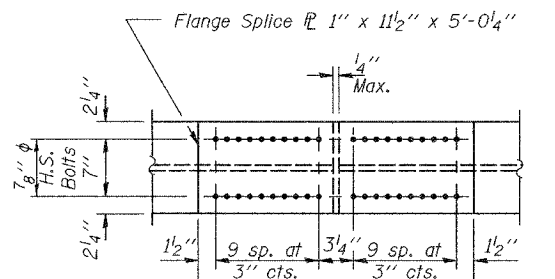
$I_c$  (3n) and  $S_c$  (3n) are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads.

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

$M_a$  (Applied Moment) =  $1.3[M\rho + M_s\rho + S_3(M_L + M(\text{Imp}))]$ .  
The Plastic Moment capacity ( $M_u$ ) is computed according to AASHTO 10.48.1 and 10.50.1.1.

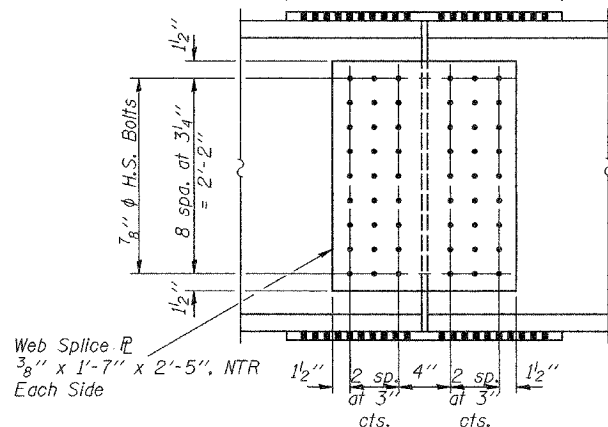
$f_s$  (Overload) is the sum of the stresses due to  $M\rho + M_s\rho + S_3(M_L + M(\text{Imp}))$ .

$f_s$  (Total) (Non-compact section) is the sum of the stresses due to  $1.3[M\rho + M_s\rho + S_3(M_L + M(\text{Imp}))]$ .



TOP & BOTTOM FLANGE PLATE

TOP OF BEAM ELEVATIONS (For Fabrication Only)				
Location	℄ S. Abut.	℄ Splice	℄ Pier	℄ N. Abut.
Bm. 1	642.97	641.23	640.90	639.28
Bm. 2	643.00	641.26	640.92	639.30
Bm. 3	643.04	641.29	640.95	639.31
Bm. 4	643.07	641.32	640.98	639.35
Bm. 5	643.08	641.32	640.98	639.35
Bm. 6	643.07	641.32	640.98	639.35
Bm. 7	643.07	641.32	640.98	639.35
Bm. 8	642.97	641.22	640.88	639.25
Bm. 9	642.75	640.99	640.65	639.02
Bm. 10	642.52	640.77	640.43	638.80
Bm. 11	642.30	640.55	640.21	638.57
Bm. 12	642.04	640.29	639.95	638.31
Bm. 13	641.78	640.03	639.69	638.05
Bm. 14	641.55	639.84	639.51	637.92

