

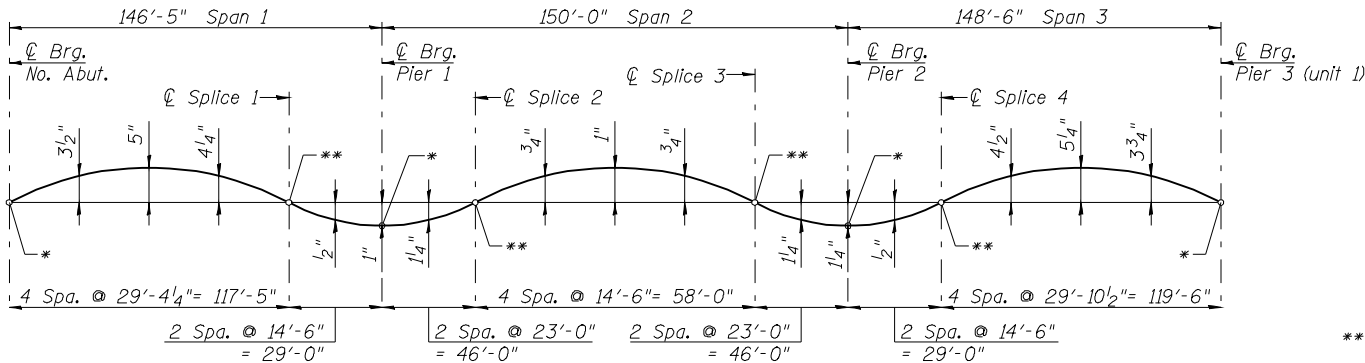
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP Rte 614	144(B-1)	Cass & Mason	351	176
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. 40

86 SHEETS

Contract #72A76



UNIT 1 - CAMBER DIAGRAM (Spans 1 thru 3)

* See Table for Final Top of Web Elevations at abutments and piers.
** Theoretical Top of Web Elevations before dead load deflections.

UNIT 1 - TOP of WEB ELEVATIONS TABLE (Spans 1 thru 3)

For Fabrication Only

Girder Number	℄ Brg. No. Abut.	℄ Splice No. 1	℄ Brg. Pier 1	℄ Splice No. 2	℄ Splice No. 3	℄ Brg. Pier 2	℄ Splice No. 4	℄ Brg. Pier 3
Girder 1	470.99	471.61	471.61	471.83	472.12	472.35	472.66	473.21
Girder 2	471.12	471.75	471.97	472.26	472.48	472.80	472.91	473.46
Girder 3	471.24	471.86	471.87	472.08	472.37	472.60	472.91	473.46
Girder 4	471.25	471.88	471.88	472.10	472.38	472.61	472.93	473.48
Girder 5	471.17	471.80	471.80	472.01	472.30	472.53	472.84	473.39
Girder 6	471.06	471.69	471.69	471.91	472.20	472.42	472.74	473.29

UNIT 1 - INTERIOR GIRDER MOMENT TABLE					
	0.4 Span 1	Pier 1	0.5 Span 2	Pier 2	0.6 Span 3
I_s	(in ⁴) 28474	57579	20051	57579	28474
$I_c(n)$	(in ⁴) 70619	-	48072	-	70619
$I_c(3n)$	(in ⁴) 50565	-	35698	-	50565
S_s	(in ³) 1205	1986	723	1986	1205
$S_c(n)$	(in ³) 1619	-	1021	-	1619
$S_c(3n)$	(in ³) 1481	-	925	-	1481
DC1	(k/ft) 0.898	1.492	0.849	1.492	0.898
M _{DC1}	(k) 1464	3306	258	3394	1506
DC2	(k/ft) 0.150	-	0.150	-	0.150
M _{DC2}	(k) 252	-	83	-	260
DW	(k/ft) 0.300	-	0.300	-	0.300
M _{DW}	(k) 504	-	165	-	519
$M_L + IM$	(k) 2089	1893	1395	1907	2118
$M_u(\text{Strength I})$	(k) 6555	7613	3115	7751	6692
*** $\phi_f M_n, \phi_f M_{nc}$	(k) 7801	-	5308	-	7761
f_s DC1	(ksi) 14.6	20.0	4.3	20.5	15.0
f_s DC2	(ksi) 2.0	-	1.1	-	2.1
f_s DW	(ksi) 4.1	-	2.1	-	4.2
f_s 1.3($L + IM$)	(ksi) 20.1	14.9	21.3	15.0	20.4
f_s (Service II)	(ksi) 40.8	34.9	28.8	35.5	41.7
**** f_s (Total)(Strength I)	(ksi) -	46.0	-	46.9	-
V_r	(k) 32.8	-	23.9	-	33.0

*** Compact Sections.
**** Non-compact and Slender Sections.

UNIT 1 - INTERIOR GIRDER REACTION TABLE HL93 Loading				
	North Abutment	Pier 1	Pier 2	Pier 3
R_{DC1}	(k) 52.1	152.1	154.2	52.9
R_{DC2}	(k) 8.7	24.5	24.8	8.8
R_{DW}	(k) 17.4	48.9	49.5	17.6
$R_L + IM$	(k) 102.9	180.2	181.0	103.4
R_{Total}	(k) 181.1	405.8	409.4	182.7

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) 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) due to 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 $M_L + IM$

