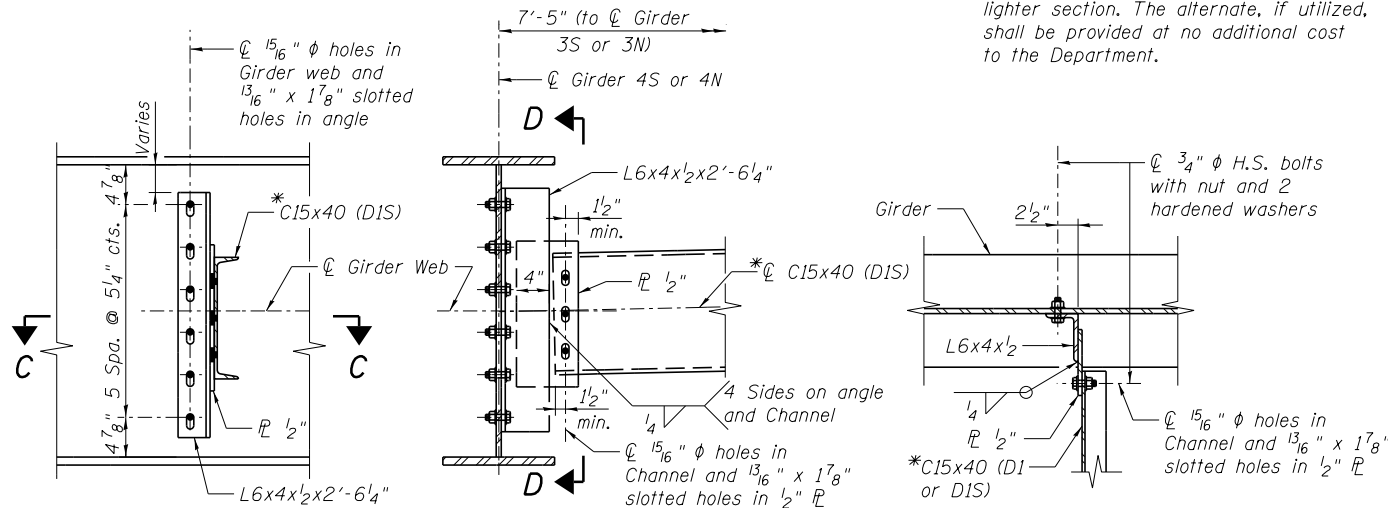


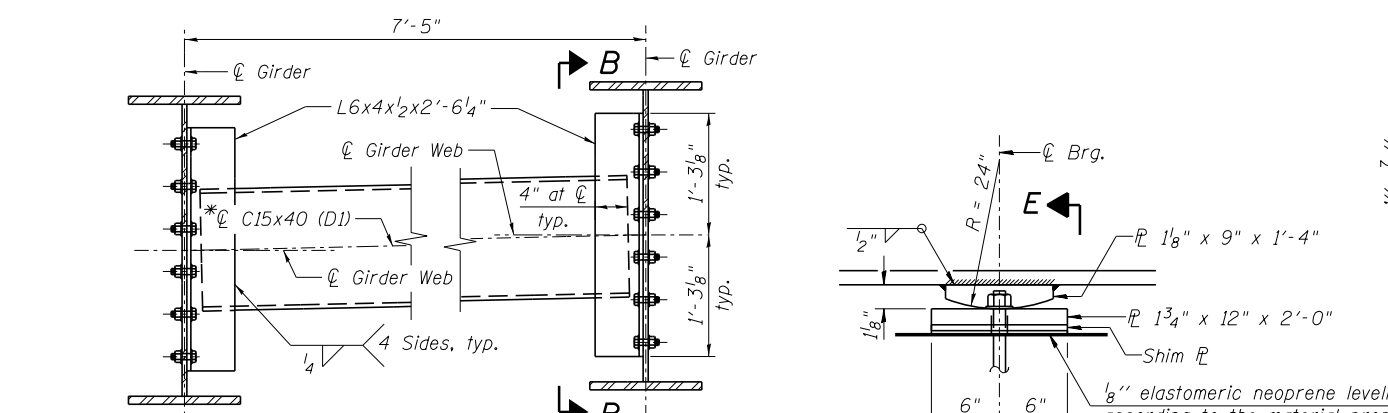
DIAPHRAGM DIS - PRIOR TO STAGE II DECK POUR
(6 - Diaphragm DIS required)



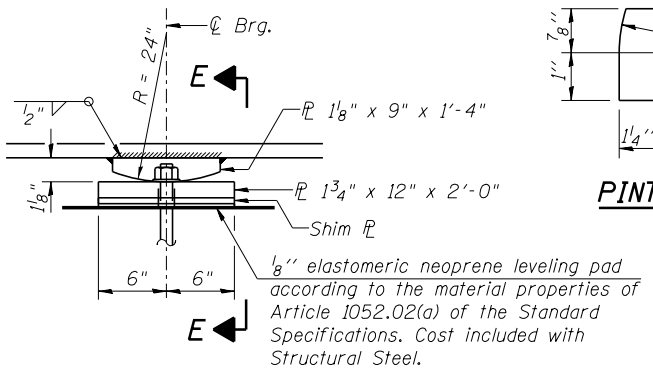
DIAPHRAGM DIS - AFTER STAGE II DECK POUR
(6 - Diaphragm DIS required)

SECTION C-C

(Section shown taken at Views A-A & D-D. Section shown is similar and opposite hand for View B-B.)



