

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 1671	‡	DOUGLAS	181	120
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 36
46 SHEETS

	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_s (in ⁴)	5900	5900	5900	5900	5900
I_c (n) (in ⁴)	15505	—	15505	—	15505
I_c (3n) (in ⁴)	11349	—	11349	—	11349
S_s (in ³)	359	359	359	359	359
S_c (n) (in ³)	526	—	526	—	526
S_c (3n) (in ³)	474	—	474	—	474
Z (in ³)	—	415	—	415	—
D (k/ft.)	0.713	1.155	0.713	1.155	0.713
$M\phi$ (k)	125	572	259	520	58
$s\phi$ (k/ft.)	0.442	—	0.442	—	0.442
$Ms\phi$ (k)	100	—	214	—	56
M_t (k)	342	238	470	226	267
M (Imp) (k)	94	62	113	60	78
$5_3[M_t + M(\text{Imp})]$ (k)	727	500	972	477	575
Ma (k)	1238	1394	1879	1296	896
Mu (k)	264.3	1729	264.3	1729	264.3
$fs\phi$ non-comp (k.s.i.)	4.2	19.1	8.7	17.4	1.9
$fs\phi$ (comp) (k.s.i.)	2.5	—	5.4	—	1.4
$fs_{5_3}(t + \text{Imp})$ (k.s.i.)	16.6	16.7	22.2	15.9	13.1
fs (Overload) (k.s.i.)	23.3	35.8	36.2	33.3	16.4
VR (k)	43.9	—	40.1	—	43.7

	S. Abut.	Pier 1	Pier 2	N. Abut.
$R\phi$ (k)	23.0	92.1	86.5	17.1
R_t (k)	31.0	41.0	39.7	29.7
Imp. (k)	8.5	10.5	10.4	8.6
R (Total) (k)	62.5	143.6	136.6	55.4

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

$I_{c(n)}$ 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. (see AASHTO 10.38)

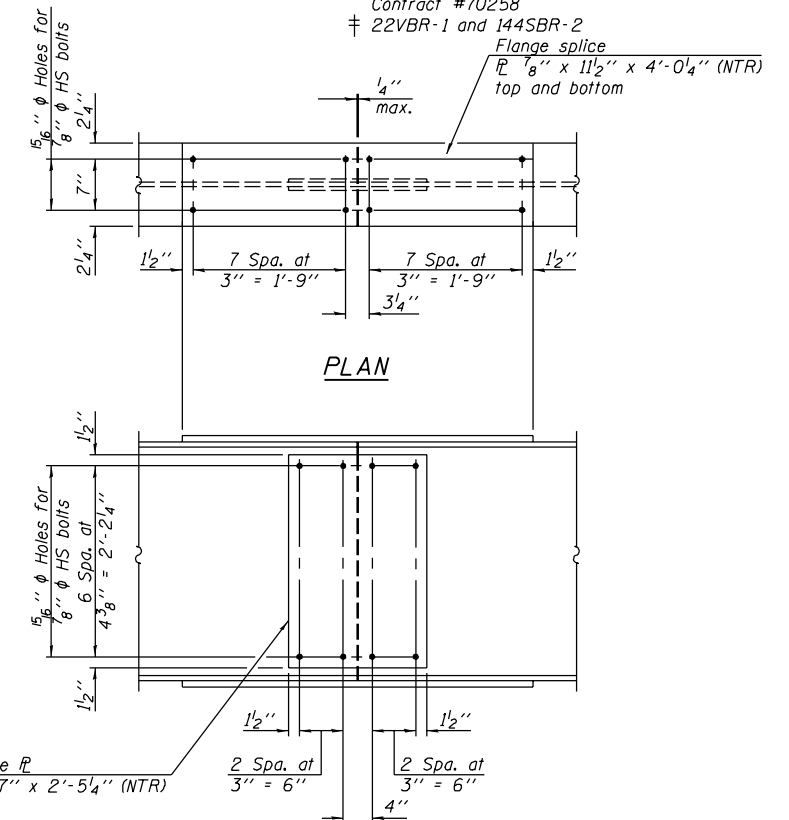
VR is the maximum Live Load + Impact shear range within the composite portion of the span.