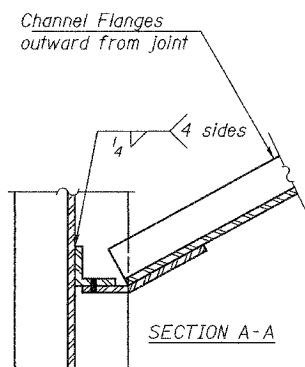


WEB PLATE

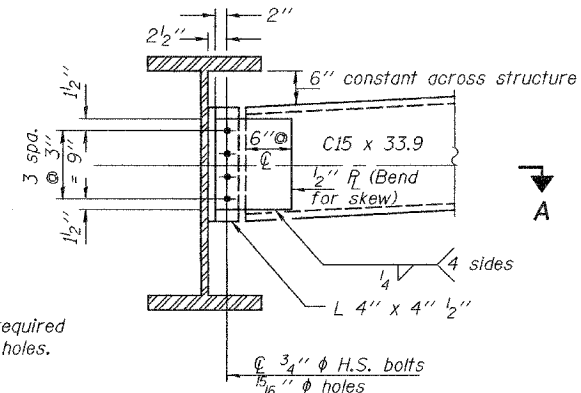
DETAIL OF SPLICE

(14 Required)  
All splice plates shall be AASHTO M270, Grade 50

Note "A": Use  $1 1/16$ " x  $1 7/8$ " slotted holes in connection angles at West side of Beam 8 except at Pier. Provide  $5/16$ " plate washers for slotted holes. The bolts for slotted holes in angles at Beam 8 shall only be finger tightened prior to the deck pour for Stage II Construction. The bolts shall be fully tightened after completion of the deck pour for Stage II Construction. Detail slots such that bolts are at top of slots prior to Stage II deck pour.



SECTION A-A

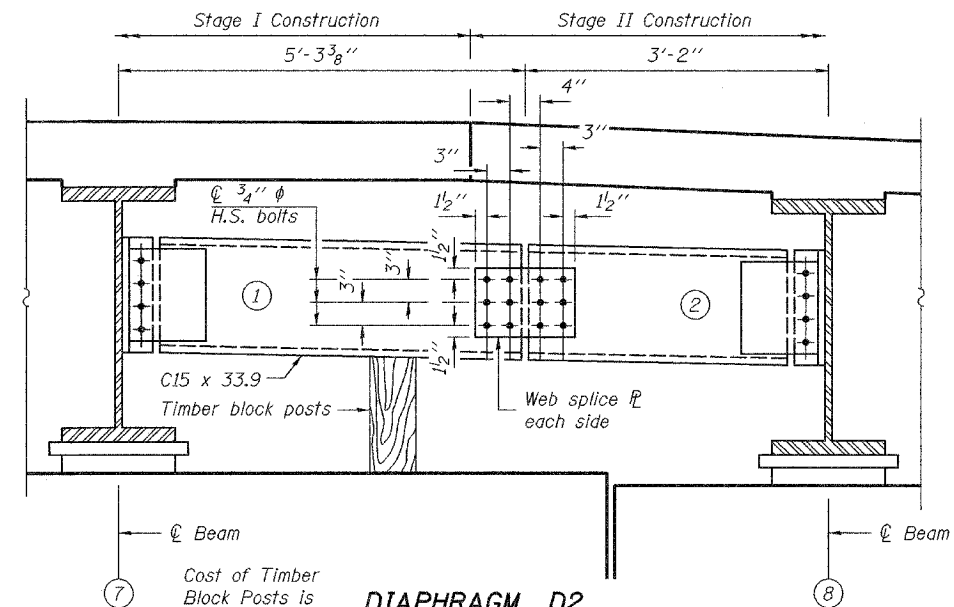


DIAPHRAGM D1

(24 Required)