DIAPHRAGM D1
(64 - Diaphragm D1 required)



ELEVATION

FIXED BEARING AT PIER 2

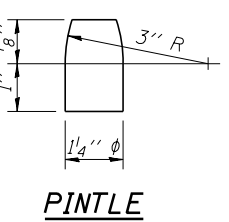
EXTERIOR GIRDER MOMENT TABLE			
	0.4 Sp. 1 0.6 Sp. 3	Pier 1 or 2	0.5 Span 2
I_s	(in ⁴) 14272	14272	13264
$I_c(n)$	(in ⁴) 36333	36333	32748
$I_c(3n)$	(in ⁴) 26193	26193	23966
$I_c(cr)$	(in ⁴) 18687	18687	-----
S_s	(in ³) 646	646	762
$S_c(n)$	(in ³) 1146	1146	1013
$S_c(3n)$	(in ³) 1056	1056	934
$S_c(cr)$	(in ³) 984	984	-----
DC1	(k/')	1.008	0.996
M _{DC1}	(k)	-105	523
DC2	(k/')	0.150	0.150
M _{DC2}	(k)	-17	77
DW	(k/')	0.340	0.340
M _{DW}	(k)	-38	175
$M_L + IM$	(k)	-369	846
M_u (Strength I)	(k)	-855	2494
$\phi_r M_n$	(k)	5403	4883
f_s DC1	(ksi)	-1.9	8.2
f_s DC2	(ksi)	-0.2	1.0
f_s DW	(ksi)	-0.5	2.2
f_s (L+IM)	(ksi)	-4.5	10.0
f_s (Service II)	(ksi)	-8.5	10.8
$0.95R_n F_{yr}$	(ksi)	47.5	47.5
f_s (Total)(Strength I)	(ksi)		
$\phi_r F_n$	(ksi)		
V_r	(k)	51.7	45.6

EXTERIOR GIRDER REACTION TABLE		
	Abut.	Pier
*R _{DC1}	(k) 33.8	86.4
R _{DC2}	(k) 0.02	12.99
R _{DW}	(k) 0.04	29.44
$R_L + IM$	(k) 62.4	122.7
R _{Total}	(k) 96.2	251.5

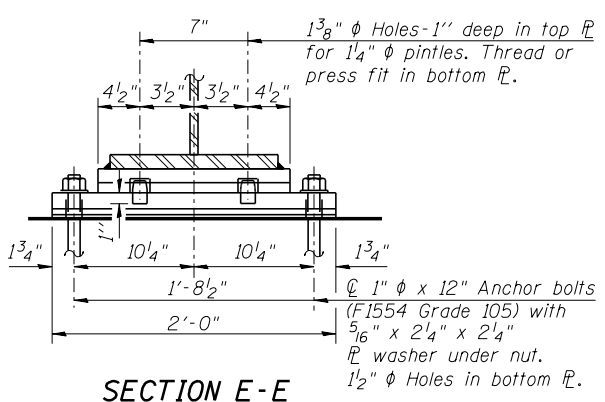
*Reaction also includes approach slab and concrete diaphragm.

NOTES FOR FIXED BEARINGS:

- Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
- Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
- Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
- Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates and placed as shown on bearing details.
- The structural steel plates and pintles of the fixed bearings shall conform to requirements of AASHTO M270 Grade 50.



PINTLE



SECTION E-E

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 (in⁴ and in³).

$I_c(n), S_c(n)$: 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 (in⁴ and in³).

$I_c(3n), S_c(3n)$: 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 (in⁴ and in³).

$I_c(cr), S_c(cr)$: 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 (in⁴ and in³).

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.).

$1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_L + IM$

$\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.) 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 plus impact loads as calculated below (ksi).

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

f_s (Service II): Sum of stresses as computed below (ksi).

$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3 f_s (L + IM)$

$0.95R_n F_{yr}$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

f (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.25 (f_{sDC1} + f_{sDC2}) + 1.5 f_{sDW} + 1.75 f_s (L + IM)$

$\phi_r F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

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

NOTES:

- M_L and R_L include the effects of centrifugal force and superelevation.
- Exterior girder controls the design.
- Erect all Diaphragms DIS before the Stage II deck pour, finger-tightening bolts in slotted holes at the stage construction line. Bolts shall be fully tightened after Stage II deck pour.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Anchor Bolts, 1"	Each	24

benesch
engineers · scientists · planners

Alfred Benesch & Company
205 North Michigan Avenue, Suite 2400
Chicago, Illinois 60601
312-565-0450 Job No. 10093

FILE NAME =	USER NAME = akeshchall	DESIGNED - JDM	REVISED -
0161000.60J16.027.stldet.2.dgn		CHECKED - RMM	REVISED -
	PLOT SCALE =	DRAWN - MAK	REVISED -
	PLOT DATE = 12/20/2012	CHECKED - RMM	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS (2 OF 2)
STRUCTURE NO. 016-1000/1001

SHEET NO. SA27 OF SA40 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
372	2013-038B-R	COOK	821	275
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60J16	

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