STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. S8
F. A. P. 846	4B-1-R	WILL	39	30	SHEETS S17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

CONTRACT NO. 60D26

FOR INFORMATION ONLY

Shear Connectors Omited

8 Spa @ 3"=2'-0"

€ Brg. Pier #1

€ brg. S. abut.

€ splice

€ brg. pier #2

€ brg. N. abut.

9 spc. @ 3" =2'-3"
22 spc. @ 6" =11'-0"
25 spc. @ 8" =16'-8"

1'-8"
4'-9" 6'-9"

10 spa. @ 3" =2'-6"
40 spa. @ 4½" =15'-0"

7'-4½" 4'-9"

9 spc. @ 3" =2'-3"
22 spc. @ 6" =11'-0"
25 spc. @ 8" =16'-8"

A

W24x84   W24x84

A

0'-5"   34'-8"   6'-9"   28'-7½"   34'-8"   0'-5"
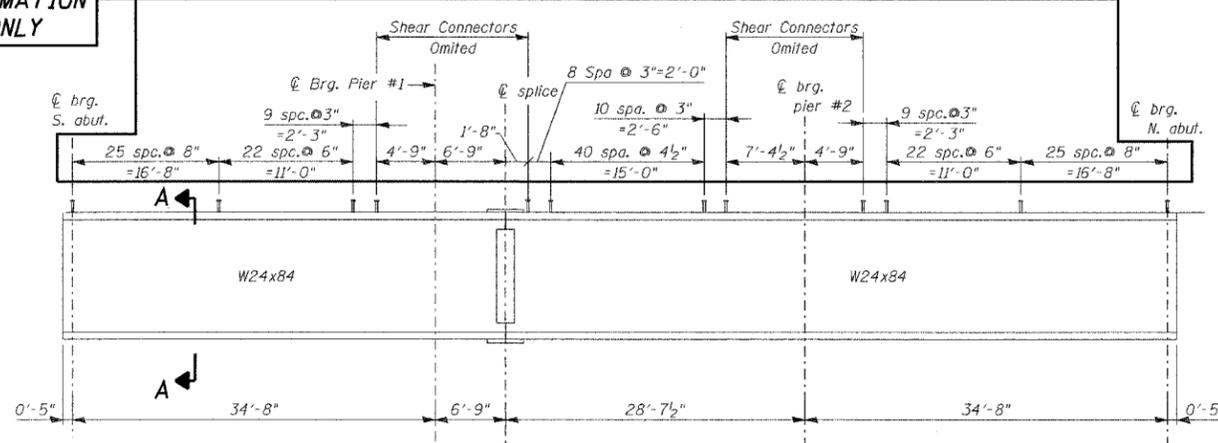
BEAM ELEVATION

NOTE:
All wide flange beams and splice plate material
shall be AASHTO M270 Grade 50 and shall meet
notch toughness requirements.

FOR INFORMATION ONLY

¾"⌀ Granular or solid
flux filled headed studs
automatically end
welded to flange.
(No. Req'd.= 519 per Beam)
Total = 3114

7½" Slab
2" min.
1½" 3" 3" 1½"
4" min.

Fillet
Varies

SECTION A-A
(Typical, unless noted otherwise)

SHEAR CONNECTOR DETAIL
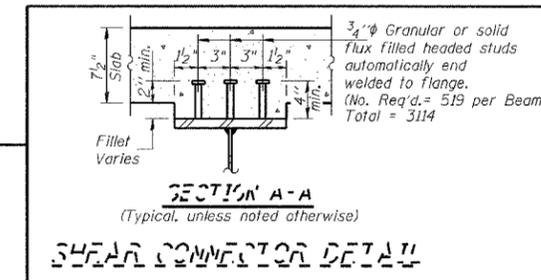
INTERIOR BEAM MOMENT TABLE

