ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 301 (US 20)	(2HB -1)D	WINNEBAGO	107	79
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. 14
34 SHEETS

Contract #64B07

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INTERIOR GIRDER MOMENT TABLE (W36x150)				
		0.4 Sp. 1	Pier	0.5 Sp. 2
I_s	(in^4)	9,040	9,040	9,040
$I_c(n)$	(in^4)	23,394	–	23,394
$I_c(3n)$	(in^4)	17,221	–	17,221
S_s	(in^3)	504	504	504
$S_c(n)$	(in^3)	729.5	–	729.5
$S_c(3n)$	(in^3)	660.4	–	660.4
Z	(in^3)	581	581	581
w_D	(k/')	0.943	0.943	0.943
M_D	('k)	220.8	319.7	119.8
s_D	(k/')	0.34	0.34	0.34
M_{sD}	('k)	79.6	115.3	43.2
M_L	('k)	391.7	293.2	341.6
M_{Imp}	('k)	109.7	82.1	95.7
$\frac{5}{3}[M_L + Imp]$	('k)	835.7	625.5	728.8
M_a	('k)	1,477	1,379	1,159.4
* M_u	('k)	2,979	1,743	2,979
f_s D non-comp	(ksi)	5.25	7.6	2.85
f_s D (comp)	(ksi)	1.45	2.75	0.80
$f_s \frac{5}{3}[M_L + M_{Imp}]$	(ksi)	13.75	14.9	12.0
f_s (Overload)	(ksi)	20.45	25.2	15.64
** f_s (Total)	(ksi)	–	–	–
VR	(k)	46.4	–	39.5

INTERIOR GIRDER REACTION TABLE			
		Abut.	Pier
R D	(k)	27.8	82.6
R L	(k)	38.9	50.0
Imp.	(k)	10.9	14.0
R Total	(k)	77.6	146.6

* Compact section
** Braced non-compact and partially braced section

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 (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 and Overload) 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 and Overload) due to long-term composite (superimposed) dead loads (in.^{4} and in.^{3}).

Z: Plastic Section Modulus of the steel section in non-composite areas (in.^{3}).

w_D: Un-factored non-composite dead load (kips/ft.).

M_D: Un-factored moment due to non-composite dead load (kip-ft.).

s_D: Un-factored long-term composite (superimposed) dead load (kips/ft.)

M_{sD}: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

M_L: Un-factored live load moment (kip-ft.).

M_{Imp}: Un-factored moment due to impact (kip-ft.).

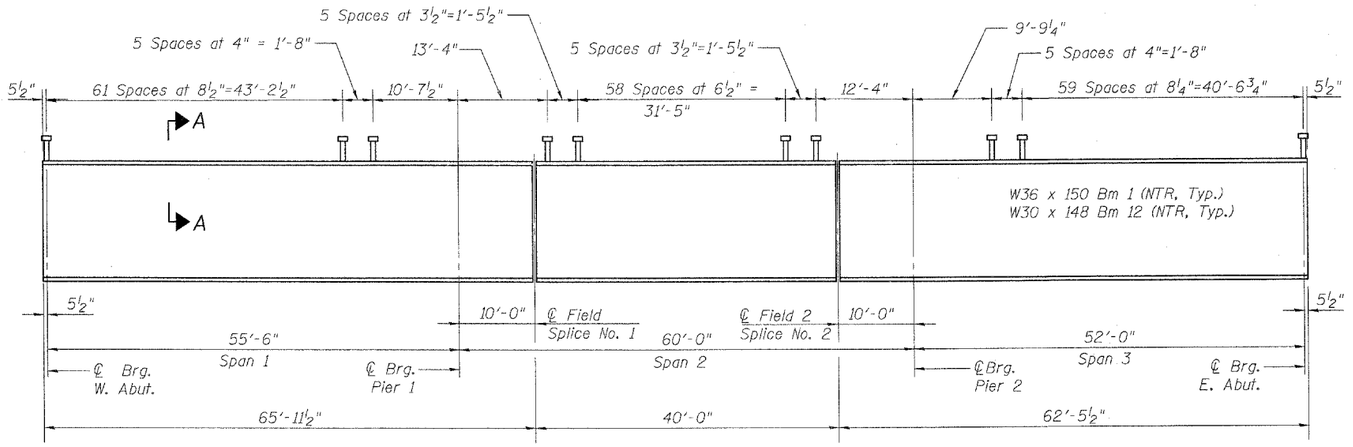
M_a: Factored design moment (kip-ft.).
$1.3\ [M_D + M_{sD} + \frac{5}{3}(M_L + M_{Imp})]$

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).
$M_D + M_{sD} + \frac{5}{3}(M_L + M_{Imp})$

f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\ [M_D + M_{sD} + \frac{5}{3}(M_L + M_{Imp})]$

VR: Maximum M_L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).



