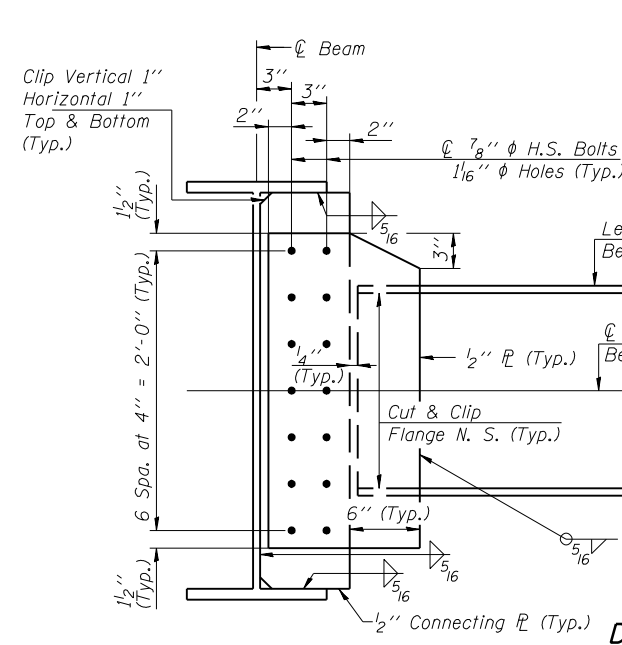
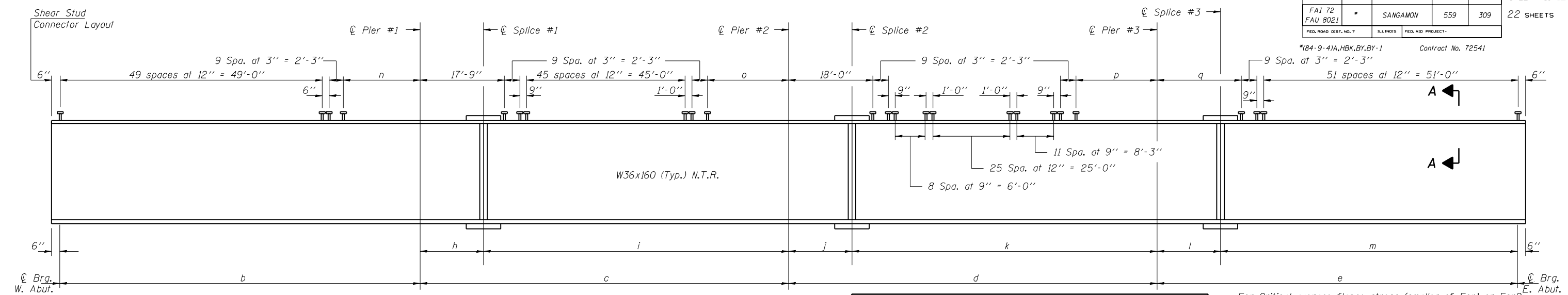
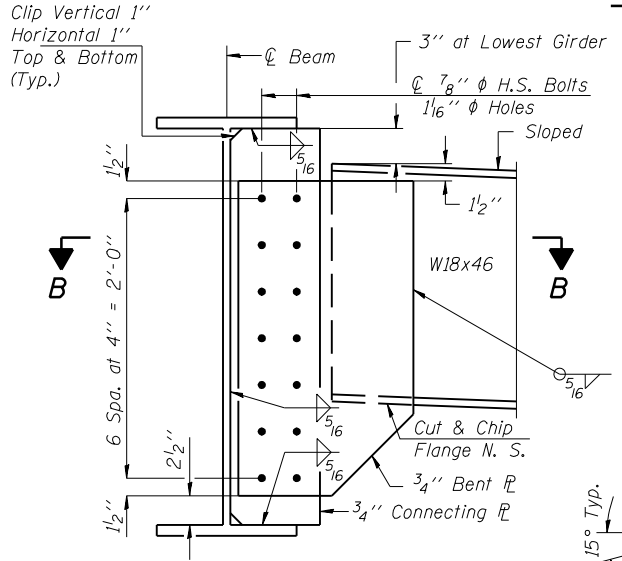


Contract No. 72541



DIAPHRAGM D-2
82 - Required

Note: Two hardened washers shall be required over all oversized holes. Horizontal dimensions at Rt. <s to \bar{C} beam.

