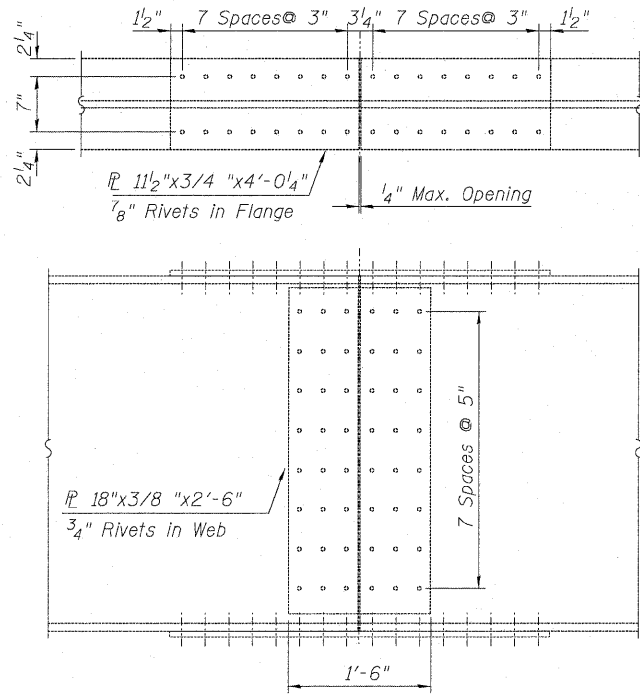
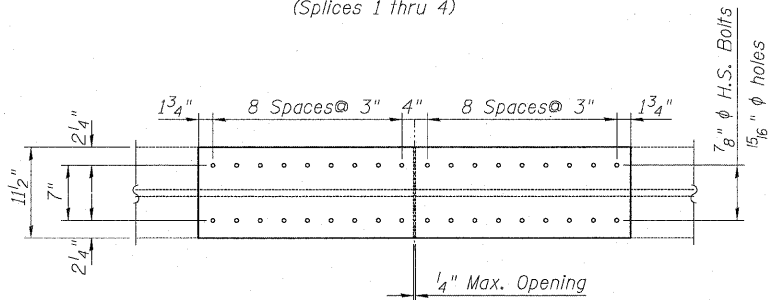


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



DETAIL OF EXISTING SPLICE
(Splices 1 thru 4)



DETAIL OF PROPOSED SPLICE 5
(For Beams 2 & 11 only)

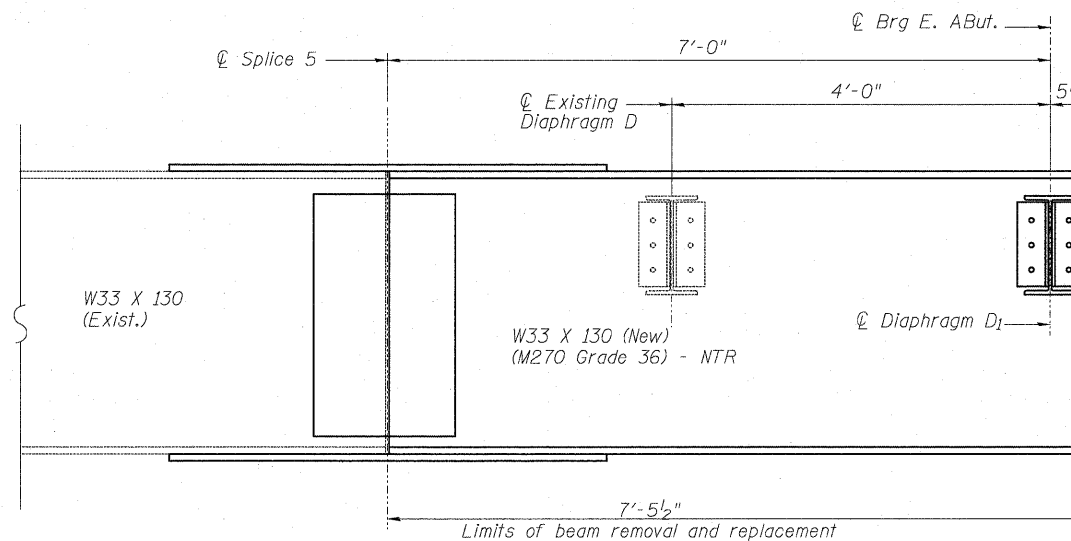
DESIGNED	JPM
CHECKED	TG
DRAWN	MPS
CHECKED	JPM, TG



