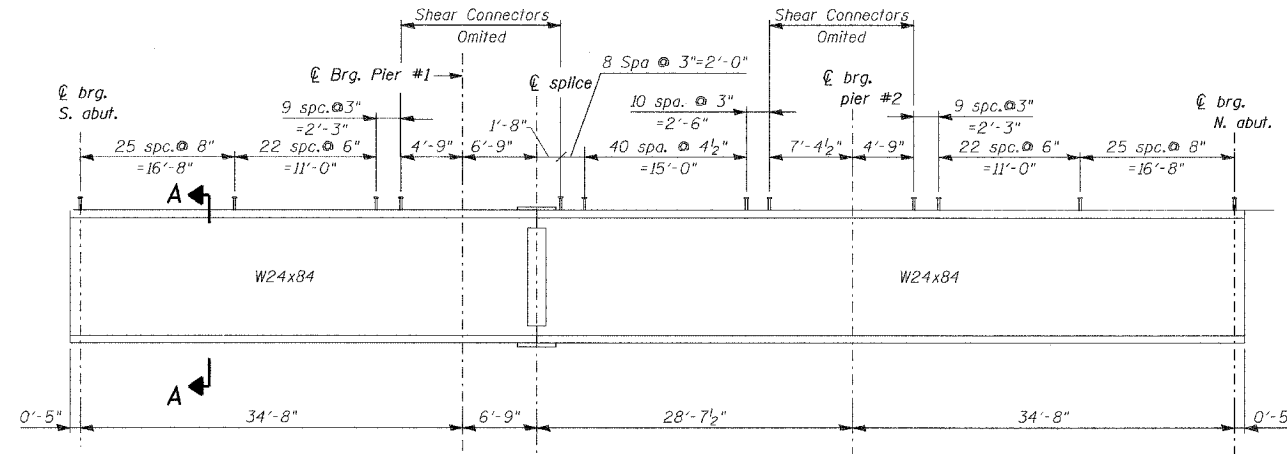


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

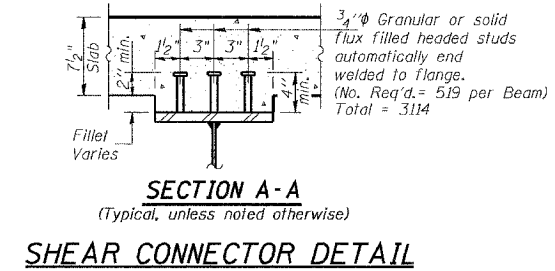
ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
F. A. P. 846	4B-1-R	WILL	87	56
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

CONTRACT NO. 62269



BEAM ELEVATION

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



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	(in ⁴)	2370	2370	2370
Ic (n)	(in ⁴)	8522	-	8522
Ic (3n)	(in ⁴)	6354	-	6354
Ss	(in ³)	196	196	196
Sc (n)	(in ³)	335	-	335
Sc (3n)	(in ³)	302	-	302
Z	(in ³)	-	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
φMn, φMnc	(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 L3(LL+I)	(ksi)	16.4	18.4	13.6
fs (Service II)	(ksi)	23.7	29.1	16.3
fs (Total) (Strength I)	(ksi)	-	38.8	-
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)

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

φMnc 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

** For Fabrication Only.

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

BILL OF MATERIAL

Item	Unit	Total
Erecting Structural Steel	L Sum	0.48
Stud Shear Connectors	Each	3114

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

ILLINOIS DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS

FAP 846
SB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4B-1-R
WILL COUNTY
STRUCTURE NO. 099-0242

SCALE: NONE
DATE: AUGUST 2007

DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO, ILLINOIS.