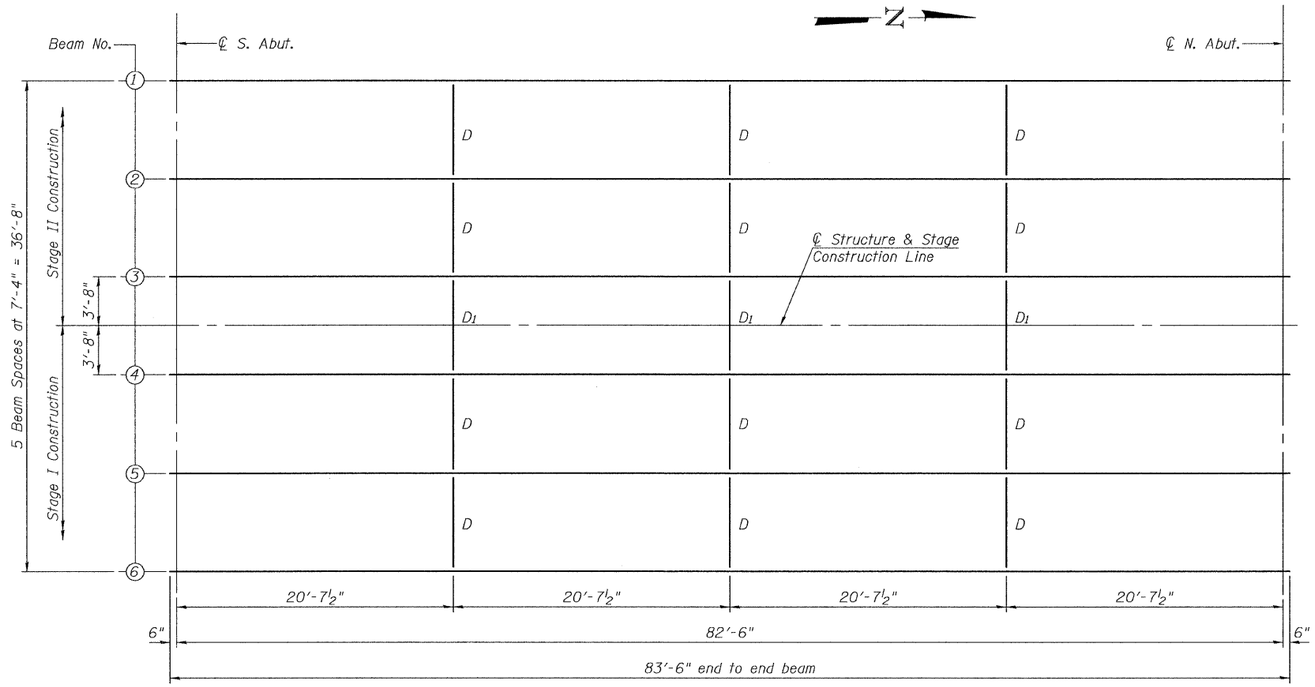
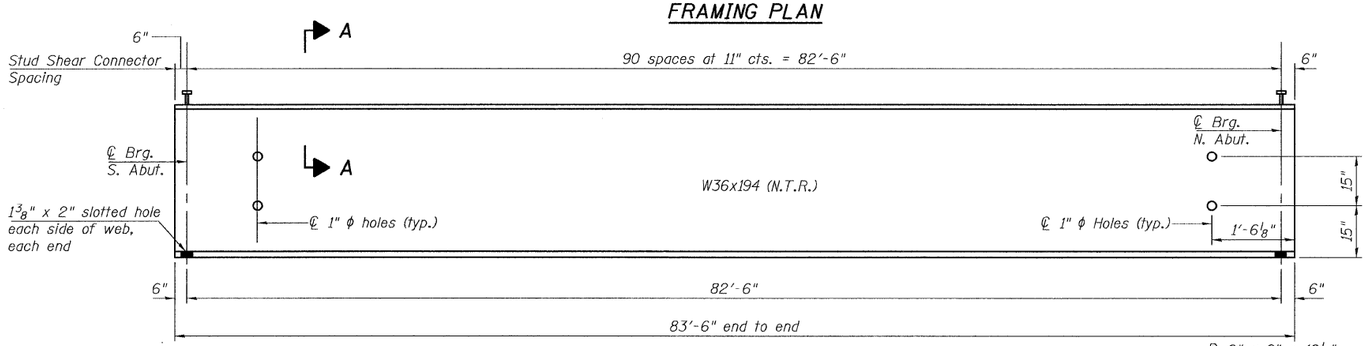


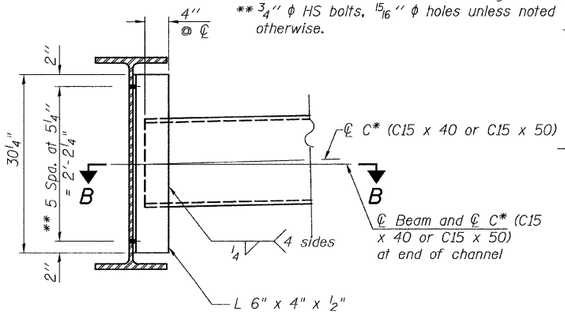
FRAMING PLAN



BEAM ELEVATION

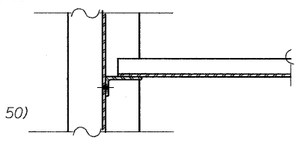
* Alternate channels are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.

