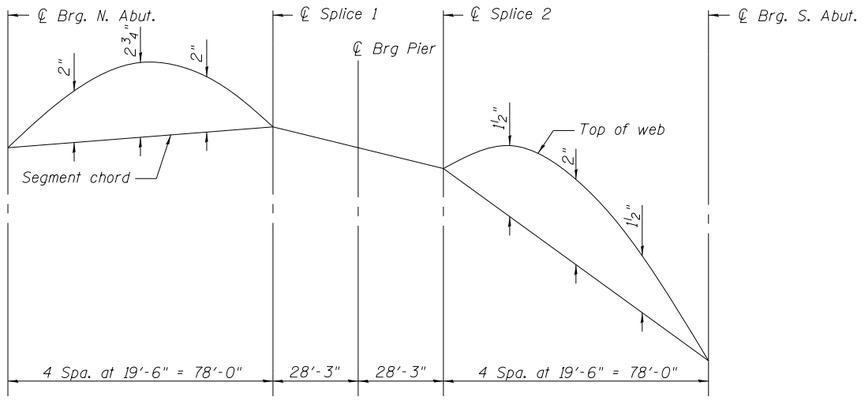


CAMBER DIAGRAM

Notes:

Cambers are based on pour sequence shown on Sht. 8. Should the contractor deviate from the proposed pouring sequence, the contractor must retain the services of an Illinois Licensed Structural Engineer to analyze the structure for revised Pouring Sequence to determine the cambers associated with the revised pouring sequence. Details and calculations with the required signature and seal shall be submitted to the Engineer for review and approval. Cost included in the pay item "Furnishing and Erecting Structural Steel".

INTERIOR GIRDER MOMENT TABLE			
		0.4 Sp. 1 or 0.6 Sp. 2	Pier
I_s	(in^4)	15885	40196
$I_c(n)$	(in^4)	39990	78140
$I_c(3n)$	(in^4)	30200	59100
$I_c(cr)$	(in^4)		45100
S_s	(in^3)	694	1692
$S_c(n)$	(in^3)	969	8255
$S_c(3n)$	(in^3)	891	3560
$S_c(cr)$	(in^3)		1698
DC1	(k/')	1.005	1.159
M_{DC1}	('k)	672	2025
DC2	(k/')	0.16	0.16
M_{DC2}	('k)	107	339
DW	(k/')	0.43	0.43
M_{DW}	('k)	291	740
M_{L+IM}	('k)	1467	1937
M_u (Strength I)	('k)	3977	7301
$\phi_f M_n$	('k)	5207	7892
f_s DC1	(ksi)	11.9	14.1
f_s DC2	(ksi)	1.446	1.856
f_s DW	(ksi)	3.92	5.06
f_s (L+IM)	(ksi)	21.85	17.19
f_s (Service II)	(ksi)	39.1	38.2
$0.95R_hF_{yf}$	(ksi)	47.5	47.5
V_r	(k)	43.0	43.0

INTERIOR GIRDER REACTION TABLE			
		Abut.	Pier
R_{DC1}	(k)	39	161
R_{DC2}	(k)	6	22
R_{DW}	(k)	16	53
R_{L+IM}	(k)	116	192
R_{Total}	(k)	177	428

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) 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) 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 or non-slender negative moment capacity according to Article A6.1.1 (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.

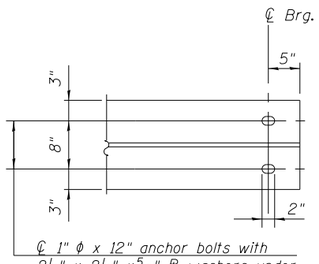
f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
$M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.

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).
$M_{L+IM} / S_c(n)$ or $M_{L+IM} / S_c(cr)$ as applicable.