		0.4 Sp. 1 0.6 Sp. 3	Pier #1 Pier #2	0.5 Sp. 2
Is	(in⁴)	2370	2370	2370
Ic (n)	(in⁴)	8522	-	8522
Ic (3n)	(in⁴)	6354	-	6354
Ss	(in³)	196	196	196
Sc (n)	(in³)	335	-	335
Sc (3n)	(in³)	302	-	302
Z	(in³)	224	224	224
DC1	(K/')	0.92	0.92	0.92
MDC1	('k)	88	111	32
DC2	(K/')	0.15	0.15	0.15
MDC2	('k)	14	18	5
DW	(K/')	0.33	0.33	0.33
MDW	('k)	31	40	11
MLL+I	('k)	353	231	293
Mu (Strength I)	('k)	794.0	628.0	578.0
ØFMn, ØFMnc	('k)	1712.0	809.0	1712.0
fs DC1	(ksi)	5.4	6.9	2.0
fs DC2	(ksi)	0.5	1.1	0.2
fs DW	(ksi)	1.1	2.4	0.4
fs 1.3(LL+I)	(ksi)	16.4	18.4	13.6
fs (Service II)	(ksi)	23.7	29.1	16.3
fs (Total) (Strength I)	(ksi)	48.6	38.8	35.4
Vf	(k)	12	15.5	9.9

Is and Ss are the moment of inertia and section
modulus of the steel section used in computing fs
due to non-composite loads.

Ic(n) and Sc(n) are the moment of inertia and section
modulus of the composite section based on modular
ratio, n,used in computing fs due to short-term
composite live loads.

Ic(3n) and Sc(3n) are the moment of inertia and section
modulus of the composite section based upon 3 times
modular ratio, 3n, used in computing fs due to long-term
composite (superimposed) dead loads.

Z is the plastic section modulus used to determine
the fully plastic moments in the non-composite areas.

DC1 is the unfactored non-composite dead load acting
on the non-composite section.

DC2 is the unfactored long term composite (superimposed
excluding future wearing surface) dead load.

DW is the unfactored long term composite (superimposed
future wearing surface only) dead load.

Mu (Strength I) Factored design moment
1.25 (MDC1+MDC2)+1.5 M DW +1.75 MLL+Imp)

ØFMn is the Compact composite positive moment capacity
computed according to Article 6.10.7.1

ØFMnc is the Compact non-composite negative moment
capacity computed according to Article A6.1.1

fs (Service II) is the sum of the stresses from the
moments below:
MDC1+MDC2+MDW+1.3MLL+Imp)

fs (Total) (Strength I) (Non-Compact Section) is the sum of
the stresses due to 1.25MDC1+DC2)+1.5MDW+1.75MLL+Imp)

Vf is the factored maximum shear range computed
according to Article 6.10.10

TOP OF BEAM ELEVATIONS **

Beam	€ Brg. S Abut	€ Brg. Pier #1	€ Splice	€ Brg. Pier #2	€ Brg. N Abut.
1	571.586	571.734	571.763	571.796	571.837
2	571.741	571.888	571.917	571.951	571.992
3	571.862	572.010	572.039	572.073	572.114
4	571.925	572.073	572.102	572.135	572.176
5	571.809	571.957	571.986	572.019	572.060
6	571.669	571.817	571.846	571.880	571.921

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INTERIOR GIRDER REACTION TABLE HS20 LOADING

		S. Abut.	Pier #1	Pier #2	N. Abut.
R (DL)	(K)	19.8	53.6	53.6	19.8
R (LL)	(K)	36.0	44.2	44.0	36.0
R (Imp)	(K)	11.2	13.8	13.7	11.2
R (Total)	(K)	67.2	111.7	111.4	67.2

INTERIOR GIRDER REACTION TABLE HL93 Loading

		S. Abut.	Pier #1	Pier #2	N. Abut.
R (DC1)	(K)	12.7	35.5	35.5	12.7
R (DC2+DW)	(K)	6.6	18.6	18.6	6.6
R(LL)	(K)	42.2	83.7	83.7	42.2
R (Imp)	(K)	13.9	27.6	27.6	13.9
R (Total)	(K)	75.6	165.5	165.5	75.6

DESIGNED	NDS/GMK
CHECKED	MTP/SMK/GBC
DRAWN	NDS/GMK
CHECKED	SMK/GBC