

68201	ROUTE No.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	FAI 74	*	TAZEWELL	1366	567
STA.			TO STA.		
F.H.W.A. REGION			ILLINOIS PROJECT		

GIRDER MOMENT TABLE (SPANS 1-5 - GIRDER 3)

	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.5 Sp. 3	Pier 3	0.5 Sp. 4	Pier 4	0.6 Sp. 5
Is (10 ⁶ mm ⁴)	16115	43072	14058	33827	15361	17695	13436	16443	11717
Ic (n) (10 ⁶ mm ⁴)	34517	--	33865	--	32335	--	31742	--	26436
Ic (3n) (10 ⁶ mm ⁴)	25465	--	24318	--	24072	--	23024	--	19640
Ss (10 ³ mm ³)	24380	56974	23430	45650	22360	24441	21463	22806	17055
Sc (n) (10 ³ mm ³)	30736	--	30564	--	28240	--	28090	--	22518
Sc (3n) (10 ³ mm ³)	28421	--	28146	--	26080	--	25841	--	20674
Sl (10 ³ mm ³)	1181	3529	1181	--	--	--	--	--	--
Z (10 ³ mm ³)	--	--	--	--	--	--	--	--	--
Q (kN/m)	14.61	18.51	14.37	17.24	14.48	14.82	14.23	14.63	13.92
M Q (kN-m)	981	4872	1773	3778	420	1921	1201	2039	562
s Q (kN/m)	8.72	8.72	8.72	8.72	8.72	8.72	8.72	8.72	8.72
Ms Q (kN-m)	609	2672	1177	2162	270	1135	753	1208	364
M L (kN-m)	1296	2290	1436	2092	1165	1427	1116	1250	954
M (Imp) (kN-m)	252	401	229	363	222	271	212	260	218
53 [M L + M (Imp)] (kN-m)	2581	4485	2775	4092	2312	2830	2213	2517	1953
Ma (kN-m)	5422	15638	7443	13041	3902	7652	5418	7493	3743
Mbi (kN-m)	7	43	15	--	--	--	--	--	--
* Mu (kN-m)	--	--	--	--	11486	--	10801	--	7956
fs Q (non-comp) (MPa)	40	133	76	130	19	124	56	141	33
fs Q (comp) (MPa)	21	--	42	--	10	--	29	--	18
fs 53 [M L + M (Imp)] (MPa)	84	79	91	90	82	116	79	110	87
fl (MPa)	6	12	12	--	--	--	--	--	--
fs (overload) (MPa)	146	212	208	220	111	240	164	251	137
** fs (Total) (MPa)	189	275	271	286	144	312	213	327	178
fcr (Overload) (MPa)	328	284	328	--	--	--	--	--	--
VR (kN)	255	--	259	--	246	--	255	--	242
Fcr (MPa)	343	315	341	--	--	--	--	--	--

Curved Curved Curved Straight Straight Straight Straight Straight Straight

GIRDER MOMENT TABLE (SPANS 1-5 - GIRDER 4)

	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.5 Sp. 3	Pier 3	0.5 Sp. 4	Pier 4	0.6 Sp. 5
Is (10 ⁶ mm ⁴)	19438	43072	17911	36868	15361	17695	13436	16443	11717
Ic (n) (10 ⁶ mm ⁴)	39480	--	35310	--	31202	--	30567	--	25540
Ic (3n) (10 ⁶ mm ⁴)	28930	--	26300	--	23211	--	22095	--	18893
Ss (10 ³ mm ³)	30903	56974	26417	49421	22360	24441	21463	22806	17055
Sc (n) (10 ³ mm ³)	37780	--	32424	--	27984	--	27839	--	22306
Sc (3n) (10 ³ mm ³)	35024	--	30023	--	25819	--	25543	--	20425
Sl (10 ³ mm ³)	1916	3529	1283	--	--	--	--	--	--
Z (10 ³ mm ³)	--	--	--	--	--	--	--	--	--
Q (kN/m)	14.00	17.35	13.71	16.50	13.32	13.66	13.07	13.47	12.77
M Q (kN-m)	1132	5070	2263	4085	377	1884	1208	2041	556
s Q (kN/m)	8.72	8.72	8.72	8.72	8.72	8.72	8.72	8.72	8.72
Ms Q (kN-m)	691	2733	1367	2269	243	1114	753	1206	360
M L (kN-m)	1632	2513	1806	2367	1228	1464	1149	1246	928
M (Imp) (kN-m)	317	440	288	410	233	279	218	259	213
53 [M L + M (Imp)] (kN-m)	3247	4922	3490	4628	2435	2905	2278	2508	1902
Ma (kN-m)	6591	16542	9256	14277	3972	7674	5510	7482	3662
Mbi (kN-m)	8	46	18	--	--	--	--	--	--
* Mu (kN-m)	--	--	--	--	11312	--	11248	--	7924
fs Q (non-comp) (MPa)	37	137	86	129	17	123	56	142	33
fs Q (comp) (MPa)	20	--	46	--	9	--	29	--	18
fs 53 [M L + M (Imp)] (MPa)	86	86	108	94	87	119	82	110	85
fl (MPa)	4	13	14	--	--	--	--	--	--
fs (overload) (MPa)	142	223	239	222	113	242	168	252	135
** fs (Total) (MPa)	185	290	310	289	147	314	218	328	176
fcr (Overload) (MPa)	328	284	328	--	--	--	--	--	--
VR (kN)	202	--	213	--	202	--	192	--	179
Fcr (MPa)	343	315	340	--	--	--	--	--	--