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

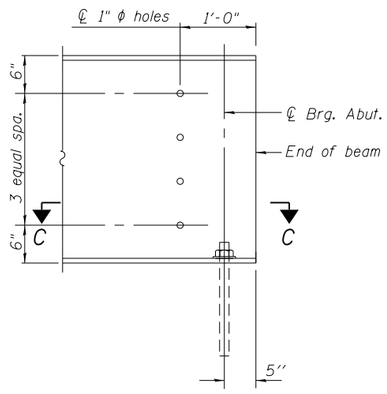
$0.95R_hF_yf$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

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

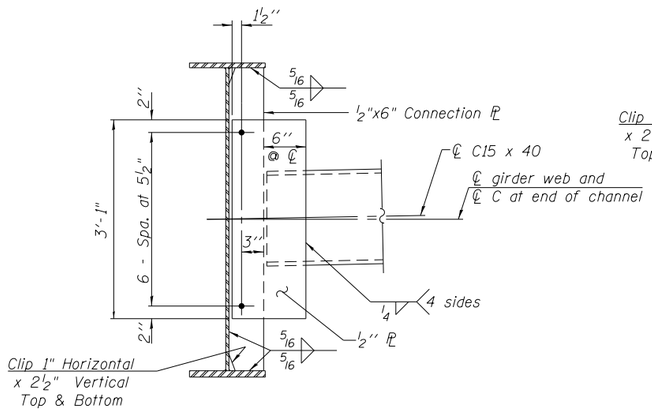


℄ 1" ϕ x 12" anchor bolts with 2 1/4" x 2 1/4" x 5/16" ℄ washers under nuts. 1 3/8" x 2" slotted holes in flange and 1 1/2" ϕ holes in bearing plate

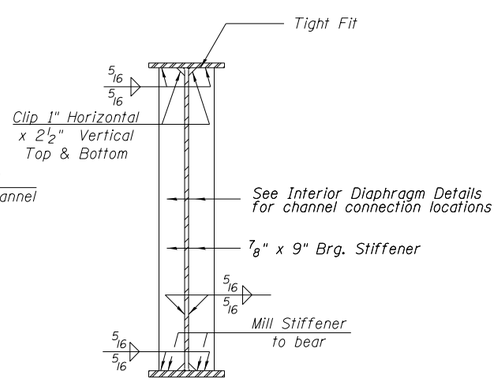
SECTION C-C



TYP. END OF BEAM ELEVATION



INTERIOR DIAPHRAGM



BEARING AT PIER

Notes:

Two hardened washers required for each set of oversized holes.

3/4" ϕ HS bolts, 15/16" ϕ holes.

Terminate welds 1/4" from ends of members and edges of plates.

All steel, except diaphragms and connection plates, shall be AASHTO M270 Grade 50.

Structural steel for bearing stiffeners shall be AASHTO M270 Grade 50.

Alternate channels C15x50 are permitted to facilitate material acquisition. Calculated weight of structural steel is based on C15x40 sections. The alternate, if utilized, shall be provided at no extra cost to the department.

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

TOP OF WEB ELEVATION					
	℄ Brg. N. Abut.	℄ Splice No. 1	℄ Bearing Pier	℄ Splice No. 2	℄ Brg. S. Abut.
Girder 1	476.03	476.28	476.12	476.03	475.29
Girder 2	476.21	476.46	476.30	476.21	475.47
Girder 3	476.39	476.64	476.48	476.40	475.65
Girder 4	476.57	476.82	476.66	476.58	475.83
Girder 5	476.75	477.00	476.84	476.76	476.01
Girder 6	476.93	477.18	477.02	476.94	476.19
Girder 7	476.79	477.04	476.88	476.80	476.05
Girder 8	476.61	476.86	476.70	476.62	475.87
Girder 9	476.43	476.68	476.52	476.44	475.69
Girder 10	476.25	476.50	476.34	476.25	475.51

Note: For fabrication only

FILE NAME = 1000099-978221-017-Steel.dgn	USER NAME = mfox	DESIGNED - DF	REVISED -
CH2MHILL		CHECKED - JE	REVISED -
	PLOT SCALE = 02.0000 '' / in.	DRAWN - AK	REVISED -
	PLOT DATE = 3/6/2014	CHECKED - JE	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS
STRUCTURE NO. 100-0099
SHEET NO. 18 OF 27 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
331	(1-3)R-2, N-4, TS-4, HBK-1	WILLIAMSON	733	375
	DRAWING NO. BR-18	CONTRACT NO. 78221		
	ILLINOIS FED. AID PROJECT			