** ¾" ϕ HS bolts, 15/16" ϕ holes unless noted otherwise.



INTERIOR DIAPHRAGMS, D & D1

(15 Required, 12-D, 3-D1)



SECTION B-B

TOP OF BEAM ELEVATIONS

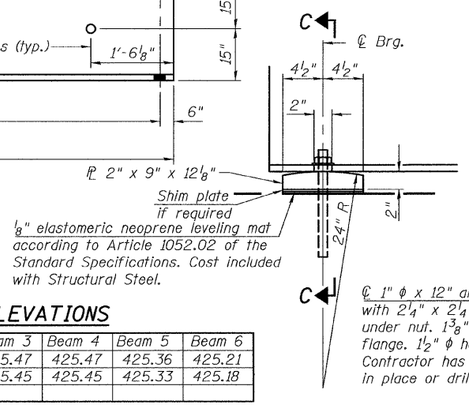
Location	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6
℄ Brg. S. Abut.	425.21	425.36	425.47	425.47	425.36	425.21
℄ Brg. N. Abut.	425.18	425.33	425.45	425.45	425.33	425.18

(for fabrication only)

NOTES:

Two hardened washers required for each set of oversized holes.

Diaphragm D1 is similar to D except the connecting angle attached to Beam 3 shall have 13/16" x 1 7/8" slotted holes with ¼" plate washers covering the entire slot. The holes in Beam 3 at this connection shall also be 13/16" x 1 7/8" slotted holes. The bolts for the slotted holes shall only be finger tight prior to pouring the deck and then tightened after completion of the pour. The slots shall be positioned so the bolts start at one end of the slot with no concrete load and finish near the opposite end under deck load.



ELEVATION AT ABUTMENT

FIXED BEARING

INTERIOR GIRDER MOMENT TABLE		0.472 Span
I_s	(in^4)	12100
$I_c(n)$	(in^4)	28402
$I_c(3n)$	(in^4)	21100
S_s	(in^3)	664
$S_c(n)$	(in^3)	927
$S_c(3n)$	(in^3)	836
DC1	(k/')	0.99
M_{DC1}	('k)	844
DC2	(k/')	0.15
M_{DC2}	('k)	127
DW	(k/')	0.33
M_{DW}	('k)	282
M_{L+Imp}	('k)	1316
Mu(Strength I)	('k)	3946
$\phi_f M_n$	('k)	4659
f_s DC1	(ksi)	15.3
f_s DC2	(ksi)	1.8
f_s DW	(ksi)	4.0
f_s 1.3(L+I)	(ksi)	22.1
f_s (Service II)	(ksi)	43.2
Vr	(k)	26.3

INTERIOR GIRDER REACTION TABLE HL93 Loading		
		Abut.
R_{DC1}	(k)	40.9
R_{DC2}	(k)	6.2
R_{DW}	(k)	13.5
R_{L+Imp}	(k)	93.8
R_{Total}	(k)	154.4

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+Imp}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

Mu (Strength I): Factored design moment (kip-ft.). $1.25\,(M_{DC1} + M_{DC2}) + 1.5\,M_{DW} + 1.75\,M_{L+Imp}$

$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi). $M_{DC1} + M_{DC2} + M_{DW} + 1.3\,M_{L+Imp}$

Vr: Factored shear range computed according to Article 6.10.10.

NOTES:

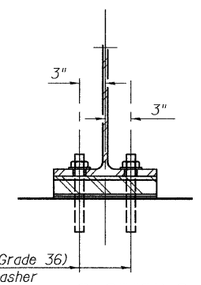
All diaphraghms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted.

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

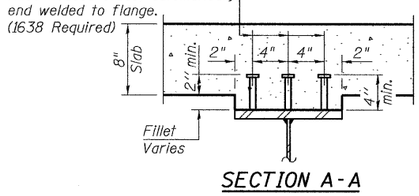
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

The steel beams shall be AASHTO M270 Grade 50. All other structural steel shall be AASHTO M270 Grade 36.



SECTION C-C



SECTION A-A

STRUCTURAL STEEL
U.S. ROUTE 45 OVER MARTIN CREEK
F.A.P. RT. 328 SEC. (9BR1-10BR1) B-1
WAYNE COUNTY
STATION 139+10.00
STRUCTURE NO. 096-0069

COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	PROJECT NO. 07053-8	SHEET NO. 12	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	SCALE		328	(9BR1-10BR1) B-1	WAYNE	67	35
	DATE 8/05/08	17 SHEETS			CONTRACT NO. 74214		
	DRAWN BY TFC						
	CHECKED BY CME/RM/MCB		FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

PLOT DATE = 08/06/2008
FILE NAME = ...8\9brridge-plane&girt-12.dgn
PLOT SCALE = 54.0000 '/ IN.
USER NAME = TFC.