STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 8
F.A.P. 751	101B-2	PIKE	48	33	14 SHEETS
FED.ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

Contract #72928

SECTION A-A

6" ℄ Brg.
4½" 4½"
2"
ℝ 2" x 9" x 1'-0"
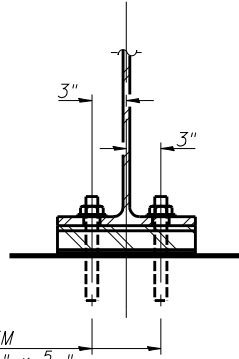Shim plate if required
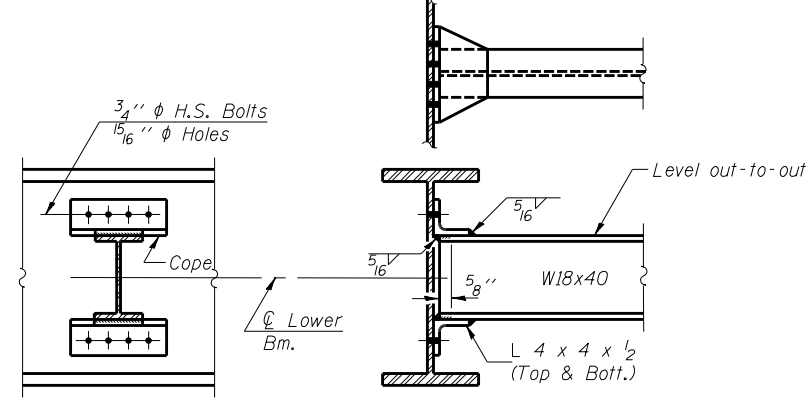
⅛" elastomeric neoprene leveling mat according to Article 1052.02 of the Standard Specifications. Cost included with Furnishing and Erecting Structural Steel.

℄ 1" φ x 12" anchor bolts (ASTM F1554 Grade 36) with 2¼"x 2¼"x ⁵⁄₁₆" ℝ washer under nut. 1³⁄₈" x 2" slotted hole in bott. flange. 1½" φ holes in bearing plate.
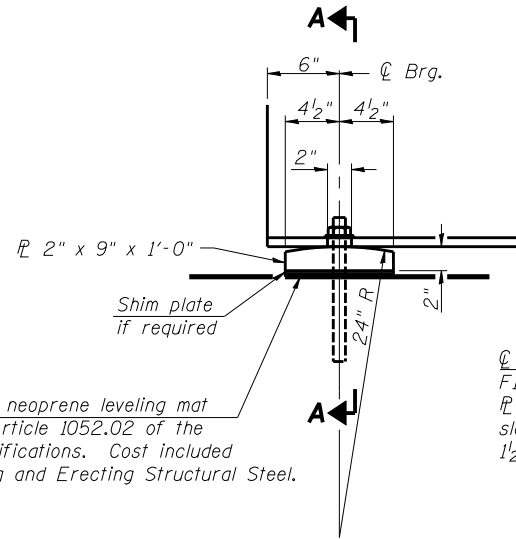
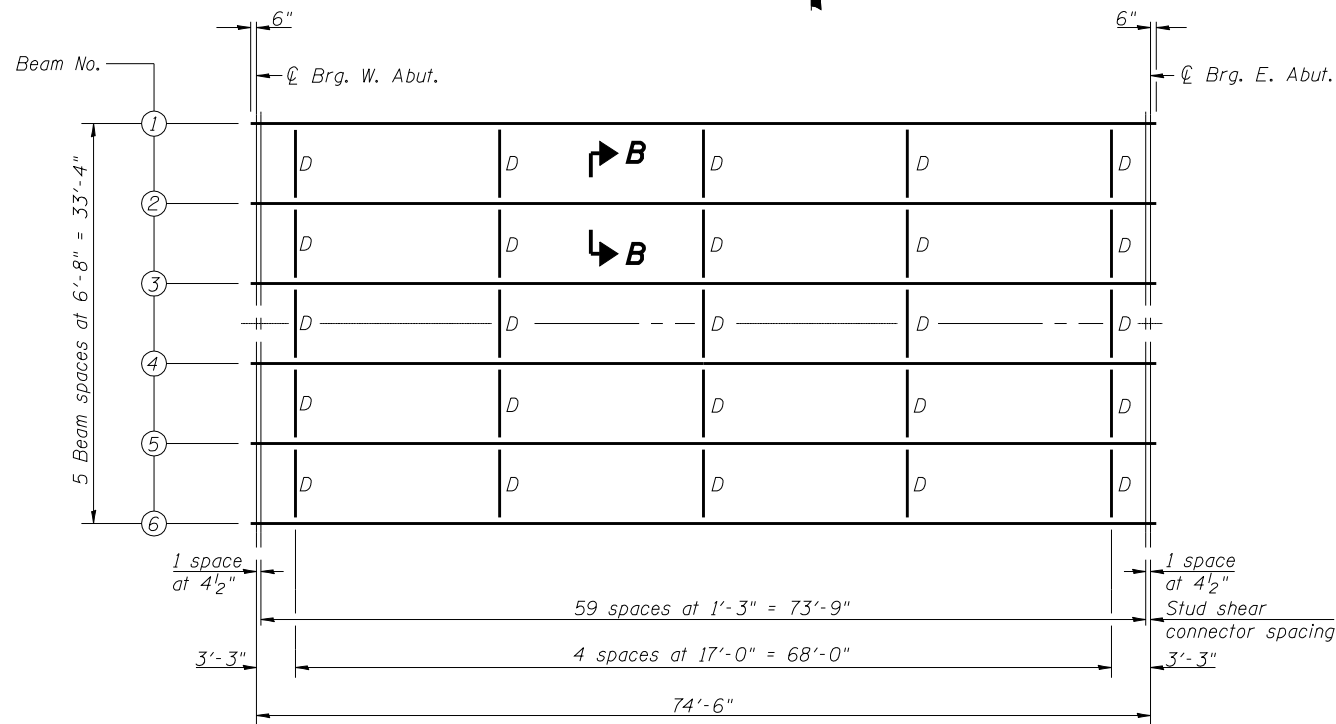## ELEVATION AT ABUTMENT

