

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SPANS 15-17, SOUTHBOUND - INTERIOR GIRDER MOMENT TABLE

Properties	0.4 Span 15	Pier 15	0.5 Span 16	Pier 16	0.6 Span 17
Is	(in4) 56421	139634	45542	69213	39369
Ic(n)	(in4) 153936	-----	123925	-----	103931
Ic(3n)	(in4) 109551	-----	89950	-----	76796
Ss	(in3) 1810	3651	1344	1858	1071
Sc(n)	(in3) 2569	-----	1983	-----	1616
Sc(3n)	(in3) 2337	-----	1794	-----	1455
Q	(k/ft) 1.270	1.858	1.234	1.680	1.217
M Q	(k-ft) 2269	5878	838	2964	1049
S Q	(k/ft) 0.380	-----	0.380	-----	0.380
Ms Q	(k-ft) 750	-----	374	-----	357
M L	(k-ft) 1955	2119	1530	1373	1289
M (Imp)	(k-ft) 338	366	264	258	267
<sup>5</sup> / <sub>3</sub> (M L + M (Imp))	(k-ft) 3830	4149	2995	2724	2600
* Mu	(k-ft) 11428	-----	7291	-----	6855
Ma	(k-ft) 8904	13035	5469	7394	5208
fs Q (non-composite)	(ksi) 15.0	19.3	7.5	19.1	11.8
fs Q (composite)	(ksi) 3.8	-----	2.5	-----	2.9
fs <sup>5</sup> / <sub>3</sub> (M L + M (Imp))	(ksi) 17.9	13.6	18.1	17.6	19.3
fs (Overload)	(ksi) 36.8	33.0	28.1	36.7	34.0
** fs (Total)	(ksi) -----	42.8	-----	47.8	-----
VR	(k) 80.0	-----	69.2	-----	79.0

SPANS 15-17, NORTHBOUND - INTERIOR GIRDER MOMENT TABLE

Properties	0.4 Span 15	Pier 15	0.5 Span 16	Pier 16	0.6 Span 17
Is	(in4) 39369	69213	45542	139634	56421
Ic(n)	(in4) 103931	-----	123925	-----	153936
Ic(3n)	(in4) 76796	-----	89950	-----	109551
Ss	(in3) 1071	1858	1344	3651	1810
Sc(n)	(in3) 1616	-----	1983	-----	2569
Sc(3n)	(in3) 1455	-----	1794	-----	2337
Q	(k/ft) 1.217	1.680	1.234	1.858	1.270
M Q	(k-ft) 1049	2964	838	5878	2269
S Q	(k/ft) 0.380	-----	0.380	-----	0.380
Ms Q	(k-ft) 357	-----	374	-----	750
M L	(k-ft) 1289	1373	1530	2119	1955
M (Imp)	(k-ft) 267	258	264	366	338
<sup>5</sup> / <sub>3</sub> (M L + M (Imp))	(k-ft) 2600	2724	2995	4149	3830
* Mu	(k-ft) 6855	-----	7291	-----	11428
Ma	(k-ft) 5208	7394	5469	13035	8904
fs Q (non-composite)	(ksi) 11.8	19.1	7.5	19.3	15.0
fs Q (composite)	(ksi) 2.9	-----	2.5	-----	3.8
fs <sup>5</sup> / <sub>3</sub> (M L + M (Imp))	(ksi) 19.3	17.6	18.1	13.6	17.9
fs (Overload)	(ksi) 34.0	36.7	28.1	33.0	36.8
** fs (Total)	(ksi) -----	47.8	-----	42.8	-----
VR	(k) 79.0	-----	69.2	-----	80.0

SPANS 15-17, SOUTHBOUND - INTERIOR GIRDER REACTION TABLE

Properties	Pier 14	Pier 15	Pier 16	Pier 17
R Q	(k) 99.5	336.7	238.7	67.4
R L	(k) 61.4	127.7	108.8	58.6
Imp.	(k) 10.6	14.1	13.4	12.1
R (Total)	(k) 171.5	478.5	360.9	138.1

SPANS 15-17, NORTHBOUND - INTERIOR GIRDER REACTION TABLE

Properties	Pier 14	Pier 15	Pier 16	Pier 17
R Q	(k) 67.4	238.7	336.7	99.5
R L	(k) 58.6	108.8	127.7	61.4
Imp.	(k) 12.1	13.4	14.1	10.6
R (Total)	(k) 138.1	360.9	478.5	171.5

**NOTES:**

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload).

Ic(n) and Sc(n) are the moment of inertia and section modulus of the composite section used in computing stresses due to live load.

Ic(3n) and Sc(3n) are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. See AASHTO 10.38.

VR is the maximum live load + impact shear range within the composite portion of the span.

Ma (Applied Moment) = 1.3[M Q + Ms Q + <sup>5</sup>/<sub>3</sub>(M L + M (Imp))].

The plastic moment capacity (Mu) is computed according to AASHTO 10.48.1 and 10.50.1.1.

fs (Overload) is the sum of the stresses due to M Q + Ms Q + <sup>5</sup>/<sub>3</sub>(M L + M (Imp)).

fs (Total) is the sum of the stresses due to 1.3[M Q + Ms Q + <sup>5</sup>/<sub>3</sub>(M L + M (Imp))].

M Q - Moment due to dead loads on non-composite section.

Ms Q - Moment due to dead loads on composite section.

M L - Moment due to live load on non-composite or composite section.

M (Imp) - Moment due to live load impact on non-composite or composite section.

\* Compact, Braced section.

\*\* Non-Compact section.

DESIGNED -	AJK
CHECKED -	KWS
DRAWN -	VH
CHECKED -	MRB

**benesch**

alfred benesch & company  
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Job # 3856

**STEEL PLATE GIRDER TABLES - 3 OF 9**  
**ABRAHAM LINCOLN MEMORIAL BRIDGE OVER**  
**THE ILLINOIS RIVER (PUBLIC WATERS)**  
**F.A.I. ROUTE 39 SEC. (50-4B) BR**  
**LASALLE COUNTY**  
**STATION 863+16.00**  
**STRUCTURE NO. 050-0191 (SB & NB)**

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