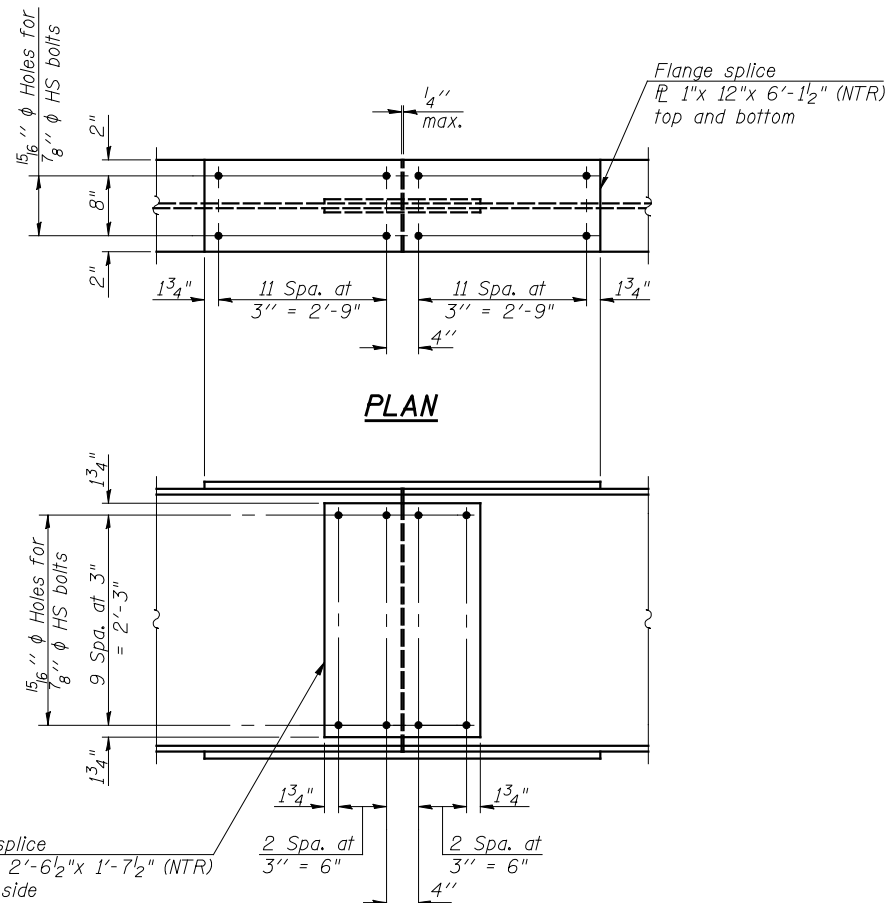


INTERIOR DIAPHRAGM

Note:
 Two hardened washers required for each set of oversized holes.
 *Alternate channel C15 x 50 is permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section. The alternate, if utilized, shall be provided at no additional cost to the Department.
 **3/4" φ HS bolts, 15/16" φ holes



ELEVATION
SPLICE DETAIL
 (28 Required)

INTERIOR GIRDER MOMENT TABLE

	0.4 Sp. 1 or 0.6 Sp. 3	Pier	0.5 Sp. 2
I_s	(in ⁴) 9760	9760	9760
$I_c(n)$	(in ⁴) 23989	-	23989
$I_c(3n)$	(in ⁴) 17446	-	17446
$I_c(cr)$	(in ⁴) -	12643	-
S_s	(in ³) 542	542	542
$S_c(n)$	(in ³) 771	-	771
$S_c(3n)$	(in ³) 694	-	694
$S_c(cr)$	(in ³) -	828	-
DC1	(k/ft) 0.824	0.824	0.824
M _{DC1}	(k) 249	448	236
DC2	(k/ft) 0.173	0.173	0.173
M _{DC2}	(k) 52	95	49
DW	(k/ft) 0.308	0.308	0.308
M _{DW}	(k) 92	169	87
M _{ℓ + IM}	(k) 714	735	704
M _u (Strength I)	(k) 1764	2219	1719
φ _r M _n	(k) 3846	3154	3846
f _s DC1	(ksi) 5.51	9.92	5.23
f _s DC2	(ksi) 0.90	1.38	0.85
f _s DW	(ksi) 1.59	2.45	1.50
f _s (ℓ + IM)	(ksi) 11.11	10.65	10.96
f _s (Service II)	(ksi) 22.45	27.59	21.82
0.95R _n F _{yf}	(ksi) 47.50	47.50	47.50
f _s (Total)(Strength I)	(ksi) 29.85	36.43	29.02
φ _r F _n	(ksi) -	-	-
V _r	(k) 49.7	-	51.8

