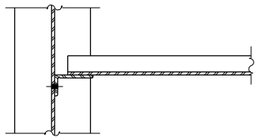
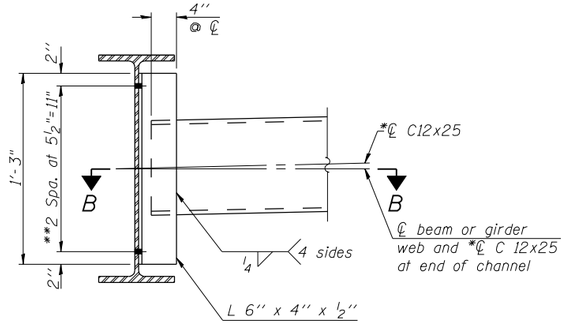
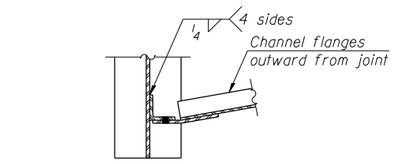
Notes:
Two hardened washers required for each set of oversized holes.
*Alternate C12x30 channels are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.
The alternate, if utilized, shall be provided at no additional cost to the Department.
**$\frac{3}{4}$" ϕ HS bolts, $\frac{15}{16}$" ϕ holes
***Cost of timber block posts is included with structural steel.



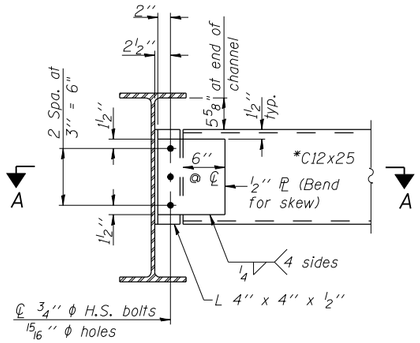
SECTION B-B



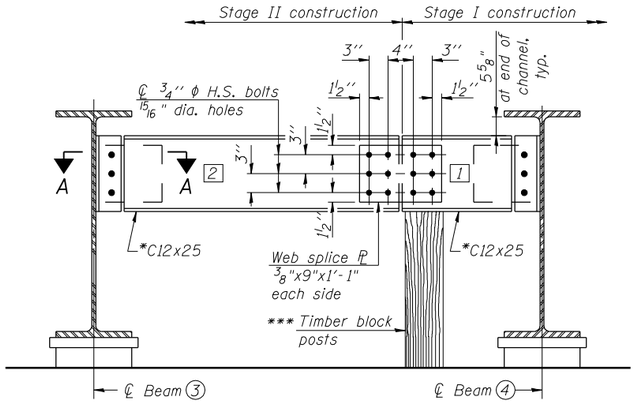
INTERIOR DIAPHRAGM D1
(46 Required)



SECTION A-A



END DIAPHRAGM D3
(8 Required)



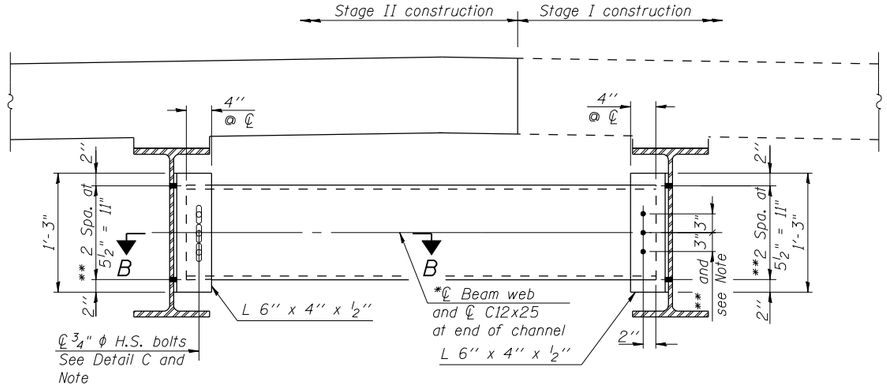
END DIAPHRAGM D2
(2 Required)

END DIAPHRAGM D2 STAGE CONSTRUCTION SEQUENCE

1. Order diaphragm in two sections.
2. Attach section [1] of diaphragm to beam ④
3. Place timber block posts between section [1] of diaphragm and abutment bearing seat.
4. Attach section [2] of diaphragm to both beam ③ and section [1] of diaphragm during stage II construction with splice plates.
5. Remove timber block posts.

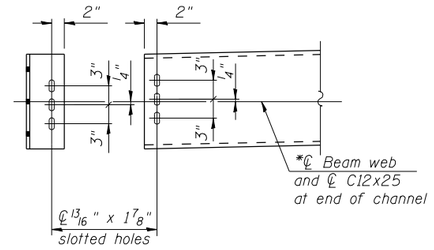
INTERIOR BEAM MOMENT TABLE				
		0.4 Sp. 1 or 0.6 Sp. 3	Piers	0.5 Sp. 2
I_s	(in^4)	4,080	4,080	2,850
$I_c(n)$	(in^4)	11,926	11,926	9,067
$I_c(3n)$	(in^4)	8,744	-	6,814
$I_c(cr)$	(in^4)	-	5,914	-
S_s	(in^3)	299	299	213
$S_c(n)$	(in^3)	460	460	342
$S_c(3n)$	(in^3)	414	-	309
$S_c(cr)$	(in^3)	-	355	-
DC1	(k/')	0.800	0.810	0.790
M_{DC1}	('k)	151.9	322.3	147.7
DC2	(k/')	0.150	0.150	0.150
M_{DC2}	('k)	28.5	60.1	29.2
DW	(k/')	0.300	0.300	0.300
M_{DW}	('k)	56.9	120.2	58.4
M_{L+IM}	('k)	591.5	586.2	545.6
M_U (Strength I)	('k)	1,346.0	1,684.2	1,263.5
$\phi_f M_n$	('k)	2,340.5	1,854.1	1,688.3
f_s DC1	(ksi)	6.10	12.94	8.32
f_s DC2	(ksi)	0.83	2.03	1.13
f_s DW	(ksi)	1.65	4.06	2.27
f_s (L+IM)	(ksi)	15.43	19.82	19.14
f_s (Service II)	(ksi)	28.63	44.79	36.61
$0.95R_hF_{yf}$	(ksi)	47.50	47.50	47.50
V_f	(k)	26.7	25.6	19.6

INTERIOR BEAM REACTION TABLE			
		Abut.	Piers
R_{DC1}	(k)	17.7	55.4
R_{DC2}	(k)	3.0	10.3
R_{DW}	(k)	5.9	20.7
R_{L+IM}	(k)	75.6	100.0
R_{Total}	(k)	102.2	186.4



Note:
Bolts in *C12x25 shall be finger tightened prior to stage II deck pour to permit differential displacement of beams. Fully tighten after stage II deck pour is complete.

INTERIOR DIAPHRAGM - D4
(4 Required)



DETAIL C

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 (superimposed) 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 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (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 load plus impact loads as calculated below (ksi).
$M_{L+IM} / S_c(n)$ 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_f: Maximum factored shear range in span computed according to Article 6.10.10.

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ESCA CONSULTANTS, INC.
HIGHWAY & STRUCTURAL ENGINEERING

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL FRAMING DETAILS
STRUCTURE NO. 093-0025
SHEET NO. 17 OF 31 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332	(12,B2)B-1	WABASH	68	37
		CONTRACT NO. 74219		
	ILLINOIS FED. AID PROJECT			