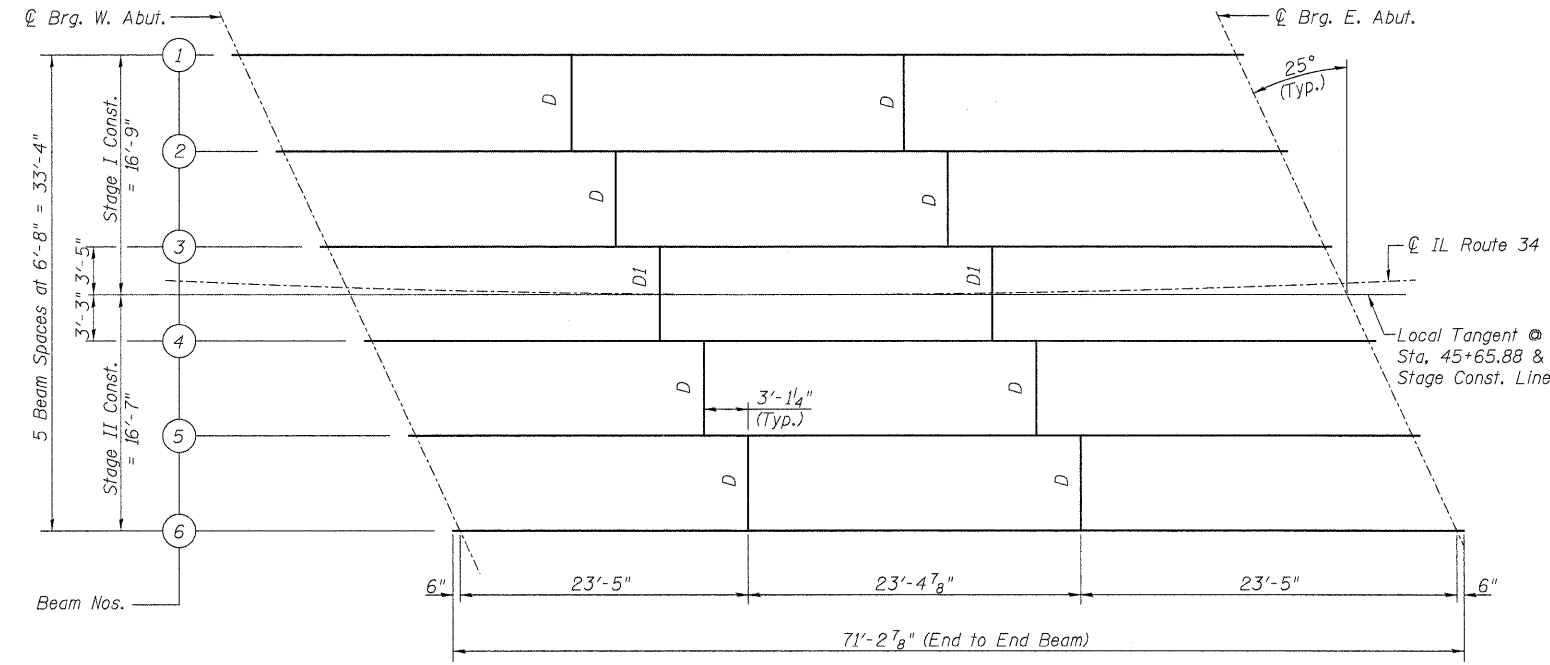


STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**INTERIOR BEAM MOMENT TABLE**

	0.5 Span	
$I_s$	(in <sup>4</sup> ) 7800	
$I_c(n)$	(in <sup>4</sup> ) 22577	
$I_c(3n)$	(in <sup>4</sup> ) 16433	
$S_s$	(in <sup>3</sup> ) 439	
$S_c(n)$	(in <sup>3</sup> ) 681	
$S_c(3n)$	(in <sup>3</sup> ) 611	
DC1	(k/')	0.837
MDC1	(k)	516
DC2	(k/')	0.150
MDC2	(k)	93
DW	(k/')	0.301
MDW	(k)	186
$M_L + IM$	(k)	1005
$M_u$ (Strength I)	(k)	2799
$\phi_r M_n$	(k)	3509
$f_s$ DC1	(ksi)	14.10
$f_s$ DC2	(ksi)	1.83
$f_s$ DW	(ksi)	3.65
$f_s$ 1.3(L+IM)	(ksi)	23.02
$f_s$ (Service II)	(ksi)	42.60
$V_r$	(k)	25.45

$I_s, S_s$ : 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>).

