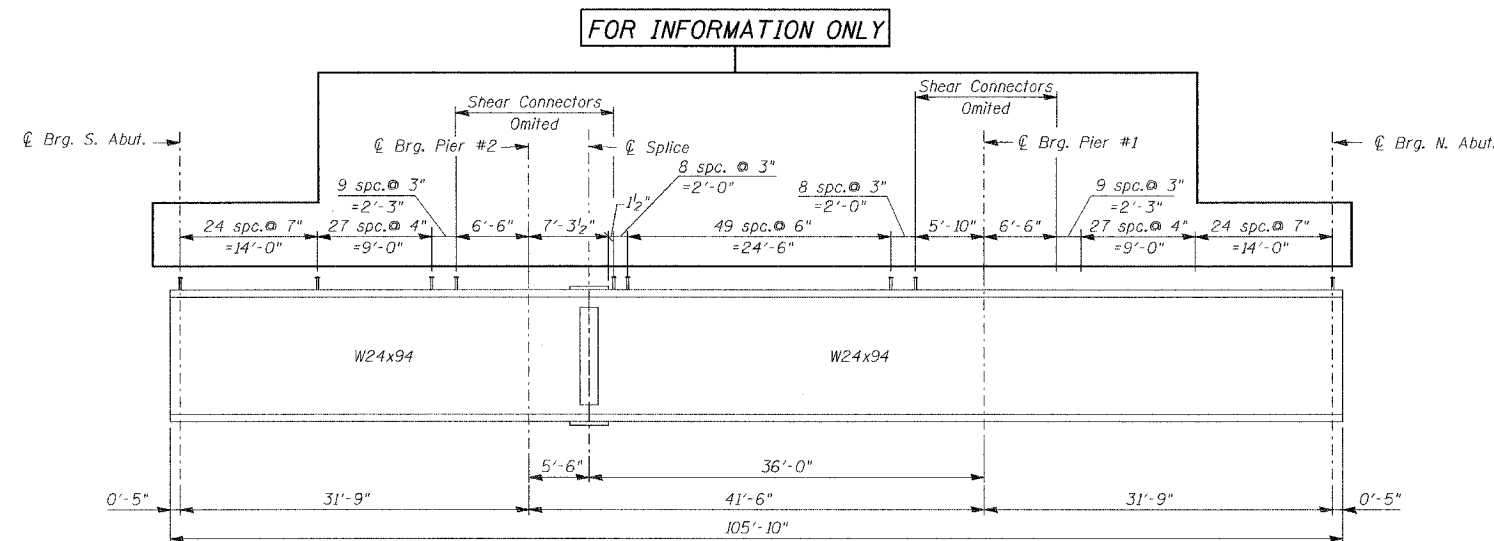


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO. S. & P. 846	SECTION 4-RB	COUNTY WILL	SHEET 87	SHEET NO. 11
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

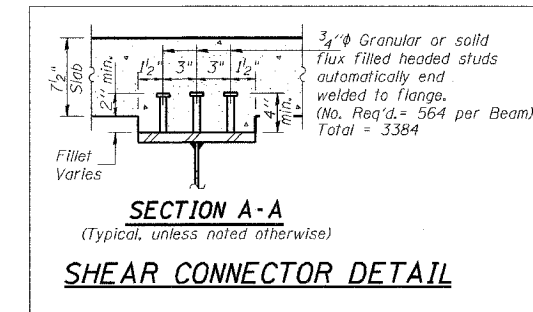
SHEET NO. S9
SHEETS S20

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.



	INTERIOR BEAM MOMENT TABLE		
	0.4 Sp. 1 0.6 Sp. 3	Pier #1 Pier #2	0.5 Sp. 2
I_s	(in ⁴) 2700	2700	2700
I_c (n)	(in ⁴) 9400	-	9400
I_c (3n)	(in ⁴) 6907	-	6907
S_s	(in ³) 222	222	222
S_c (n)	(in ³) 373	-	373
S_c (3n)	(in ³) 336	-	336
Z	(in ³) 254	254	254
DC1	(K') 0.92	0.92	0.92
MDC1	(K) 61	126	73
DC2	(K') 0.25	0.25	0.25
MDC2	(K) 16	33	19
DW	(K') 0.33	0.33	0.33
MDW	(K) 22	45	26
MLL+I	(K) 324	249	328
Mu (Strength I)	(K) 696.0	703.0	728.0
ϕ F _{Mn} , ϕ F _{Mnc}	(K) 1900.0	805.0	1900.0
f _s DC1	(ksi) 3.3	6.8	3.9
f _s DC2	(ksi) 0.5	1.8	0.6
f _s DW	(ksi) 0.7	2.4	0.8
f _s 1.3LL+I	(ksi) 13.5	17.6	13.6
f _s (Service II)	(ksi) 18.2	28.8	19.2
f _s (Total) (Strength I)	(ksi) 24.2	38.3	25.6
Vf	(K) 11.9	15.6	10.4

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing I_s due to non-composite loads.

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

$I_c(3n)$ and $S_c(3n)$ are the moment of inertia and section modulus of the composite section based upon 3 times modular ratio, $3n$, used in computing f_s 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
 $1.25(MDC1+MDC2)+1.5 MDW+1.75 MLL+Imp$

ϕ F_{Mn} is the Compact composite positive moment capacity computed according to Article 6.10.7.1

ϕ F_{Mnc} is the Compact non-composite negative moment capacity computed according to Article A6.1.1

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

f_s (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 #2	€ Splice	€ Brg. Pier #1	€ Brg. N Abut.
1	568.672	568.782	568.804	569.011	569.197
2	568.807	568.917	568.939	569.145	569.332
3	568.920	569.030	569.052	569.259	569.445
4	568.857	568.968	568.989	569.196	569.382
5	568.740	568.850	568.872	569.078	569.265
6	568.589	568.699	568.721	568.927	569.114

** For Fabrication Only.

INTERIOR GIRDER REACTION TABLE HS20 LOADING

	S. Abut.	Pier #2	Pier #1	N. Abut.
R (DL) (K)	18.1	60.8	60.8	18.1
R (LL) (K)	35.3	44.2	42.1	35.3
R (Imp) (K)	10.6	13.3	12.6	10.6
R (Total) (K)	64.0	118.3	115.5	64.0

INTERIOR GIRDER REACTION TABLE HL93 Loading

	S. Abut.	Pier #2	Pier #1	N. Abut.
R (DC1) (K)	10.7	37.8	37.8	10.7
R (DC2+DW) (K)	6.7	23.7	23.7	6.7
R (LL) (K)	41.4	83.0	80.3	41.4
R (Imp) (K)	13.6	27.4	26.5	13.6
R (Total) (K)	72.4	171.9	168.3	72.4

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

ILLINOIS DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS

FAP 846
NB IL. ROUTE 53 OVER PRAIRIE CREEK
STATION 1305+00 SECTION 4-RB
WILL COUNTY

STRUCTURE NO. 099-0090

SCALE: NONE
DATE: JUNE 2007

AEI DELTA ENGINEERING INC.
CONSULTING ENGINEERS, CHICAGO ILLINOIS