FIXED BEARING

3"   3"

DIAPHRAGM D
25 Required

¾" φ H.S. Bolts
¹⁵⁄₁₆" φ Holes

Cope

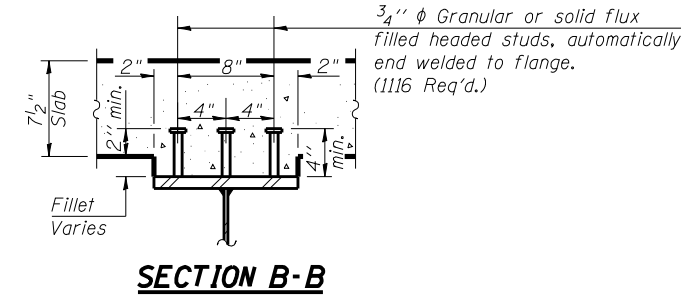Level out-to-out
⁵⁄₁₆ V
⁵⁄₁₆ V
⁵⁄₁₆
5⅝"
W18x40
℄ Lower Bm.
L 4 x 4 x ½ (Top & Bott.)

Notes:
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
Two hardened washers shall be required over all ¹⁵⁄₁₆" φ holes for diaphragms.
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 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 ⅛ in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

N

INTERIOR GIRDER MOMENT TABLE

		.5 Span
I_s	(in⁴)	9040
$I_c(n)$	(in⁴)	22452
$I_c(3n)$	(in⁴)	16432
S_s	(in³)	504
$S_c(n)$	(in³)	717
$S_c(3n)$	(in³)	648
DC1	(k/')	0.811
M_{DC1}	('k)	562.7
DC2	(k/')	0.150
M_{DC2}	('k)	104.1
DW	(k/')	0.333
M_{DW}	('k)	231.0
$M_{LL + Imp}$	('k)	1040
M_u(Strength I)	('k)	3000
$\phi_f M_n$	('k)	3740.7
f_s DC1	(ksi)	13.398
f_s DC2	(ksi)	1.928
f_s DW	(ksi)	4.278
f_s 1.3($_{LL}$+I)	(ksi)	22.628
f_s (Service II)	(ksi)	42.231
f_s (Total)(Strength I)	(ksi)	
V_r	(k)	24.5

INTERIOR GIRDER REACTION TABLE
HL93 Loading

		Abutment
R_{DC1}	(k)	30.2
R_{DC2}	(k)	5.6
R_{DW}	(k)	12.4
$R_{LL + Imp}$	(k)	77.4
R_{Total}	(k)	125.6

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.).
$M_{LL + Imp}$: 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 $M_{LL + Imp}$
$\phi_f M_n$: 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 $M_{LL + Imp}$
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 $M_{LL + Imp}$
V_r: Factored shear range computed according to Article 6.10.10.

PLAN

Beam No.
6"   6"
℄ Brg. W. Abut.   ℄ Brg. E. Abut.

① ② ③ ④ ⑤ ⑥

5 Beam spaces at 6'-8" = 33'-4"

B   B

D (repeated)

1 space at 4½"
1 space at 4½"
59 spaces at 1'-3" = 73'-9"
4 spaces at 17'-0" = 68'-0"
Stud shear connector spacing
3'-3"   3'-3"
74'-6"

All beams are W 36X150, NTR, and AASHTO M 270 Gr. 50W

SECTION B-B

¾" φ Granular or solid flux filled headed studs, automatically end welded to flange. (1116 Req'd.)

7½" Slab
2" 8" 2"
4" 4"
2" min.
Fillet Varies

TYP. END OF BEAM ELEVATION

℄ 1" φ holes in beam for m₂(E) bars. See sheet 7 of 14.
℄ Brg. Abut.
1'-6"
1'-0" 6"
1'-0" 1'-0"
1'-0" 1'-0"
W36x150

*TOP OF BEAM ELEVATIONS

Location	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6
West Abut.	464.25	464.38	464.48	464.48	464.38	464.25
East Abut.	464.26	464.39	464.49	464.49	464.39	464.26

*For Fabrication only

STRUCTURAL STEEL DETAILS
F.A.P. 751 SEC. 101B-2
PIKE COUNTY
STATION 381+00.00
STRUCTURE NO. 075-0507