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

Ma (Applied Moment) = $1.3[M\phi + Ms\phi + 5_3(M_t + M(\text{Imp}))]$.

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 $M\phi + Ms\phi + 5_3(M_t + M(\text{Imp}))$.



ELEVATION

SPLICE DETAIL

Typical for splice 1 and splice 2
(12 Required)

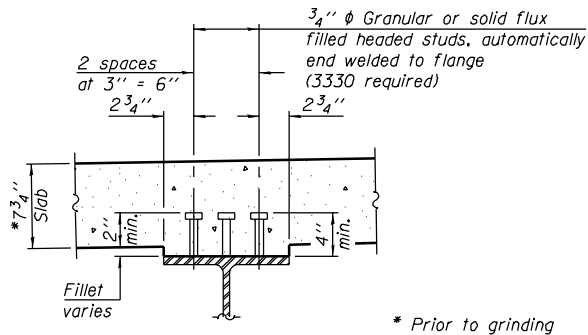
*TOP OF BEAM ELEVATIONS

Beam	1	2	3	4	5	6
⊕ Brg. South Abutment	684.31	684.42	684.51	684.50	684.41	684.30
⊕ Brg. Pier 1	684.02	684.11	684.20	684.19	684.09	683.97
⊕ Splice 1	683.96	684.05	684.14	684.13	684.03	683.91
⊕ Splice 2	683.33	683.42	683.50	683.48	683.37	683.25
⊕ Brg. Pier 2	683.19	683.28	683.35	683.34	683.23	683.11
⊕ Brg. North Abutment	682.51	682.60	682.67	682.64	682.53	682.40

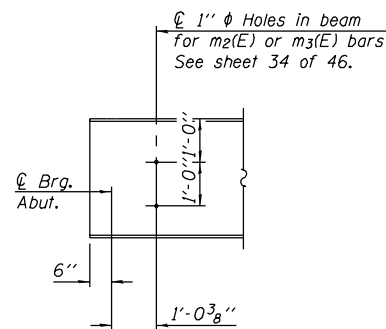
* For fabrication only.

Notes:
Two hardened washers shall be required over all oversize holes for diaphragms.
NTR denotes members to which Notch Toughness Requirements are applicable.

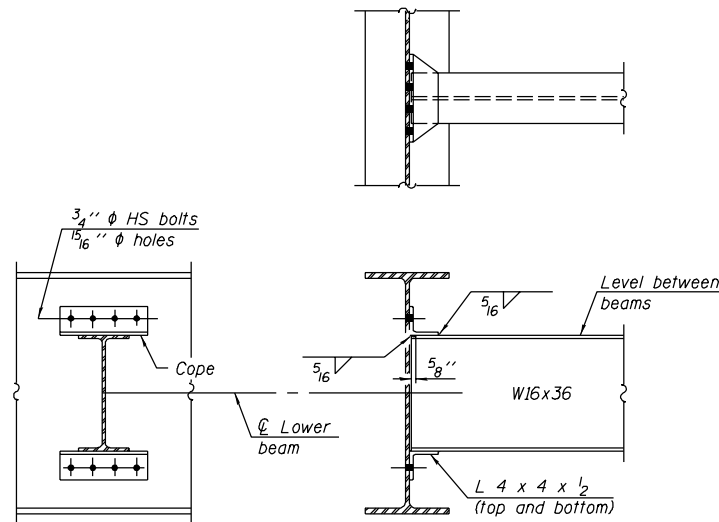
STRUCTURAL STEEL DETAILS
F.A.S. RT. 1671 - SEC. 22VBR-1
DOUGLAS COUNTY
STATION 1154+99.02
STRUCTURE NO. 021-0060



SECTION A-A



END OF BEAM
ELEVATION



DIAPHRAGM D
(60 Required)

DESIGNED	Curt M. Evoy
CHECKED	Rebecca L. Tharp
DRAWN	Michael B. Mossman
CHECKED	C.M.E. / R.L.T.

EXAMINED	Thomas J. Donagale	August 4, 2006
PASSED	Ralph E. Anderson	