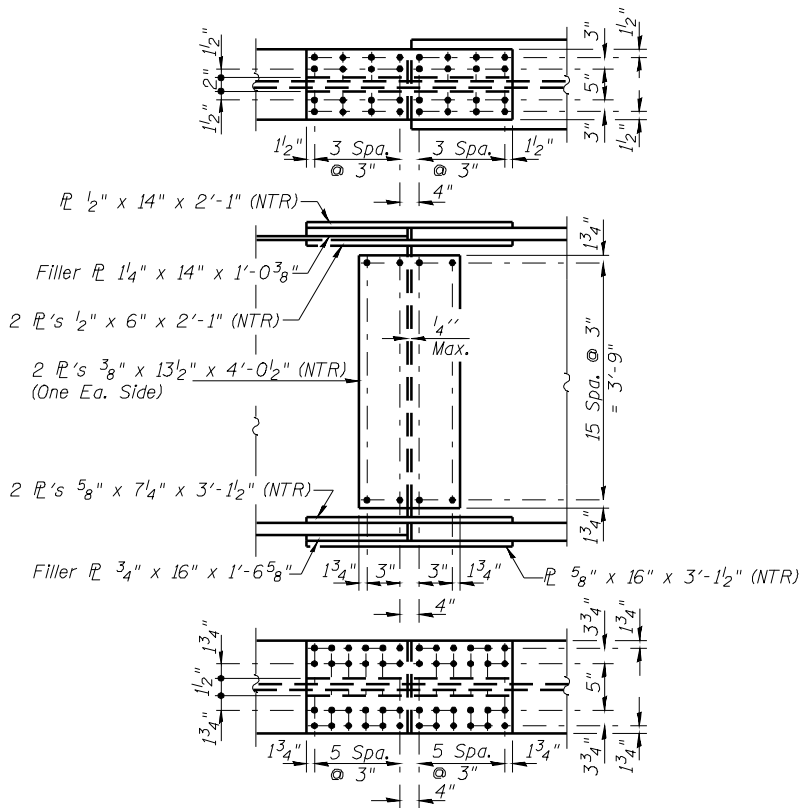
$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

$\phi_f M_{nc}$: Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).

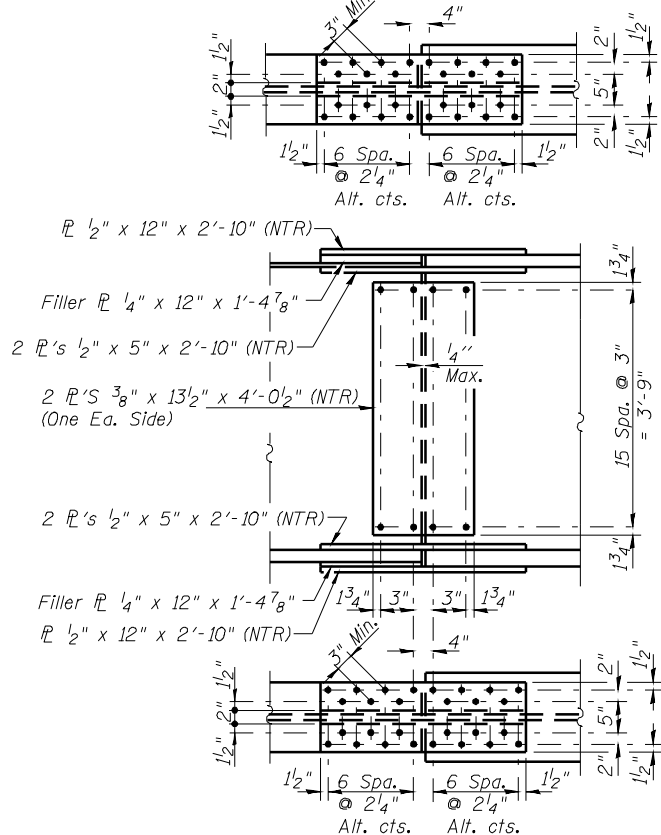
f_s (Service II): Sum of stresses as computed from the moments below (ksi).
M_{DC1} + M_{DC2} + M_{DW} + 1.3 $M_L + IM$

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 $M_L + IM$

V_r : Factored shear range computed according to Article 6.10.10.



DETAIL - FIELD SPLICE NO. 1 & 4



DETAIL - FIELD SPLICE NO. 2 & 3

Note:
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
Use 3/8" ϕ H.S. Bolts with 15/16" ϕ holes for all splice connections.
Use 7#8" ϕ H.S. Bolts with 15#16" ϕ holes for all splice connections.

UNIT 1 - STRUCTURAL STEEL DETAILS (Sheet 2 of 2)
F.A.P. 614 (IL 78) OVER SANGAMON RIVER
PUBLIC WATERS
CASS & MASON COUNTIES
SECTION 144 (B-1)
STA. 913+26.00
STRUCTURE NUMBER 009-0510
PROFESSIONAL DESIGN FIRM LICENSE #184-001084

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HANSON
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JOB NO.

07S2026

DATE

03/27/09

LAYOUT: BWC/AMM 09/12/08
DRAWN: DAB 09/30/08
REVIEWED: TEH 09/30/08
Mod: 3/1/2009 08:02:44M
C:\m\work\PM1001\144B-1\UNIT 1\0314498-009-0510 Master Steel Detail.dgn