INTERIOR GIRDER MOMENT TABLE		0.5 Span
I_s	(in^4)	4,580
$I_c(n)$	(in^4)	12,313
$I_c(3n)$	(in^4)	8,820
S_s	(in^3)	371
$S_c(n)$	(in^3)	546
$S_c(3n)$	(in^3)	489
DC1	(k/')	0.802
M_{DC1}	('k)	435
DC2	(k/')	0.183
M_{DC2}	('k)	99
DW	(k/')	0.308
M_{DW}	('k)	167
M_{L+IM}	('k)	793
M_u (Strength I)	('k)	2,306
$\phi_f M_n$	('k)	2,527
f_s DC1	(ksi)	14.1
f_s DC2	(ksi)	2.4
f_s DW	(ksi)	4.1
f_s (L+IM)	(ksi)	17.4
f_s (Service II)	(ksi)	43.3
$0.95R_hF_{yf}$	(ksi)	47.5
f_s (Total)(Strength I)	(ksi)	
V_f	(k)	22.7

INTERIOR GIRDER REACTION TABLE		Abutment
R_{DC1}	(k)	26.4
R_{DC2}	(k)	6.0
R_{DW}	(k)	10.2
R_{L+IM}	(k)	70.5
R_{Total}	(k)	113.1

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 $in.^3$).

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).
$M_{DC2} / S_c(3n)$

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).
$M_{DW} / S_c(3n)$

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).
$M_{L+IM} / S_c(n)$

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

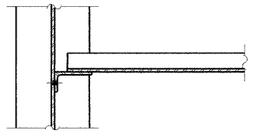
$0.95R_hF_yf$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

f_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
$1.25\ (f_{sDC1} + f_{sDC2}) + 1.5\ f_{sDW} + 1.75\ f_{sL+IM}$

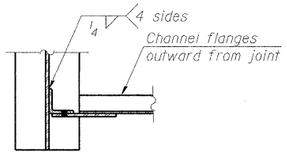
V_f: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

Structural Steel is furnished in a separate contract (60R35). Cost for erecting Structural Steel is included in this contract as "Erecting Structural Steel".

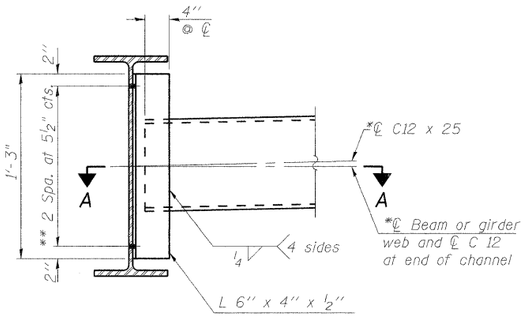
Note:
All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.



SECTION A-A

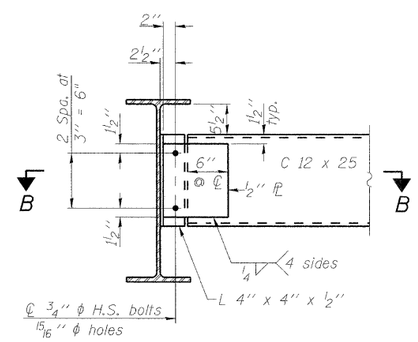


SECTION B-B



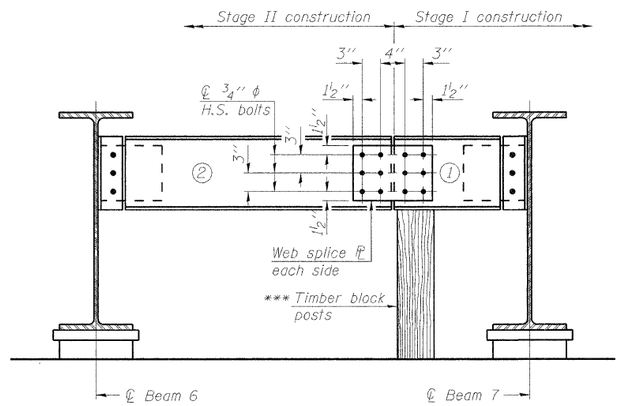
INTERIOR DIAPHRAGM D

Note:
Two hardened washers required for each set of oversized holes.
*C12 x 30 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.
**¾" ϕ HS bolts, 15/16" ϕ holes
The interior diapragms below the stage construction line (between Beams 6 and 7) require standard long slotted holes (13/16" x 1 7/8") in both connection angles. The bolts in the long slots shall be finger tight until the second stage pour is complete. Position slots so bolts start at one end with no concrete load and finish near the opposite end under deck load. All holes shall have appropriate hardened or plate washers.



END DIAPHRAGM D1

Note:
Two hardened washers required for each set of oversized holes.



END DIAPHRAGM D2

*** Cost of Timber Block Posts is included with Erecting Structural Steel.

END DIAPHRAGM STAGE CONSTRUCTION SEQUENCE

1.) Order diaphragm in two sections.
2.) Attach section (1) of diaphragm to Beam 7
3.) Place timber block posts between section (1) of diaphragm and abutment bearing section.
4.) Attach section (2) of diaphragm to both Beam 6 and section (1) of diaphragm during stage II construction with splice plates.
5.) Remove timber block posts.

FILE NAME = g:\project\2202155.009\cadd\structure\sht\0160680-60M52-018-Steel.dgn

ENTRAN

USER NAME = 2sayerb	DESIGNED - BPS	REVISED -
	CHECKED - BHS	REVISED -
PLOT SCALE = N/A	DRAWN - BPS	REVISED -
PLOT DATE = 11/30/2011	CHECKED - BHS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS
S.N. 016-0680
SHEET NO. 518 OF 29 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2692	1415B-1	COOK	72	53
		CONTRACT NO. 60M52		
	ILLINOIS FED. AID PROJECT			