INTERIOR GIRDER REACTION TABLE

	Abut.	Pier
R _{DC1}	(k) 21.1	67.5
R _{DC2}	(k) 4.3	14.2
R _{DW}	(k) 7.6	26.3
R _{ℓ + IM}	(k) 75.0	104.0
R _{Total}	(k) 107.9	212.0

TOP OF BEAM ELEVATIONS

For Fabrication Only

NORTHBOUND STRUCTURE (SN 038-0216)

Beam Number	ℓ Brg. N. Abut.	ℓ Brg. Pier 1	ℓ Splice No. 1	ℓ Brg. Pier 2	ℓ Splice No. 2	ℓ Brg. S. Abut.
Beam 1	643.10	643.04	643.03	642.83	642.79	642.59
Beam 2	643.23	643.17	643.15	642.95	642.90	642.70
Beam 3	643.35	643.27	643.25	643.04	642.99	642.78
Beam 4	643.45	643.36	643.34	643.12	643.07	642.86
Beam 5	643.42	643.32	643.30	643.07	643.02	642.80
Beam 6	643.32	643.22	643.20	642.96	642.91	642.68
Beam 7	643.20	643.10	643.07	642.83	642.77	642.53

SOUTHBOUND STRUCTURE (038-0215)

Beam Number	ℓ Brg. N. Abut.	ℓ Brg. Pier 1	ℓ Splice No. 1	ℓ Brg. Pier 2	ℓ Splice No. 2	ℓ Brg. S. Abut.
Beam 8	643.34	643.28	643.26	643.06	643.01	642.81
Beam 9	643.47	643.39	643.37	643.16	643.12	642.91
Beam 10	643.57	643.48	643.46	643.25	643.20	642.98
Beam 11	643.61	643.51	643.49	643.27	643.21	642.99
Beam 12	643.51	643.41	643.39	643.15	643.10	642.88
Beam 13	643.41	643.30	643.27	643.03	642.97	642.74
Beam 14	643.28	643.16	643.13	642.88	642.83	642.59

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 (in⁴ and in³).

$I_c(n), S_c(n)$: 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) in uncracked sections due to short-term composite live loads (in⁴ and in³).

$I_c(3n), S_c(3n)$: 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) in uncracked sections, due to long-term composite (superimposed) dead loads (in⁴ and in³).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in⁴ and in³).

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_{ℓ + IM}: 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_{ℓ + IM}
 φ_rM_n: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).
 f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).
 M_{DC1} / S_{nc}
 f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).
 M_{DC2} / S_{c(3n)} or M_{DC2} / S_{c(cr)} as applicable.
 f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
 M_{DW} / S_{c(3n)} or M_{DW} / S_{c(cr)} as applicable.
 f_s (ℓ + IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).
 M_{ℓ + IM} / S_{c(n)} or M_{DW} / S_{c(cr)} as applicable.
 f_s (Service II): Sum of stresses as computed below (ksi).
 f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3 f_s (ℓ + IM)
 0.95R_nF_{yf}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).
 f_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
 1.25 (f_{sDC1} + f_{sDC2}) + 1.5 f_{sDW} + 1.75 f_s (ℓ + IM)
 φ_rF_n: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).
 V_r: Maximum factored shear range in span computed according to Article 6.10.10.

Note:
 M_ℓ and R_ℓ include the effects of centrifugal force and superelevation.

Notes:
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.
 All connecting angles and diaphragms shall conform to the requirements of AASHTO M270 Grade 50W.
 All splice plates shall conform to the requirements of AASHTO M270 Grade 50W.

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DESIGNED	MAS	REVISED
CHECKED	BJM	REVISED
DRAWN	MWS	REVISED
CHECKED	BJM	REVISED

PLOT DATE = 1/28/2013

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS
STRUCTURE NO. 038-0215 (S.B.) & 038-0216 (N.B.)

SHEET NO. 21 OF 38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	141 BR(SB) & 38-1 BR(NB)	IROQUOIS	138	59
CONTRACT NO. 66944				
ILLINOIS FED. AID PROJECT				