PROPOSED BEAM 1 & 12 ELEVATION

"NTR" Denotes Beams to which notch toughness requirements are applicable.

NOTE:
Shear stud spacing shown is to be used on both new and existing beams.

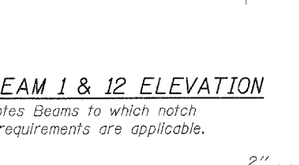
NOTES:
Two hardened washers shall be required over all oversize holes for diaphragms.

Holes shall be field drilled in the existing fascia beam using the holes in the proposed connection angle as a template. Cost included with Furnishing and Erecting Structural Steel.

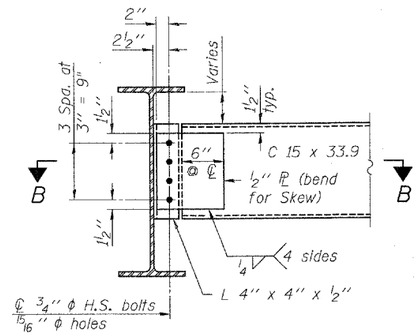
DIAPHRAGM D1

(16 Required)

SECTION A-A



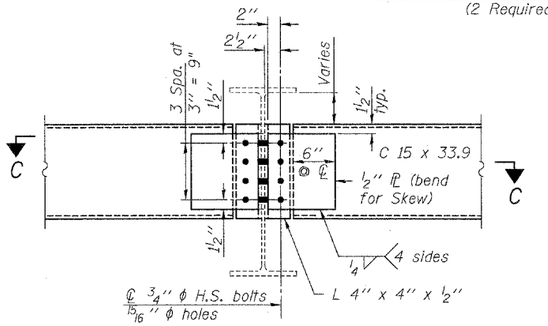
SECTION B-B
BEAM 1 & BEAM 12 ONLY



END DIAPHRAGM D

(20 Required)

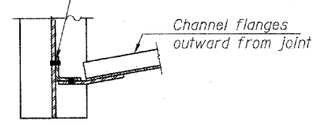
NOTES:
Two hardened washers required for each set of oversized holes.
Existing diaphragm angles shall be removed from existing beams using the air-arc method. Cost included with Structural Steel Renewal.



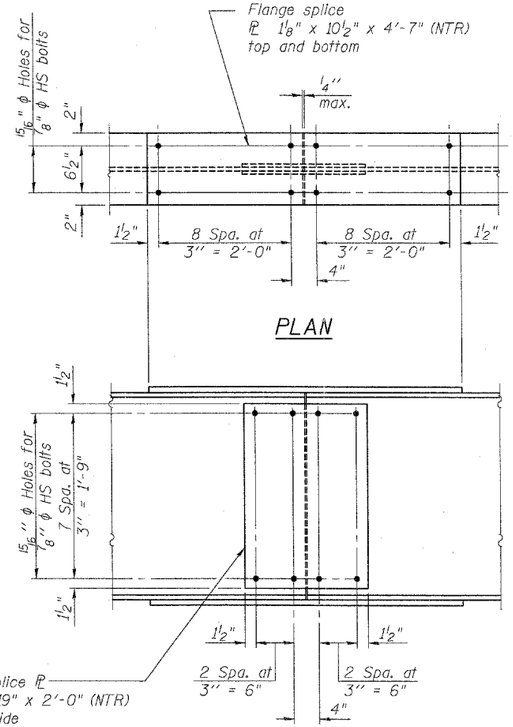
END DIAPHRAGM D

(At existing beams 2-11)

Holes to be drilled in existing beams in the field using holes in proposed connection angle as template Cost included with Furnishing and Erecting Structural Steel.



SECTION C-C
BEAM 2 THRU BEAM 11 ONLY



Note:
(See Sheet 13 for Beam 1)

ELEVATION
SPLICE DETAIL BEAM 12

(2 Required)

TOP OF BEAM ELEVATIONS

BEAM	W. ABUT.	PIER 1	***SPLICE 1	***SPLICE 2	PIER 2	E. ABUT.
1	757.19	756.63	756.53	756.13	756.03	755.47
12	757.98	757.48	757.39	757.03	756.93	756.46

For fabrication only.
*** Elevations at Top of Beams, Not Top of Splice Plates.

DESIGNED	SSM
CHECKED	JLA
DRAWN	GYR
CHECKED	SSM

Plans Prepared by: Kudrna & Associates, Ltd.

STRUCTURAL STEEL DETAILS
F.A.P. ROUTE 301 (US 20)
OVER SIMPSON ROAD
SECTION (2HB-1)D
WINNEBAGO COUNTY
STATION 849+27.97
STRUCTURE NO. 101-0053 (W.B.)
STRUCTURE NO. 101-0054 (E.B.)