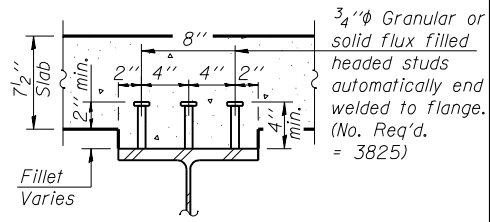


DIAPHRAGM D-1
8 - Required

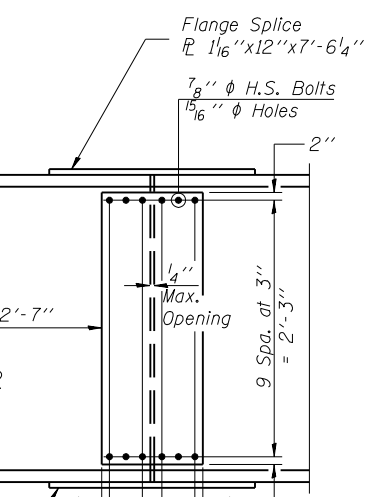
Note: Two hardened washers shall be required over all oversized holes.

BEAM ELEVATION

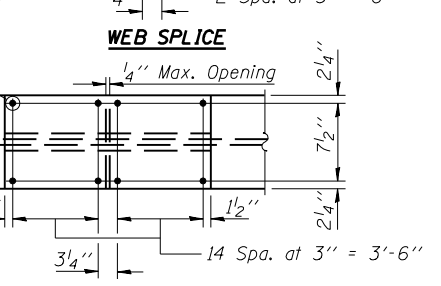
"NTR" denotes members to which notch toughness requirements are applicable. For dimensions b thru m see sheet 11 of 22.



SECTION A-A



WEB SPlice



TOP & BOTTOM FLANGE SPlice
FIELD SPlice DETAIL

H.S. Bolts shall conform to AASHTO M-164 Specifications (ASTM A325)

	INTERIOR BEAM MOMENT TABLE			
	0.4 Sp. 1 or 0.6 Sp. 4	Pier #1 or #3	0.5 Sp. 2 or Sp. 3	Pier #2
I_s	(in ⁴) 9750	9750	9750	9750
I_c (n)	(in ⁴) 22342	-	22342	-
I_c (3n)	(in ⁴) 16351	-	16351	-
S_s	(in ³) 542	542	542	542
S_c (n)	(in ³) 743	-	743	-
S_c (3n)	(in ³) 671	-	671	-
S_f	(in ³) 22.5	22.5	22.5	22.5
$\bar{\phi}$	(k/ft.) 0.74	1.21	0.74	1.21
$M\bar{\phi}$	(k) 273	668	233	664
$s\bar{\phi}$	(k/ft.) 0.47	-	0.47	-
$M_s\bar{\phi}$	(k) 179	-	164	-
M_L	(k) 415	378	395	390
M (Imp)	(k) 104	76	99	78
$5_3[M_L + M(\text{Imp})]$	(k) 865	757	823	778
M_a	(k) 1712	1853	1586	1875
M_{b_1}	(k) 0.25	0.14	0.17	0.14
$f_s\bar{\phi}$ non-comp	(k.s.i.) 6.0	14.8	5.2	14.7
$f_s\bar{\phi}$ (comp)	(k.s.i.) 3.2	-	2.9	-
$f_s 5_3[M_L + M(\text{Imp})]$	(k.s.i.) 14.0	16.8	13.3	17.2
f_1	(k.s.i.) 0.1	0.1	0.1	0.1
f_s (Overload)	(k.s.i.) 23.2	31.6	21.5	31.9
f_s (Total)	(k.s.i.) 30.2	41.1	28.0	41.5
F_{cr} (Overload)	(k.s.i.) 47.5	47.5	47.5	47.5
VR	(k) 54.9	-	57.2	-
F_{cr}	(k.s.i.) 50.0	50.0	50.0	50.0

