

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

		0.4 Sp. 1 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
I_s	(in ⁴)	3270	3270	3270
$I_c(n)$	(in ⁴)	9809	—	9809
$I_c(3n)$	(in ⁴)	7235	—	7235
S_s	(in ³)	243	243	243
$S_c(n)$	(in ³)	378	—	378
$S_c(3n)$	(in ³)	341	—	341
DC1	(k/')	0.72	0.72	0.72
M _{DC1}	('k)	123.0	228.8	118.6
DC2	(k/')	0.15	0.15	0.15
M _{DC2}	('k)	30.2	35.7	36.3
DW	(k/')	0.30	0.30	0.30
M _{DW}	('k)	59.7	70.5	71.7
M _{± + Imp}	('k)	458.2	254.4	499.0
M _u (Strength I)	('k)	1083	882	1174
$\phi_f M_n$, $\phi_f M_{nc}$	('k)	2159	1158	2159
f_s DC1	(ksi)	6.1	11.3	5.9
f_s DC2	(ksi)	1.1	1.8	1.3
f_s DW	(ksi)	2.1	3.5	2.5
f_s 1.3(I+I)	(ksi)	18.9	16.3	20.6
f_s (Service II)	(ksi)	28.2	32.9	30.3
V _r	(k)	24.5	—	20.6

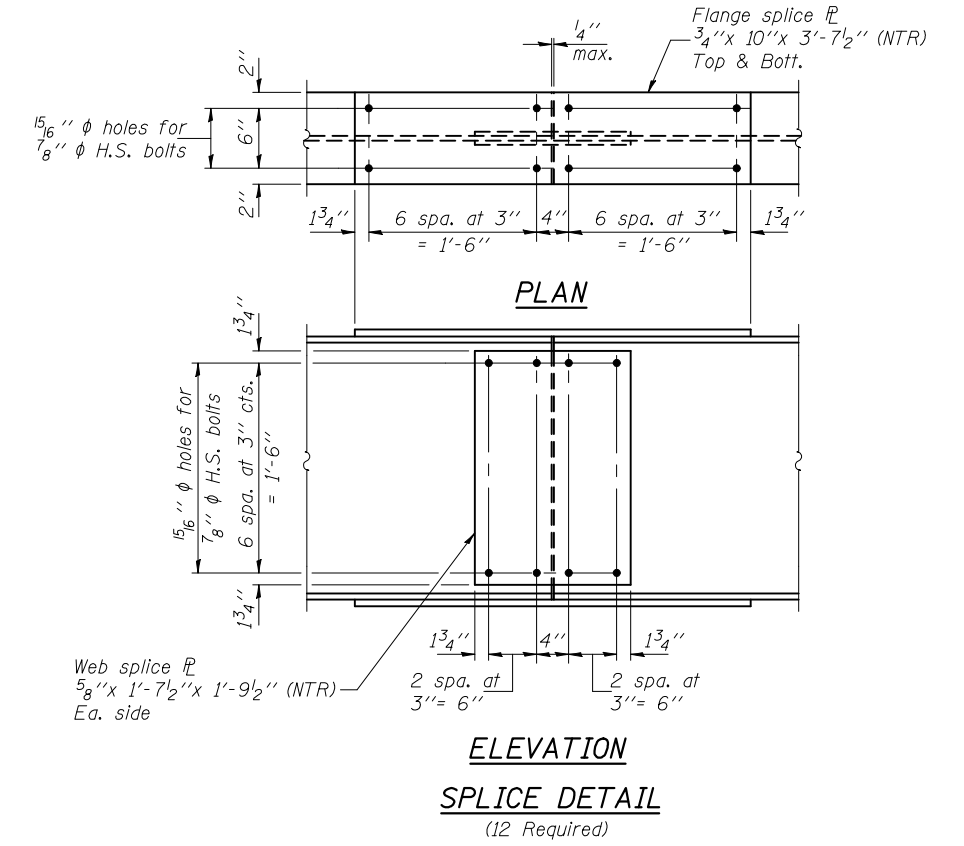
		Abutments	Piers
R _{DC1}	(k)	13.4	45.0
R _{DC2}	(k)	3.0	9.1
R _{DW}	(k)	5.9	17.9
R _{± + Imp}	(k)	62.8	86.6
R _{Total}	(k)	85.1	158.6

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 (in.⁴ and in.³).