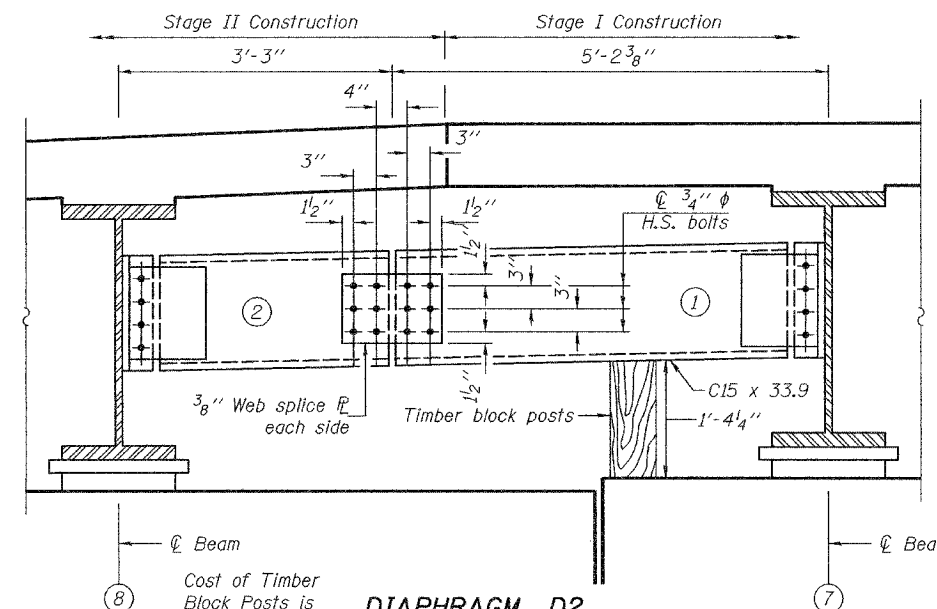
Note:  
Two hardened washers required for each set of oversized holes.

\*\*\*A C12 x 30 channel is permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.



DIAPHRAGM D2

North Abut.  
(Looking North)



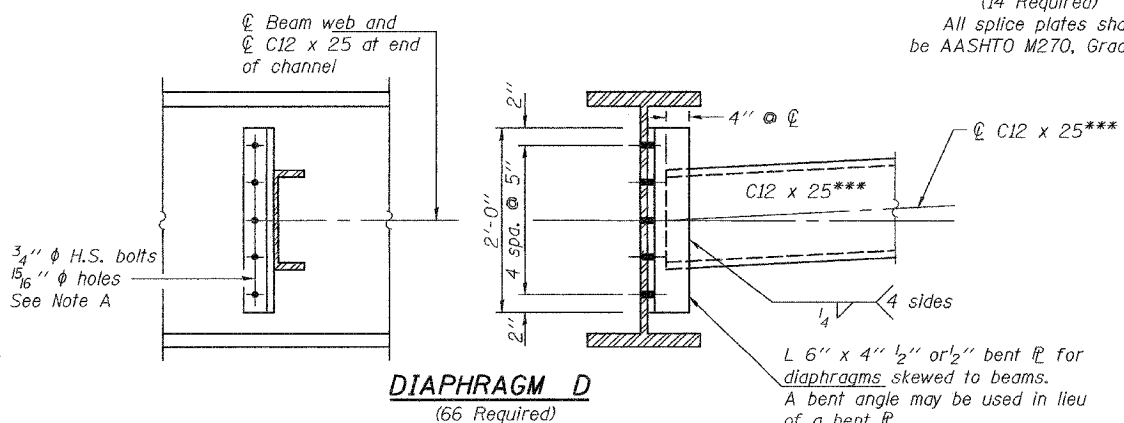
DIAPHRAGM D2

South Abut.  
(Looking South)

END DIAPHRAGM STAGE CONSTRUCTION SEQUENCE

- 1) Order Diaphragm in two sections.
- 2) Attach section ① of Diaphragm to Beam.
- 3) Place Timber Block Posts between section ① of diaphragm and abutment bearing section.
- 4) Attach section ② of diaphragm to both Beam and section ① of diaphragm during Stage II Construction with splice plates.
- 5) Remove Timber Block Posts.

STRUCTURAL STEEL DETAILS  
IL. RTE. 5 OVER IL. RTE. 84  
F.A.P. RTE. 595 - SECTION 5HBR  
ROCK ISLAND COUNTY  
STATION 623+65.69  
S.N. 081-0169



DIAPHRAGM D

(66 Required)

DESIGNED	Dewey H. Coultas
CHECKED	Chad E. Hodel
DRAWN	W.D. Collins
CHECKED	D.H.C./C.E.H.

EXAMINED	Thomas J. Demagali
PASSED	Ralph E. Anderson

October 5, 2007