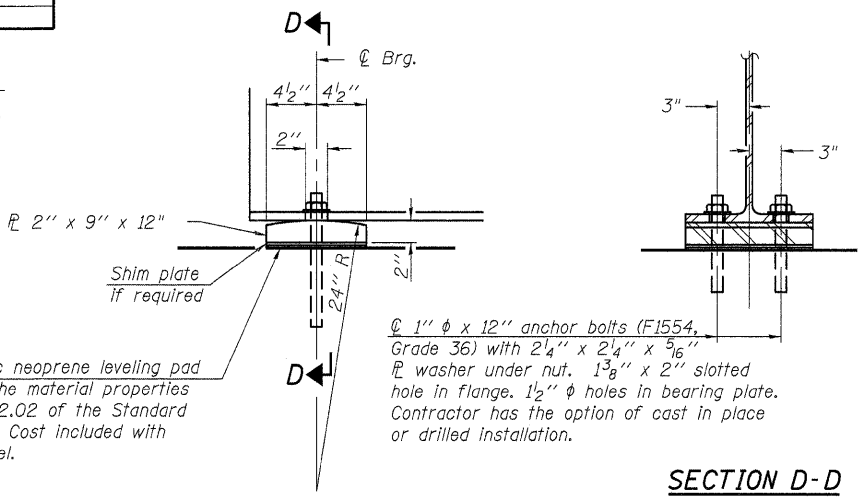
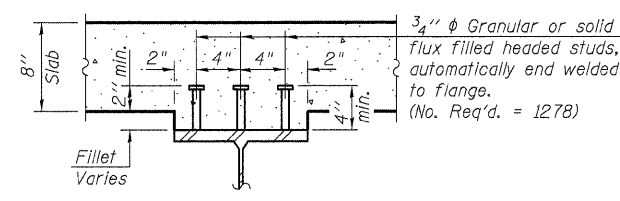
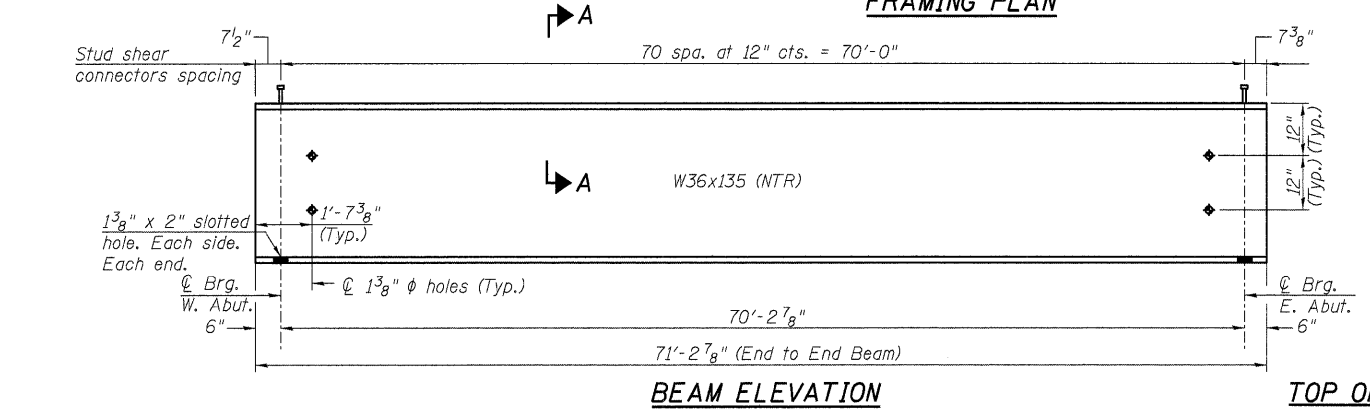
$I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total-Strength I, and Service II) due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : 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<sup>4</sup> and in<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).  
MDC1: 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.).  
MDC2: 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.).  
MDW: 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.).  
 $f_s$  (Service II): Sum of stresses as computed from the moments below (ksi).  
 $M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_L + IM$   
 $V_r$ : Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

