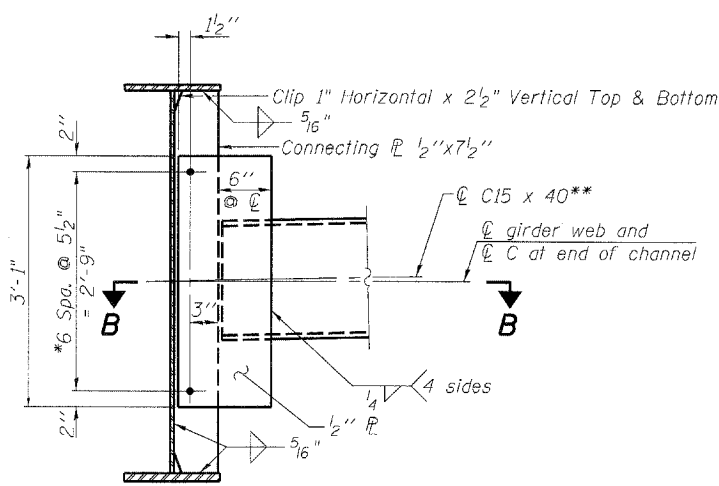
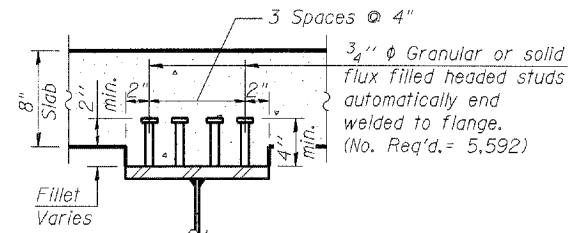


**SECTION B-B**

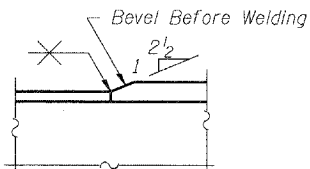


**INTERIOR DIAPHRAGM (D)**

Note:  
 Two hardened washers required for each set of oversized holes.  
 \*3/4"  $\phi$  HS bolts, 1/16"  $\phi$  holes. 1/16" vertical slotted holes in bracing and main member connection plates on the south side of Beam 3. Provide 5/16" plate washers for slotted holes. The bolts for the slotted holes shall be finger tightened prior to the deck slab pouring of Stage II Construction and fully tightened after completion of stage II pour. Position slotted holes in connection plates so bolts start at one end with no concrete load and finish near the opposite end under deck load, allowing maximum displacement.  
 \*\* 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.



**SECTION A-A**

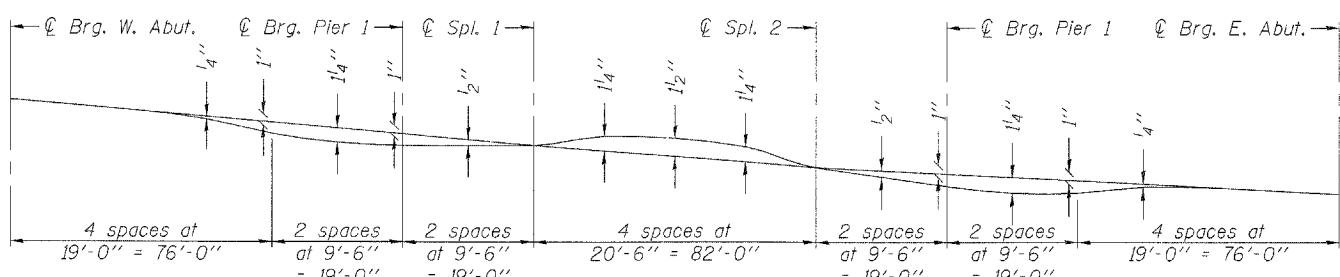


**DETAIL "B"**

**\*\*\*TOP OF WEB ELEVATIONS**

Location	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6
$\phi$ Brg. W. Abut.	604.59	604.71	604.80	604.76	604.61	604.42
$\phi$ Pier 1	603.19	603.32	603.42	603.39	603.25	603.08
$\phi$ Splice 1	603.01	603.14	603.24	603.22	603.08	602.91
$\phi$ Splice 2	602.19	603.32	602.42	602.40	602.26	602.09
$\phi$ Pier 2	601.98	602.11	602.21	602.20	602.06	601.89
$\phi$ Brg. E. Abut.	601.43	601.57	601.68	601.68	601.55	601.40

\*\*\* For Fabrication only.



**CAMBER DIAGRAM**

Note:  
 All structural steel shall be AASHTO M 270 Grade 50W.

INTERIOR GIRDER MOMENT TABLE				
		0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
$I_a$	(in <sup>4</sup> )	17170	26386	17170
$I_o(n)$	(in <sup>4</sup> )	40396	---	40396
$I_o(3n)$	(in <sup>4</sup> )	30414	---	30414
$S_s$	(in <sup>3</sup> )	723	1088	723
$S_o(n)$	(in <sup>3</sup> )	980	---	980
$S_o(3n)$	(in <sup>3</sup> )	900	---	900
Z	(in <sup>3</sup> )	---	1210	---
DC1	(k/')	0.959	1.022	0.959
M <sub>DC1</sub>	('k)	547	1239	499
DC2	(k/')	0.150	0.150	0.150
M <sub>DC2</sub>	('k)	99	159	111
DW	(k/')	0.333	0.333	0.333
M <sub>DW</sub>	('k)	220	353	246
$M_k + 1M$	('k)	1327	1243	1406
$M_u$ (Strength I)	('k)	3460	4452	3592
$\phi_f M_n, \phi_f M_{nc}$	('k)	5189	5040	5189
$f_s$ DC1	(ksi)	9.1	13.7	8.3
$f_s$ DC2	(ksi)	1.3	1.8	1.5
$f_s$ DW	(ksi)	2.9	3.9	3.3
$f_s$ 1.3( $k + 1M$ )	(ksi)	21.1	17.8	22.4
$f_s$ (Service II)	(ksi)	34.4	37.2	35.5
$f_s$ (Total)(Strength I)	(ksi)	---	---	---
$V_f$	(k)	19.8	---	22.2

\*\*\*\* Compact sections  
 \*\*\*\* Non-Compact and slender sections

INTERIOR GIRDER REACTION TABLE			
	Abut.	Pier	
$R_{DC1}$	(k)	32.6	118.4
$R_{DC2}$	(k)	5.5	17.8
$R_{DW}$	(k)	12.1	39.5
$R_k + 1M$	(k)	92.4	135.7
$R_{Total}$	(k)	142.6	311.4

$I_s, S_s$ : 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<sup>4</sup> and in<sup>3</sup>).  
 $I_o(n), S_o(n)$ : 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<sup>4</sup> and in<sup>3</sup>).  
 $I_o(3n), S_o(3n)$ : 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<sup>4</sup> and in<sup>3</sup>).  
 Z: Plastic Section Modulus of the steel section in non-composite areas. Omit line in Moment Table if not used in design calculations (in<sup>3</sup>).  
 DC1: Un-factored non-composite dead load (kips/ft.).  
 M<sub>DC1</sub>: 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<sub>DC2</sub>: 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<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).  
 M<sub>k + 1M</sub>: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).  
 $M_u$  (Strength I): Factored design moment (kip-ft.).  
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_k + 1M$   
 $\phi_f M_n$ : Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).  
 $\phi_f M_{nc}$ : Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).  
 $f_s$  (Service II): Sum of stresses as computed from the moments below (ksi).  
 $M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_k + 1M$   
 $f_s$  (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).  
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_k + 1M$   
 $V_f$ : Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

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.

PRINTED DATE: 5/11/2011  
 FILE NAME: n:\proj\gcs\adot\148\item 25 - d7 various design\work\_order\_87\lead\dr\wpa\Sheets\50\_R16\_StructSteel\_2.dgn



DESIGNED - DF	REVISED -
CHECKED - ADG, SA	REVISED -
DRAWN - ADG	REVISED -
CHECKED - DF	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS  
 STRUCTURE NO. 015-0075

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
91	(SBR)B-1	COLES	91	50
CONTRACT NO. 74244				
FED. ROAD DIST. NO. - ILLINOIS FED. AID PROJECT				

SHEET NO. 15 OF 24 SHEETS