Curved Curved Curved Straight Straight Straight Straight Straight Straight

GIRDER REACTION TABLE GIRDER 1

	S.Abut	Pier 1	Pier 2	Pier 3	Pier 4	N.Abut.
R Q (kN)	283	1483	1225	923	931	213
R L (kN)	164	401	364	315	294	154
Imp. (kN)	29	70	69	66	61	35
R (Total) (kN)	476	1954	1659	1304	1286	401

GIRDER REACTION TABLE GIRDER 2

	S.Abut	Pier 1	Pier 2	Pier 3	Pier 4	N.Abut.
R Q (kN)	293	1347	1242	919	939	214
R L (kN)	216	437	439	367	352	205
Imp. (kN)	38	76	83	76	73	47
R (Total) (kN)	546	1859	1765	1362	1364	466

GIRDER REACTION TABLE GIRDER 3

	S.Abut	Pier 1	Pier 2	Pier 3	Pier 4	N.Abut.
R Q (kN)	287	1487	1242	913	937	214
R L (kN)	213	442	416	366	349	205
Imp. (kN)	37	77	79	76	73	47
R (Total) (kN)	537	2005	1737	1356	1359	465

GIRDER REACTION TABLE GIRDER 4

	S.Abut	Pier 1	Pier 2	Pier 3	Pier 4	N.Abut.
R Q (kN)	318	1380	1318	903	938	211
R L (kN)	192	371	392	317	296	154
Imp. (kN)	34	64	75	66	61	35
R (Total) (kN)	544	1815	1785	1286	1295	400

NOTES:

- * Compact, Braced section (for straight portion of the bridge)
- ** Non-Compact section (for straight portion of the bridge)

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 in span
 Ma (Applied Moment) = 1.3[M Q + Ms Q + 53(M L + M (Imp))].
 fs(overload) is the sum of the stress due to M Q + Ms Q + 53(M L + M (Imp))

fs (Total) is the sum of the stress due to 1.3[M Q + Ms Q + 53(M L + M (Imp))]
 fl is the calculated normal stress at the edge of flange due to lateral bending (factored)
 Sbi is the section modulus for one flange plate for lateral flange bending
 Mbi is the lateral bending moment for flange plate (factored)
 M L and R L include the effects of centrifugal force and superelevation
 Mu is the plastic moment capacity, computed according to AASHTO 10.48.1 & 10.50.1.1.
 Fcr - Critical average flange stress (smaller of Fcr1 or Fcr2 for partially braced flanges and Fy for continuously braced flanges) computed according to the 2003 AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges (Sections 5.2, 5.3 and 5.4).

fcr (overload) - Critical average flange stress at overload computed according to the 2003 AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges Section 9.5.

Z - Plastic section modulus used to determine the Fully Plastic Moments in the non-composite areas.

DESIGNED	JQZ
CHECKED	KWS
DRAWN	VH
CHECKED	LRB



ILLINOIS DEPARTMENT OF TRANSPORTATION
 RAMP K-2 OVER
 MAIN ST & RAMP J-3
 F.A.I. ROUTE 74 (I-74)
 SECTION 90-IHB-5
GIRDER MOMENT TABLES
 SN: 090-0156 TAZEWELL CO., IL. STA. 10+529.222 DATE: 12-23-04

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