$I_c(n)$, $S_c(n)$: Composite moment of inertia 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 (in.⁴ and in.³).

$I_c(3n)$, $S_c(3n)$: 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 (in.⁴ and in.³).

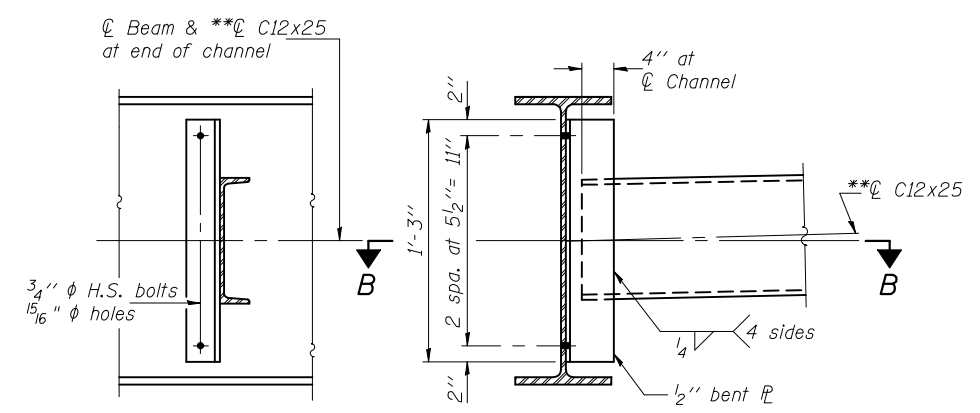
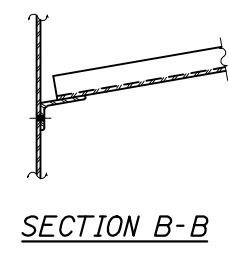
DC1: Un-factored non-composite dead load (kips/ft.).
M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
M_{± + Imp}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
M_u (Strength I): Factored design moment (kip-ft.).
1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{± + Imp}
 $\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).
 $\phi_f M_{nc}$: Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).
 f_s (Service II): Sum of stresses as computed from the moments below (ksi).
M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_{± + Imp}
V_r: Factored shear range in span computed according to Art. 6.10.10.



***TOP OF BEAM ELEVATIONS**

Location	℄ Brg. W. Abut.	℄ Brg. Pier 1	℄ Splice 1	℄ Brg. Pier 2	℄ Splice 2	℄ Brg. E. Abut.
Beam 1	756.31	756.62	756.70	756.64	756.62	756.36
Beam 2	756.43	756.74	756.81	756.74	756.73	756.46
Beam 3	756.54	756.83	756.91	756.83	756.82	756.54
Beam 4	756.56	756.84	756.91	756.83	756.81	756.53
Beam 5	756.47	756.75	756.82	756.73	756.71	756.42
Beam 6	756.37	756.65	756.71	756.62	756.60	756.30

*For fabrication use only.



DIAPHRAGM D
(55 Required)

**Alternate channel C12x30 may be used to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section, C12x25. The alternate channel C12x30, if utilized, shall be provided at no extra cost to the Department.

Notes: Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
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.
All splice plate material shall be AASHTO M 270 Grade 50W.

DESIGNED	D.P. Narielwala
CHECKED	S.M. Ryan
DRAWN	h.f. duong
CHECKED	DPN/SMR

November 25, 2009
EXAMINED *Thomas J. Domagala*
PASSED *Ralph E. Anderson*

STRUCTURAL STEEL DETAILS
STRUCTURE NO. 074-0086

SHEET NO. 14 25 SHEETS	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	1517	12VBR-1	PIATT	168	99
CONTRACT NO. 70388			FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT		