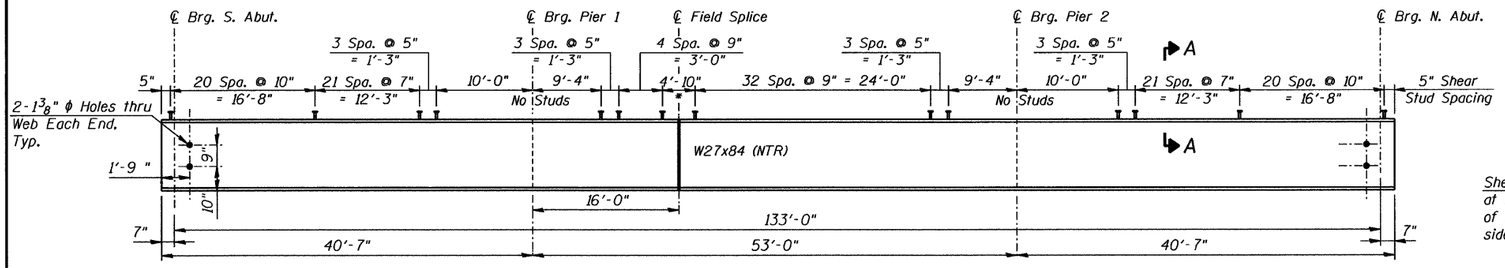
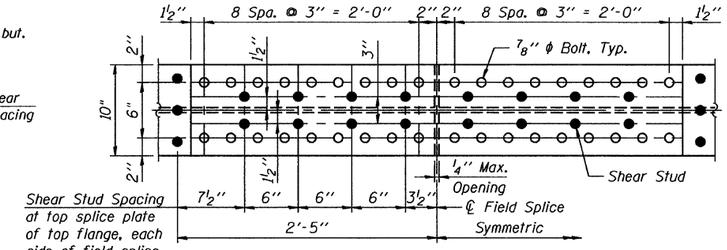
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

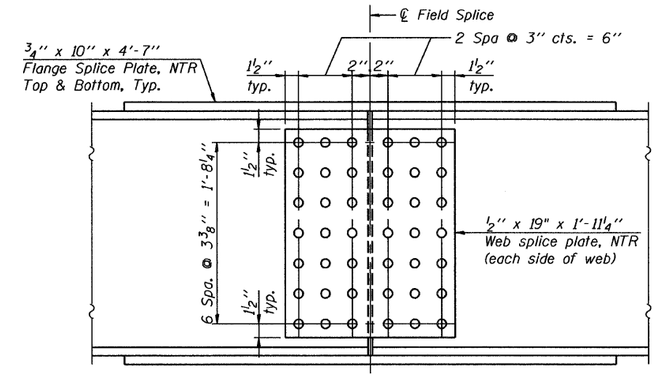


TYPICAL BEAM ELEVATION

* See Splice Details



FLANGE SPLICE PLATE



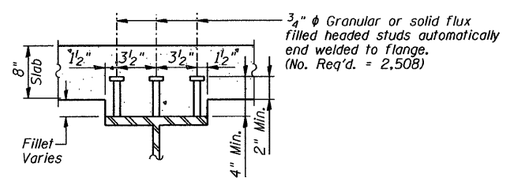
WEB SPLICE PLATE

INTERIOR BEAM MOMENT TABLE		0.4 Sp. 1 & 0.6 Sp. 3	Pier 1 & Pier 2	0.5 Span 2
I_s	(in^4)	2,850	2,850	2,850
I_c (n)	(in^4)	9,566	-	9,566
I_c (3n)	(in^4)	7,106	-	7,106
S_s	(in^3)	213	213	213
S_c (n)	(in^3)	354	-	354
S_c (3n)	(in^3)	319	-	319
DC1	(k/')	0.706	0.706	0.706
M_{DC1}	('k)	74.0	156	91.9
DC2	(k/')	0.150	0.150	0.150
M_{DC2}	('k)	18.3	26.4	26.3
DW	(k/')	0.267	0.267	0.267
M_{DW}	('k)	32.6	46.8	47.0
M_{LL+Imp}	('k)	332	195	406
M_u (Strength I)	('k)	755	640	929
$\phi_f M_n$, $\phi_f M_{nc}$	('k)	1,827	1,017	1,802
f_s DC1	(ksi)	4.17	8.76	5.19
f_s DC2	(ksi)	0.69	1.49	0.99
f_s DW	(ksi)	1.22	2.64	1.77
f_s 1.3(LL+I)	(ksi)	15.0	14.3	17.9
f_s (Service II)	(ksi)	20.9	27.2	25.9
f_s (Total)(Strength I)	(ksi)	-	-	-
V_f	(k)	20.4	-	20.6