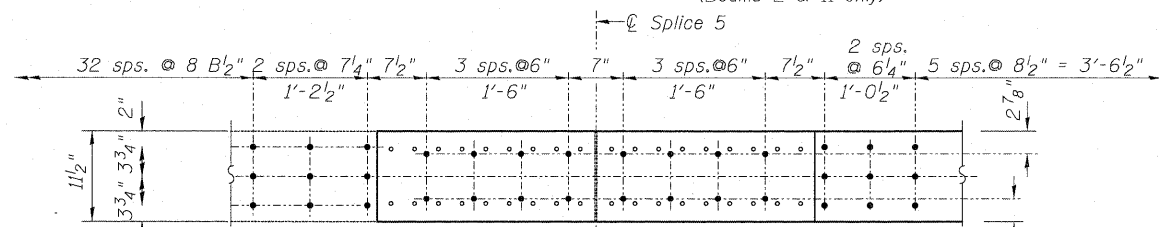
		0.4 Sp.1 or 0.6 Sp.5	Pier 1 or Pier 4	0.5 Sp.2 or 0.5 Sp.4	Pier 2 or Pier 3	0.5 Sp.3
I_s	(in ⁴)	6607.6	6607.6	6607.6	6607.6	6607.6
$I_c(n)$	(in ⁴)	18348.8	-	18348.8	-	18348.8
$I_c(3n)$	(in ⁴)	13393.8	-	13393.8	-	13393.8
S_s	(in ³)	399.4	399.4	399.4	399.4	399.4
$S_c(n)$	(in ³)	602.0	-	602.0	-	602.0
$S_c(3n)$	(in ³)	542.1	-	542.1	-	542.1
Z	(in ³)					
ρ	(k/')	0.84	1.41	0.84	1.41	0.84
$M\rho$	(k)	117.3	275.7	77.7	371.2	163.0
$s\rho$	(k/')	0.57	-	0.57	-	0.57
$M_s\rho$	(k)	89.4	-	81.9	-	145.9
M_L	(k)	257.9	145.4	274.1	176.1	360.7
M_{IM}	(k)	76.7	42.1	77.3	48.3	96.4
$^{5/3}[M_L + I]$	(k)	557.5	312.5	585.7	374.0	761.9
M_a	(k)	993.5	764.7	968.9	968.7	1392.1
* M_u	(k)	1565.4	-	1592.6	-	1527.1
$f_s \rho$ non-comp	(ksi)	3.5	8.3	2.3	11.2	4.9
$f_s \rho$ comp	(ksi)	2.0	-	1.8	-	3.2
$f_s \ ^{5/3}[M_L + M_I]$	(ksi)	11.1	9.4	11.7	11.2	15.2
f_s (Overload)	(ksi)	16.6	17.7	15.8	22.4	23.3
** f_s (Total)	(ksi)	-	23.0	-	29.1	-
VR	(k)	31.8	-	33.7	-	36.5

		N. or S. Abut	Pier 1 or 4	Pier 2 or 3
$R\rho$	(k)	26.2*****	72.1	82.6
R_L	(k)	31.9	38.7	39.3
R_I	(k)	9.5	8.8	8.2
R_{Total}	(k)	67.6	119.6	130.1

* Compact section
** Braced non-compact and partially braced section
***** Includes weight of concrete over the diaphragm



SECTION F-F
(Beams 2 & 11 only)



SHEAR STUDS LAYOUT AT SPLICE 5

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) 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 and Overload) 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 and Overload) due to long-term composite (superimposed) dead loads (in⁴ and in³).

ρ : Un-factored non-composite dead load (kips/ft.).
 $M\rho$: Un-factored moment due to non-composite dead load (kip-ft.).
 $s\rho$: Un-factored long-term composite (superimposed) dead load (kips/ft.).
 $M_s\rho$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
 M_L : Un-factored live load moment (kip-ft.).
 M_I : Un-factored moment due to impact (kip-ft.).
 M_a : Factored design moment (kip-ft.).
 $1.3 [M\rho + M_s\rho + \frac{5}{3} (M_L + M_I)]$
 M_u : Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).
 f_s (Overload): Sum of stresses as computed from the moments below (ksi).
 $M\rho + M_s\rho + \frac{5}{3} (M_L + M_I)$
 f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M\rho + M_s\rho + \frac{5}{3} (M_L + M_I)]$
VR: Maximum ρ + impact shear range within the composite portion of the span for stud shear connector design (kips).

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Structural Steel Repair	Pound	6,020
Cleaning and Painting Steel Bridge	L. Sum	1***

Wt. of Structural Steel Repair for this sheet and Sheets S19 & 21 of S34 = 5,110 lbs (Grade 36)****
910 lbs (Grade 50)*****

*** Includes 5 feet of existing beams ends, exterior face and bottom flange of the fascia beams, existing end diaphragms and its connection angles.

**** Includes Beams, Diaphragms, Angles & Fasteners.

***** Includes Splice Plates Only.

Note:
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

Use the existing diaphragm connection angles as a template for bolts holes to reattach Diaphragm D to the new beam ends.

FRAMING DETAILS 1
STRUCTURE NO. 016-0519

SHEET NO.	F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
S20	1548	461 (VB&VF) I	COOK	52	32
S34 SHEETS				CONTRACT NO. 60H65	
DATE: 06-22-2010		ILLINOIS FED. AID PROJECT			