	INTERIOR BEAM REACTION TABLE		
	E.&W. Abut.	Piers #1 & #3	Pier #2
$R\bar{\phi}$	(k) 33.4	103.7	103.5
R_L	(k) 39.3	61.8	61.7
$Imp.$	(k) 11.8	18.5	18.5
R (Total)	(k) 84.5	184.0	183.7

***TOP OF BEAM ELEVATIONS**

Location	Beam #1	Beam #2	Beam #3	Beam #4	Beam #5
\bar{C} Brg. W. Abut.	631.07	630.80	630.54	630.30	630.08
\bar{C} Pier #1	631.91	631.62	631.33	631.04	630.75
\bar{C} Splice #1	632.07	631.78	631.48	631.18	630.88
\bar{C} Pier #2	632.61	632.35	632.08	631.81	631.54
\bar{C} Splice #2	632.71	632.45	632.19	631.93	631.66
\bar{C} Pier #3	632.94	632.70	632.47	632.23	631.99
\bar{C} Splice #3	632.98	632.75	632.52	632.28	632.05
\bar{C} Brg. E. Abut.	633.05	632.84	632.62	632.41	632.19

* For Fabrication only.

For Critical average flange stress (smaller of F_{cr1} or F_{cr2} for partially braced flanges and F_y for continuously braced flanges) computed according to the 2003 AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges (Sections 5.2, 5.3 and 5.4).

F_{cr} (Overload) Critical average flange stress at overload computed according to the 2003 AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges Section 9.5.

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (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 in span.

$M\bar{\phi}$ Moment due to dead loads on non-composite section.

$M_s\bar{\phi}$ Moment due to dead loads on composite section.

M_L Moment due to live load on non-composite or composite section.

M (Imp) Moment due to live load impact on non-composite or composite section.

M_a (Applied Moment) = $1.3[M\bar{\phi} + M_s\bar{\phi} + 5_3(M_L + M(\text{Imp}))]$.

f_s (Overload) is the sum of the stresses due to $M\bar{\phi} + M_s\bar{\phi} + 5_3(M_L + M(\text{Imp}))$.

f_s (Total) is the sum of the stresses due to $1.3[M\bar{\phi} + M_s\bar{\phi} + 5_3(M_L + M(\text{Imp}))]$.

S_{b_1} is the section modulus for one flange for lateral flange bending.

M_{b_1} is the lateral bending moment for flange (factored).

f_1 is the calculated normal stress at the edge of flange due to lateral bending (factored).

M_L and R_L include the effects of centrifugal force and superelevation.

BEAM DIMENSIONS

(Measured Along Centerline of Beam)

Line No.	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5
n	16'-4 ⁵ / ₈ "	16'-6 ³ / ₈ "	16'-7 ⁷ / ₈ "	16'-9 ¹ / ₈ "	16'-10 ¹ / ₈ "
o	15'-4 ¹ / ₈ "	15'-6 ⁷ / ₈ "	15'-9 ³ / ₄ "	16'-0 ⁵ / ₈ "	16'-3 ¹ / ₂ "
p	16'-4 ⁷ / ₈ "	16'-7 ⁵ / ₈ "	16'-9 ³ / ₄ "	17'-0 ³ / ₁₆ "	17'-2 ³ / ₄ "
q	16'-9 ³ / ₁₆ "	16'-11 ¹ / ₁₆ "	17'-0 ¹⁵ / ₁₆ "	17'-2 ¹⁵ / ₁₆ "	17'-4 ⁷ / ₈ "

Corporate License Number 184-001-084

STRUCTURAL STEEL DETAILS
I-72/MACARTHUR BLVD. RAMP B OVER UPRR
SECTION (84-9-4)A, HBK, BY, BY-1
SANGAMON COUNTY
STATION 33+95.61
STRUCTURE NUMBER 084-0514

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DATE: 11/16/05

MM 06/27/03
DAP 01/04/05
JMM 02/24/05
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12/16/2006