INTERIOR BEAM REACTION TABLE HL93 Loading		Abut.	Pier
R_{DC1}	(k)	10.22	36.70
R_{DC2}	(k)	2.34	7.64
R_{DW}	(k)	4.17	13.61
R_{LL+Imp}	(k)	63.88	81.23
R_{Total}	(k)	80.61	139.18

TOP OF BEAM ELEVATIONS (For Fabrication only)	℄ Brg. S. Abut.	℄ Brg. Pier 1	℄ Splice	℄ Brg. Pier 2	℄ Brg. N. Abut.
Beam 1	609.31	609.44	609.49	609.45	609.40
Beam 2	609.44	609.55	609.60	609.55	609.50
Beam 3	609.55	609.66	609.70	609.64	609.57
Beam 4	609.57	609.66	609.70	609.63	609.55
Beam 5	609.50	609.58	609.61	609.53	609.44
Beam 6	609.40	609.47	609.50	609.41	609.31

I_s, S_s	Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads.
I_c(n), S_c(n)	Composite moment of intertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to short-term composite live loads.
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-Strength I, and Service II) due to long-term composite (superimposed) dead loads.
DC1	Un-factored non-composite dead load.
M_{DC1}	Un-factored moment due to non-composite dead load.
DC2	Un-factored long-term composite (superimposed excluding future wearing surface) dead load.
M_{DC2}	Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load.
DW	Un-factored long-term composite (superimposed future wearing surface only) dead load.
M_{DW}	Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load.
M_{LL+Imp}	Un-factored live load moment plus dynamic load allowance (impact).
M_u(Strength I)	Factored design moment. $1.25\ (M_{DC1} + M_{DC2}) + 1.5M_{DW} + 1.75M_{LL+Imp}$
$\phi_f M_n$	Compact composite positive moment capacity computed according to Article 6.10.7.1.
$\phi_f M_{nc}$	Compact non-composite negative moment capacity computed according to Article A6.1.1.
f_s (Service II)	Sum of stresses as computed from the moments below. $M_{DC1} + M_{DC2} + M_{DW} + 1.3M_{LL+Imp}$
f_s (Total)(Strength I)	Sum of stresses as computed from the moments below on non-compact section. $1.25\ (M_{DC1} + M_{DC2}) + 1.5M_{DW} + 1.75M_{LL+Imp}$
V_f	Factored shear range computed according to Article 6.10.10.



SECTION A-A

NOTES

1. Work this Sheet with Sheet SA14 of 25.
2. Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
3. All Structural Steel on this Sheet shall be AASHTO M270 Grade 50W Steel.

BILL OF MATERIAL

Item	Unit	Total
Stud Shear Connectors	EACH	2,508

DESIGNED	J.Z.
CHECKED	J.A.Z.
DRAWN	R.B.H.
CHECKED	J.A.Z.

GRAEF
8501 W. Higgins Road; Suite 280
Chicago, Illinois 60631
(773) 399-0112

BEAM ELEVATION & TABLES

Illinois Rte. 84 Over Apple River Tributary

STATION 165+50.00 STRUCTURE NO. 043-0078

SHEET NO. SA15 OF 25 SHEETS	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	308	104BR-1	JO DAVIESS	126	51
			CONTRACT NO. 64B26		
	10-15-2010	ILLINOIS	FED. AID PROJECT		

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10/13/2010