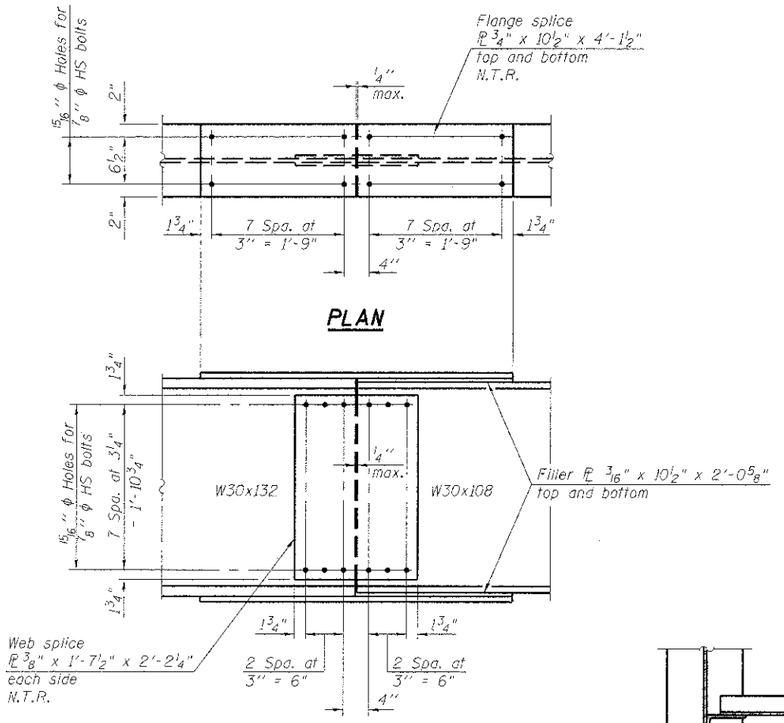
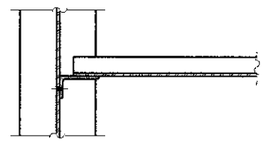
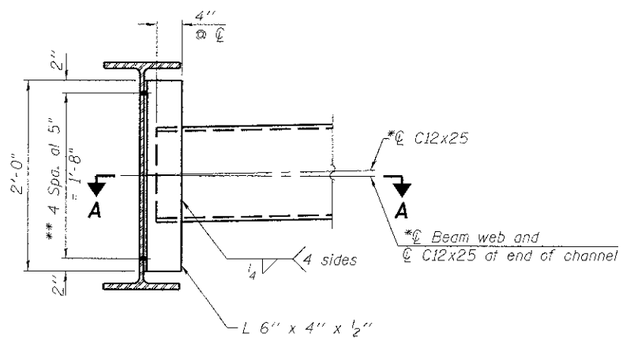


SPLICE DETAIL

(24 Required)



SECTION A-A



INTERIOR DIAPHRAGM, D

(60 Required)

Notes:

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

All splice plates, filler plates, bolts, washers, diaphragms and connection plates shall be galvanized according to AASHTO M111 or F239 as applicable.

Galvanized surfaces on beam and plate in contact with each other shall be roughened by hand-wire brushing after galvanizing. Power-wire brushing shall not be permitted. See Special Provisions.

Note:

Two hardened washers required for each set of oversized holes.

*Alternate C12x30 channels are 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

INTERIOR BEAM MOMENT TABLE							
		0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_s	(in^4)	4,470	5,770	4,470	5,770	4,470
$I_c(n)$	(in^4)	13,269		13,269		13,269
$I_c(3n)$	(in^4)	9,789		9,789		9,789
$I_c(cr)$	(in^4)		7,977		7,977	
S_s	(in^3)	300	380	300	380	300
$S_c(n)$	(in^3)	467		467		467
$S_c(3n)$	(in^3)	421		421		421
$S_c(cr)$	(in^3)		647		647	
DC1	(k/')	0.815	0.837	0.815	0.837	0.815
M_{DC1}	('k)	122	377	213	409	163
DC2	(k/')	0.150	0.150	0.150	0.150	0.150
M_{DC2}	('k)	23	68	40	74	30
DW	(k/')	0.329	0.329	0.329	0.329	0.329
M_{DW}	('k)	50	150	87	163	66
M_{L+IM}	('k)	565	661	643	692	625
M_U (Strength I)	('k)	1,245	1,938	1,572	2,059	1,434
$\phi_f M_n$	('k)	2,402	2,313	2,309	2,310	2,360
f_s DC1	(ksi)	4.9	11.9	8.5	12.9	6.5
f_s DC2	(ksi)	0.7	1.3	1.1	1.4	0.9
f_s DW	(ksi)	1.4	2.8	2.5	3.0	1.9
f_s (L+IM)	(ksi)	16.1	12.3	18.3	12.8	17.8
f_s (Service II)	(ksi)	27.9	31.9	36.0	34.0	32.4
$0.95R_hF_{yf}$	(ksi)	47.5	47.5	47.5	47.5	47.5
V_r	(k)	29.6	56.7	32.0	55.4	30.1

INTERIOR BEAM REACTION TABLE					
		S. Abut.	Pier 1	Pier 2	N. Abut.
R_{DC1}	(k)	15.2	60.2	62.9	17.2
R_{DC2}	(k)	2.7	10.9	11.5	3.0
R_{DW}	(k)	5.8	24.0	25.2	6.7
R_{L+IM}	(k)	69.3	108.6	109.5	71.2
R_{Total}	(k)	93.0	203.7	209.1	98.1

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 ($in.^4$ 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-Strength I, and Service II) in uncracked sections, 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-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads ($in.^4$ and $in.^3$).

$I_c(cr)$, $S_c(cr)$: 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 dead loads ($in.^4$ and $in.^3$).

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.).

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 plus impact loads as calculated below (ksi).
$M_{L+IM} / S_c(3n)$ or $M_{L+IM} / S_c(cr)$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).
$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3\ f_s(L+IM)$

$0.95R_hF_yf$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

V_r: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

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ADAMS COUNTY
HIGHWAY DEPARTMENT

BEAM DETAILS
S.N. 001-3338
SHEET NO. 16 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1598	11-00218-00-BR	ADAMS	53	32
		CONTRACT NO. 93590		
		ILLINOIS FED. AID PROJECT		

Kilngner & Associates P.C.