

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER MOMENT TABLE - RAMP 1 FLARE

Girder 1.12				
		0.4 Sp. R1-1	Pier	0.6 Sp. R1-2
I_s	(in ⁴)	126,687	126,687	126,687
$I_c(n)$	(in ⁴)	185,044	185,044	185,044
$I_c(3n)$	(in ⁴)	150,261	150,261	150,261
S_s	(in ³)	3913	3913	3913
$S_c(n)$	(in ³)	4410	4410	4410
$S_c(3n)$	(in ³)	4145	4145	4145
S_l	(in ³)	228	228	228
Q	(k/')	1.11	1.54	2.43
M_D	(k)	646.6	2783.5	1418
s_D	(k/')	0.34	0.53	0.91
M_{sD}	(k)	197.9	956.7	533.7
M_L	(k)	722.9	828.5	803.4
M_I	(k)	157.6	170.7	156.7
$M_3 [M_L + M_I]$	(k)	1467.5	1665.3	1600.2
M_a	(k)	3005.6	7027.2	4617.4
M_{b1}	(k)	24.1	49.8	44.8
$f_s D$ (non-comp)	(ksi)	2.0	8.5	4.3
$f_s D$ (comp)	(ksi)	0.6	2.8	1.5
$f_s D_3 [M_L + M_I]$	(ksi)	4.0	4.5	4.4
f_l	(ksi)	1.3	2.6	2.4
f_s (Overload)	(ksi)	6.5	15.8	10.2
f_s (Total)	(ksi)	8.6	20.6	13.4
F_{or} (Overload)	(ksi)	47.5	47.5	47.5
VR	(k)	69.1		70.4
F_{or}	(ksi)	49.8	48.4	49.7

GIRDER REACTION TABLE - RAMP 1 FLARE

Girder 1.12				
		R1 Abut.	Pier	Carrier Girder
R_D	(k)	50.2	371.7	66.4
R_L	(k)	42.9	83.3	41.0
R_I	(k)	9.4	17.1	8.0
R_{Total}	(k)	102.5	472.1	115.4

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) due to non-composite dead loads (in⁴ and in³).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total and Overload) due to short-term composite live loads (in⁴ and in³).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total and Overload) due to long-term composite (superimposed) dead loads (in⁴ and in³).

S_l : Section modulus of one flange plate for lateral flange bending (in³).

Q : Un-factored non-composite dead load (kips/ft.).

M_D : Un-factored moment due to non-composite dead load (kip-ft.).

s_D : Un-factored long-term composite (superimposed) dead load (kips/ft.).

M_{sD} : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

M_L : Un-factored live load moment (kip-ft.).

M_I : Un-factored moment due to impact (kip-ft.).

M_a : Factored design moment (kip-ft.).

$1.3 [M_D + M_{sD} + \frac{5}{3} (M_L + M_I)]$

M_{b1} : Factored lateral bending moment for flange plate (kip-ft.).

f_l : Factored calculated normal stress at the edge of flange due to lateral bending (ksi).

f_s (Overload): Sum of stresses as computed from the moments below (ksi).

$M_D + M_{sD} + \frac{5}{3} (M_L + M_I)$

f_s (Total): Sum of stresses as computed from the moments below (ksi).

$1.3 [M_D + M_{sD} + \frac{5}{3} (M_L + M_I)]$

F_{or} (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 (ksi).

F_{or} : Critical average flange stress (smaller of F_{or1} or F_{or2} for partially braced flanges and F_y 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) (ksi).

VR : Maximum impact shear range within span for stud shear connector design (kips).

Note:
 M_L and R_L include the effects of centrifugal force and superelevation.

MOMENT TABLE 2
RAMP 1 FLARE
STRUCTURE NO. 016-0724

TYLIN INTERNATIONAL	DESIGNED - EKH, JMA	REVISIONS		SHEET NO. 111	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.				
	CHECKED - AMD,	NAME	DATE							239 SHEETS	741	435	
	DRAWN - EKH, JMA												CONTRACT NO. 60999
	CHECKED - AMD,												
DATE - 03/25/2011			FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT										