

MOMENT AND REACTION TABLES - GIRDERS 1 THRU 17

		Girder 1			Girder 2			Girders 3 thru 15		Girder 16			Girder 17		
		0.4 Sp. 1	Pier	0.6 Sp. 2	0.4 Sp. 1	Pier	0.6 Sp. 2	0.4 Sp.1 / 0.6 Sp.2	Pier	0.4 Sp. 1	Pier	0.6 Sp. 2	0.4 Sp. 1	Pier	0.6 Sp. 2
<i>I_s</i>	(in ⁴)	28664	44550	28664	14268	22578	14268	9750	12100	14268	22578	14268	28664	44550	28664
<i>I_c</i> (n)	(in ⁴)	50600		50600	31550		31550	25062		31550		31550	50600		50600
<i>I_c</i> (3n)	(in ⁴)	38257		38257	23230		23230	18317		23230		23230	38257		38257
<i>S_s</i>	(in ³)	1549	2285	1549	782	1188	782	542	664	782	1188	782	1549	2285	1549
<i>S_c</i> (n)	(in ³)	1870		1870	1027		1027	783		1027		1027	1870		1870
<i>S_c</i> (3n)	(in ³)	1719		1719	938		938	707		938		938	1719		1719
<i>Z</i>	(in ³)		2529			1315			767		1315			2529	
<i>DL</i>	(k/')	2.32	1.74	2.29	1.11	1.82	1.14	1.05	1.53	1.14	1.82	1.11	2.29	1.74	2.32
<i>M_{dl}</i>	(' k)	1031	3477	985	560	1707	556	496	1100	556	1707	560	985	3477	1031
<i>s DL</i>	(k/')	0.48		0.48	0.61		0.59	0.48		0.61		0.59	1.24		1.28
<i>M_{s DL}</i>	(' k)	612		584	301		286	252		286		301	584		612
<i>M_{LL}</i>	(' k)	2086	1943	1697	1173	1043	1080	805	572	1080	1043	1173	1697	1943	2086
<i>M</i> (Imp)	(' k)	562	525	458	317	281	292	196	140	292	281	317	458	525	562
<i>5/3[M_{LL} + M(Imp)]</i>	(' k)	4414	4114	3592	2483	2207	2287	1728	1068	2287	2207	2483	3592	4114	4414
<i>M_a</i>	(' k)	7874	9868	6709	4348	5087	4069	3218	2818	4069	5087	4348	6709	9868	7874
<i>M_u</i>	(' k)	7896	10538	7896	4736	5479	4736	3921	3196	4736	5479	4736	7896	10538	7896
<i>f_s DL non-comp</i>	(ksi)	8.0	18.3	7.6	8.6	17.2	8.5	11.0	19.9	8.5	17.2	8.6	7.6	18.3	8.0
<i>f_s DL (comp)</i>	(ksi)	4.3		4.1	3.9		3.7	4.3		3.7		3.9	4.1		4.3
<i>f_s 5/3[M_{LL} + M(Imp)]</i>	(ksi)	28.3	21.6	23.1	29.0	22.3	26.7	26.5	19.3	26.7	22.3	29.0	23.1	21.6	28.3
<i>f_s (Overload)</i>	(ksi)	40.6	39.9	34.8	41.5	39.5	38.9	41.7	39.2	38.9	39.5	41.5	34.8	39.9	40.6
<i>VR</i>	(k)	120.0		113.5	63.5		73.8	69.9		73.8		63.53	113.5		120.0

		Girder 1			Girder 2			Girders 3 thru 15		Girder 16			Girder 17		
		W. Abutment	Pier	E. Abutment	W. Abutment	Pier	E. Abutment	Abutments	Pier	W. Abutment	Pier	E. Abutment	W. Abutment	Pier	E. Abutment
<i>R_{DL}</i>	(k)	79.1	373.6	74.3	60.0	193.4	53.7	45.4	153.0	53.7	193.4	60.0	74.3	373.6	79.1
<i>R_{LL}</i>	(k)	83.3	189.8	75.9	43.7	106.3	50.9	51.6	73.6	50.9	106.3	43.7	75.9	189.8	83.3
<i>Imp.</i>	(k)	22.5	57.2	20.5	11.8	28.7	13.7	12.6	18.0	13.7	28.7	11.8	20.5	57.2	22.5
<i>R (Total)</i>	(k)	184.9	620.6	170.7	115.6	328.4	118.3	109.6	244.6	118.3	328.4	115.6	170.7	620.6	184.9

I_s and *S_s* are the moment of inertia and section modulus of the steel section used in computing *f_s* (Total & Overload).

I_c(n) and *S_c(n)* are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

I_c(3n) and *S_c(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 in span.

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

M_a (Applied Moment) = 1.3[M_{DL} + M_{sDL} + 5₃(M_L + M(Imp))].

The Plastic Moment capacity (*M_u*) is computed according to AASHTO 10.48.1 and 10.50.1.1.

f_s (Overload) is the sum of the stresses due to M_{DL} + M_{sDL} + 5₃(M_L + M(Imp)).

f_s (Total) (Non-compact section) is the sum of the stresses due to 1.3[M_{DL} + M_{sDL} + 5₃(M_L + M(Imp))].

REVISIONS	
NAME	DATE

SHT. S-46 OF S-68

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ILLINOIS DEPARTMENT OF TRANSPORTATION
 IL ROUTE 162 OVER I-55/70 IN TROY
 F.A.I. ROUTE 70 SECTION 60-10K-1, 60-10HB
 MADISON COUNTY STATION 499+48.35
 STRUCTURE NO. 060-0338
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 GIRDERS 1 THRU 17**

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