

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 16	07-00944-00-BR	CHAMPAIGN	45	20
STA.	TO STA.			
F.H.W.A. REG.	ILLINOIS	PROJECT		

	0.4 Span 1 or 0.6 Span 3	Pier 1 or Pier 2	0.5 Span 2
$I_s$ (in <sup>4</sup> )	4,930	4,930	4,930
$I_c$ (n) (in <sup>4</sup> )	13,339	13,339	13,339
$I_c(3n)$ (in <sup>4</sup> )	9681	9681	9681
$S_s$ (in <sup>3</sup> )	329	329	329
$S_c$ (n) (in <sup>3</sup> )	487	487	487
$S_c(3n)$ (in <sup>3</sup> )	437	437	437
$DC1$ (K/ft.)	0.695	0.695	0.695
$M_{DC1}$ (K)	189.81	355.50	186.42
$DC2$ (K/ft.)	0.150	0.150	0.150
$M_{DC2}$ (K)	10.99	76.76	40.25
$DW$ (K/ft.)	0.275	0.275	0.275
$M_{DW}$ (K)	75.14	140.73	73.80
$M_k + IM$ (K)	617.08	519.91	646.05
$M_u$ (Strength I) (K)	1,481.10	1,661.26	1,524.63
$\phi_r M_n$ or $M_{nc}$ (K)	2,295.98	1,979.67	2,295.98
$f_s DC1$ (k.s.i.)	6.92	12.97	6.80
$f_s DC2$ (k.s.i.)	1.13	2.11	1.11
$f_s DW$ (k.s.i.)	2.06	3.86	2.03
$f_s (1.3I_k + IM)$ (k.s.i.)	19.77	16.65	20.69
$f_s$ (Service II) (k.s.i.)	29.88	35.59	30.63
$f_s$ (Total)(Strength I)	39.76	47.05	40.78
$V_f$ (K)	40.3		42.0

$I_s, S_s$ : 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.).

$M_{DC1}$ : 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.).

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

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

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

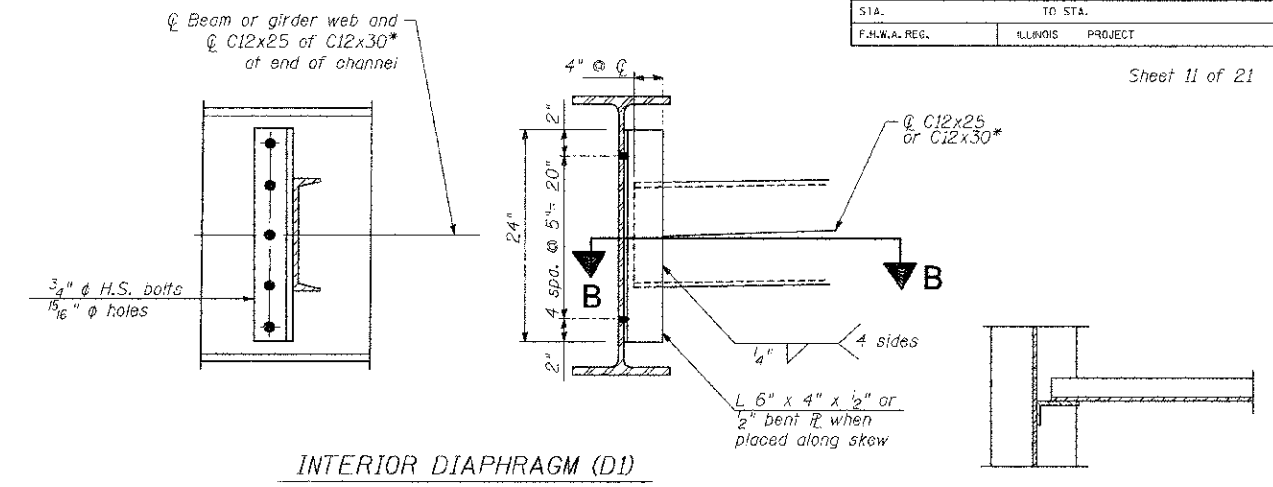
$\phi_r M_{nc}$ : Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).

$f_s$  (Service II): Sum of stresses as computed from the moments below (ksi).  
 $M_{DC1} + M_{DC2} + M_{DW} + 1.5 M_k + Imp$

$f_s$  (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).  
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_k + Imp$

$V_f$ : Factored shear range computed according to Article 6.10.10.

	Abuts.	Pier 1 or Pier 2
$R_{DC1}$ (K)	16.24	54.96
$R_{DC2}$ (K)	3.51	11.87
$R_{DW}$ (K)	6.43	21.76
$R_k + IM$ (K)	61.37	72.36
$R$ (Total) (K)	87.55	160.95



INTERIOR DIAPHRAGM (DI)

(35 Required)

SECTION B-B

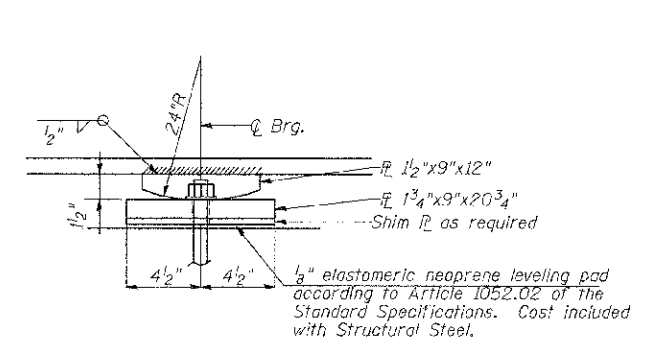
Notes:

Two hardened washers required for each set of oversized holes.

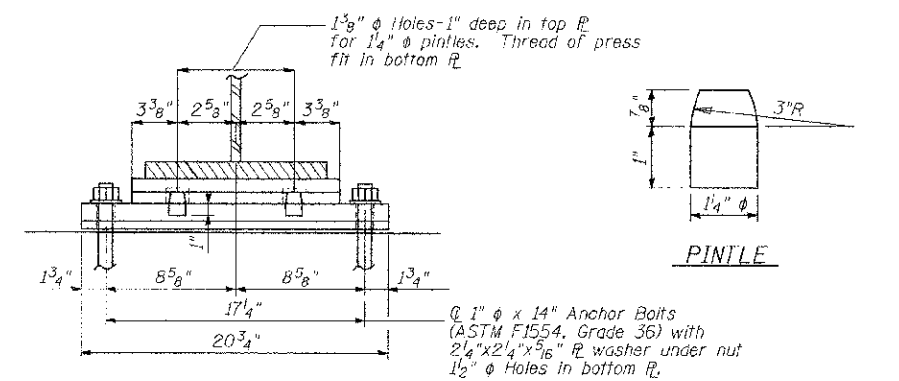
\*Alternate channels are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.

The alternate, if utilized, shall be provided at no extra cost to the contract.

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.



ELEVATION AT PIER



SECTION B-B

PINTELE

FIXED BEARING

- Notes:
- 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.
  - Anchor bolts of 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 inch adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
  - The structural steel plates of the bearing assembly shall conform to the requirements of AASHTO M270, Grade 50W.

FRAMING PLAN & BEAM DETAILS

SECTION: 07-00944-00-BR  
 CHAMPAIGN COUNTY  
 STATION 10+00