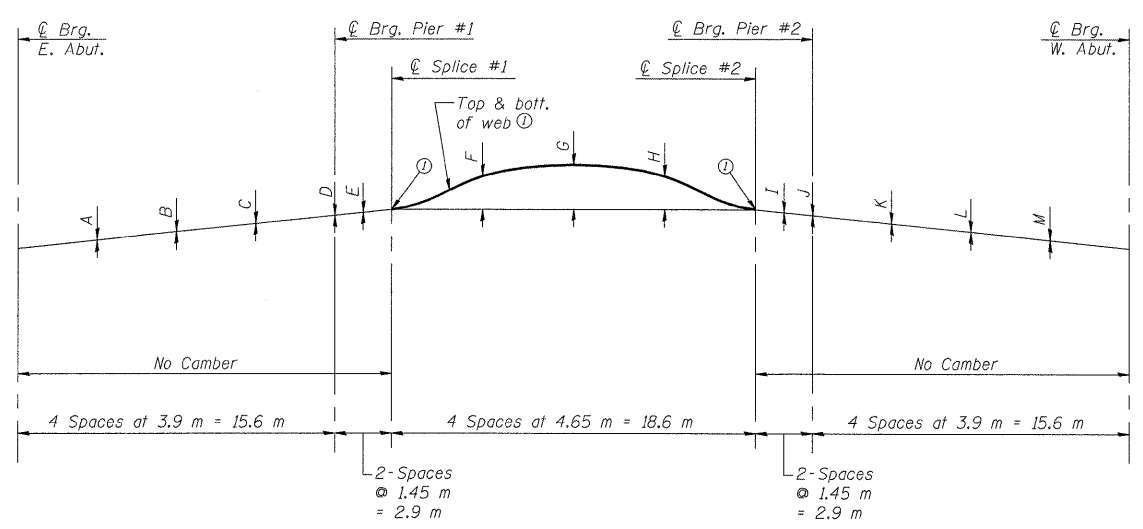


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ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET NO.
R.A.P. 310	*	MADISON	149	48
36 SHEETS				
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
Contract #76634 * 60-15VB-1 & 2				



**CAMBER DIAGRAM**

① Theoretical elevation before dead load deflection

**TOP OF WEB ELEVATIONS**

GIRDER	⊕ Brg. E. Abut.	⊕ Brg. Pier #1	Splice #1 *	Splice #2 *	⊕ Brg. Pier #2	⊕ Brg. W. Abut.
1	198.339	198.116	198.074	197.810	197.770	197.550
2	198.188	197.964	197.922	197.658	197.617	197.396
3	198.037	197.812	197.771	197.505	197.464	197.243
4	197.886	197.660	197.618	197.352	197.311	197.089
5	197.766	197.575	197.539	197.262	197.214	196.960
6	197.657	197.489	197.457	197.174	197.125	196.858
7	197.511	197.339	197.307	197.019	196.969	196.702
8	197.365	197.188	197.156	196.862	196.813	196.546
9	197.219	197.038	197.004	196.706	196.656	196.390

Elevations for fabrication use only.  
 \* Top of web elevation before dead load deflection.

**INTERIOR GIRDER REACTION TABLE**

	E. & W. Abuts.	Piers 1 & 2
RP (kN)	111	490
R <sub>L</sub> (kN)	191	248
Imp. (kN)	53	64
R (Total) (kN)	355	802

**INTERIOR GIRDER MOMENT TABLE**

	0.4 Sp. 1 & 3	Piers 1 & 2	0.5 Sp. 2
I <sub>s</sub> (10 <sup>6</sup> mm <sup>4</sup> )	4,202	4,202	4,202
I <sub>c</sub> (n) (10 <sup>6</sup> mm <sup>4</sup> )	10,422	10,422	10,422
I <sub>c</sub> (3n) (10 <sup>6</sup> mm <sup>4</sup> )	7,785	7,785	7,785
S <sub>s</sub> (10 <sup>3</sup> mm <sup>3</sup> )	9,134	9,134	9,134
S <sub>c</sub> (n) (10 <sup>3</sup> mm <sup>3</sup> )	12,549	12,549	12,549
S <sub>c</sub> (3n) (10 <sup>3</sup> mm <sup>3</sup> )	11,520	11,520	11,520
W (kN/m)	14.45	21.63	14.45
M <sub>Q</sub> (kN-m)	168	903	441
s <sub>Q</sub> (kN/m)	7.18	7.18	7.18
M <sub>sQ</sub> (kN-m)	102	266	266
M <sub>L</sub> (kN-m)	561	427	845
M <sub>imp</sub> (kN-m)	157	111	203
E <sub>3L</sub> (M <sub>L</sub> + M <sub>imp</sub> ) (kN-m)	1,197	897	1,747
M <sub>a</sub> (kN-m)	1,907	2,340	3,190
M <sub>u</sub> (kN-m)	4,235	4,084	4,084
f <sub>sQ</sub> non-comp (MPa)	18	99	48
f <sub>sQ</sub> (comp) (MPa)	9	23	23
f <sub>s</sub> (3n) (MPa)	95	98	139
f <sub>s</sub> (Overload) (MPa)	122	197	210
f <sub>s</sub> (Total) (MPa)	256	256	256
VR (kN)	277	274	274

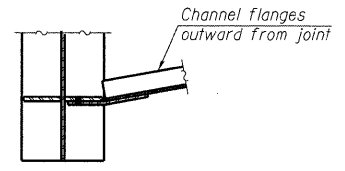
\* Compact Composite Section at 0.4 Span 1 & 3, 0.5 Span 2  
 \*\* Non-compact, non-composite, partially braced section at Piers 1 & 2

I<sub>s</sub>, S<sub>s</sub>: Non-composite moment of inertia and section modulus of the steel section used for computing T<sub>s</sub> (Total and Overload) due to non-composite dead loads.  
 I<sub>c</sub>(n), S<sub>c</sub>(n): Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f<sub>s</sub> (Total and Overload) due to short-term composite live loads.  
 I<sub>c</sub>(3n), S<sub>c</sub>(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<sub>s</sub> (Total and Overload) due to long-term composite (superimposed) dead loads.  
 Q: Un-factored non-composite dead load.  
 M<sub>Q</sub>: Un-factored moment due to non-composite dead load.  
 s<sub>Q</sub>: Un-factored long-term composite (superimposed) dead load.  
 M<sub>sQ</sub>: Un-factored moment due to long-term composite (superimposed) dead load.  
 M<sub>L</sub>: Un-factored live load moment.  
 M<sub>imp</sub>: Un-factored moment due to impact.  
 M<sub>a</sub>: Factored design moment (kip-ft.).  
 1.3 [ M<sub>Q</sub> + M<sub>sQ</sub> +  $\frac{5}{8}$  (M<sub>L</sub> + M<sub>imp</sub>) ]  
 M<sub>u</sub>: Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.4.  
 f<sub>s</sub> (Overload): Sum of stresses as computed from the moments below.  
 $M_Q + M_{sQ} + \frac{5}{8} (M_L + M_{imp})$   
 f<sub>s</sub> (Total): Sum of stresses as computed from the moments below on non-compact section.  
 1.3 [ M<sub>Q</sub> + M<sub>sQ</sub> +  $\frac{5}{8} (M_L + M_{imp})$  ]  
 VR: Maximum  $\frac{1}{4}$  + impact horizontal shear range within the composite portion of the span for stud shear connector design.

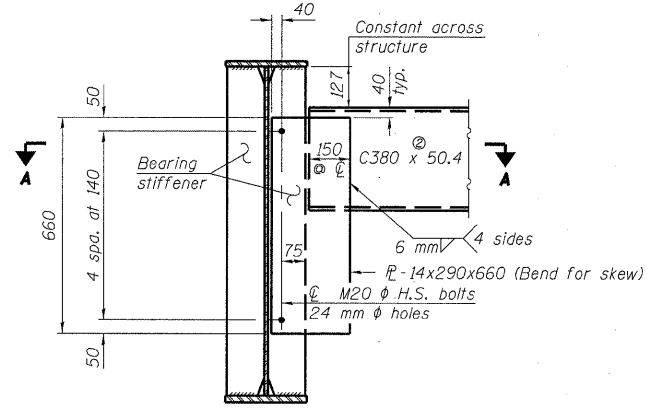
**CAMBER DIAGRAM DIMENSIONS - mm**

Girder No.	A	B	C	D	E	F	G	H	I	J	K	L	M
1	0	0	0	0	0	26	44	26	0	0	0	0	0
2	0	0	0	0	0	26	44	26	0	0	0	0	0
3	0	0	0	0	0	26	44	26	0	0	0	0	0
4	0	0	0	0	0	26	44	26	0	0	0	0	0
5	0	0	0	0	0	31	51	31	0	0	0	0	0
6	0	0	0	0	0	34	55	34	0	0	0	0	0
7	0	0	0	0	0	34	55	34	0	0	0	0	0
8	0	0	0	0	0	34	55	34	0	0	0	0	0
9	0	0	0	0	0	34	55	34	0	0	0	0	0

\*\*\* Alternate C380x74 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 Department.



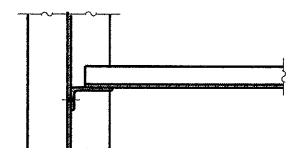
**SECTION A-A**



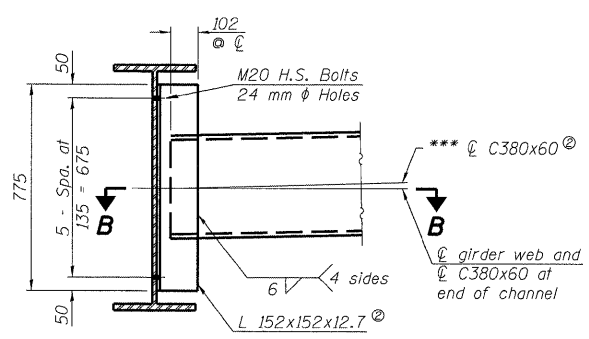
Note:  
Two hardened washers required for each set of oversized holes.

DESIGNED	ADL
CHECKED	WLW
DRAWN	ADL/DGM
CHECKED	WLW

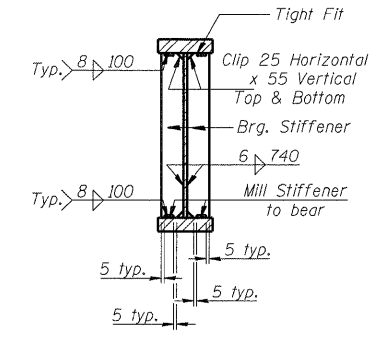
Ⓢ Indicates structural steel conforming to AASHTO M270M Grade 250.  
 All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor bolts.



**SECTION B-B**



Note:  
Two hardened washers required for each set of oversized holes.



**SECTION THRU BEARING STIFFENER AT ABUTMENTS AND PIERS**

**GIRDER DETAILS**  
**FAP RTE. 310 (IL RTE. 255) NB & RAMP C OVER**  
**UNION PACIFIC & KANSAS CITY SOUTHERN R.R.**  
**SECTION 60-15VB-1 & 2**  
**MADISON COUNTY**  
**STATION 39+160.297**  
**STRUCTURE NUMBER 060-0310**