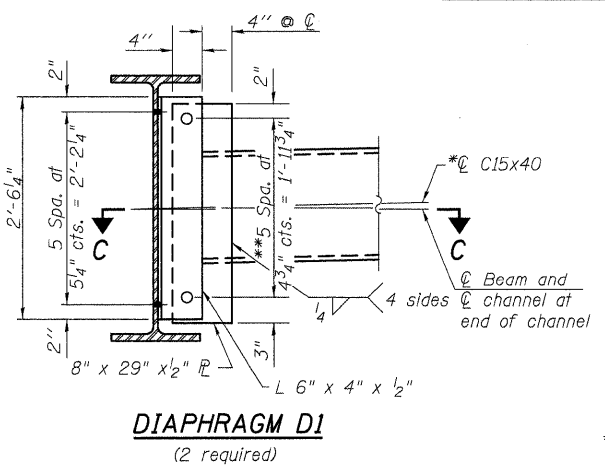
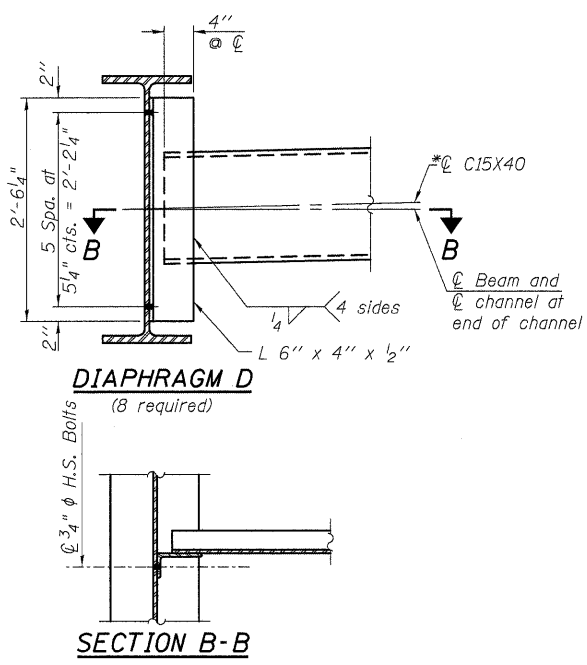
**INTERIOR BEAM REACTION TABLE**

	Abut.
RDC1	(k) 30.2
RDC2	(k) 5.3
RDW	(k) 10.6
$R_L + IM$	(k) 82.9
RTotal	(k) 129.0



**TOP OF BEAM ELEVATIONS (For Fabrication Only)**

Location	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6
⊖ Brg. W. Abut.	407.69	407.76	407.81	407.76	407.61	407.43
⊖ Brg. E. Abut.	406.50	406.58	406.63	406.58	406.43	406.25



**NOTES:**

- All beams shall be W36x135 AASHTO M270 Grade 50 (NTR). All bearing plates shall be AASHTO M270 Grade 50.
- All diaphragms 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.

Notes:  
3/4" phi H.S. Bolts 15/16" phi Holes, unless otherwise noted.  
Two hardened washers required for each set of oversized holes and 5/16" plate washer over slotted holes.  
\*C15x50 is permitted to facilitate material acquisition. Calculated weight of structural steel is based on C15x40. The alternate, if utilized, shall be provided at no additional cost to the Department.  
\*\*3/4" phi HS bolts, 13/16" x 17/8" vertical slotted holes in 8" x 29" x 1/2" plate and L 6" x 4" x 1/2". Slots shall be positioned such that the bolts start at one end with no concrete load and finish near the opposite end after the deck pour. Bolts in slotted holes shall be finger tightened and then fully tightened after second stage deck pour.

**NOTES:**

- All beams shall be W36x135 AASHTO M270 Grade 50 (NTR). All bearing plates shall be AASHTO M270 Grade 50.
- All diaphragms 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.

**SHIM PLATES**

	Beam 3
West Abut.	5/8"
East Abut.	5/8"

**FRAMING PLAN & STEEL DETAILS  
STRUCTURE NO. 028-0084**

<p>LIN ENGINEERING, LTD. Consulting Engineers Chatham, Illinois</p>	SHEET NO. 12	F.A.P. RTE. 869	SECTION 101B-1	COUNTY FRANKLIN	TOTAL SHEETS 40	SHEET NO. 27
	17 SHEETS	CONTRACT NO. 78086				
Designed By: ESH Checked By: MTH Date: 8/2009 File: 028-0084.dgn		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				