GIRDER MOMENT TABLE - RAMP 4 FLARE

Girder 4.12				
		0.4 Sp. R4-1	Pier	0.6 Sp. R4-2
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
ℓ	$(k/')$	2.43	1.54	1.11
$M\ell$	$('k)$	1418	2783.5	646.6
$_s\ell$	$(k/')$	0.91	0.53	0.34
$M_s\ell$	$('k)$	533.7	956.7	197.9
M_ℓ	$('k)$	803.4	828.5	722.9
M_I	$('k)$	156.7	170.7	157.6
$\frac{5}{3}[M_\ell + M_I]$	$('k)$	1600.2	1665.3	1467.5
M_a	$('k)$	4617.4	7027.2	3005.6
M_{bl}	$('k)$	44.8	49.8	24.1
$f_s\ell$ (non-comp)	(ksi)	4.3	8.5	2.0
$f_s\ell$ (comp)	(ksi)	1.5	2.8	0.6
$f_s \frac{5}{3}[M_\ell + M_I]$	(ksi)	4.4	4.5	4.0
f_1	(ksi)	2.4	2.6	1.3
f_s (Overload)	(ksi)	10.2	15.8	6.5
f_s (Total)	(ksi)	13.4	20.6	8.6
F_{cr} (Overload)	(ksi)	47.5	47.5	47.5
VR	(k)	70.4		69.1
F_{cr}	(ksi)	49.7	48.4	49.8

GIRDER REACTION TABLE - RAMP 4 FLARE

Girder 4.12				
		Carrier Girder	Pier	R4 Abut.
$R\ell$	(k)	66.4	371.7	50.2
R_ℓ	(k)	41.0	83.3	42.9
R_I	(k)	8.0	17.1	9.4
R_{Total}	(k)	115.4	472.1	102.5

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 (in^4 and in^3).

$I_c(n)$, $S_c(n)$: 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 (in^4 and in^3).

$I_c(3n)$, $S_c(3n)$: 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 (in^4 and in^3).

S_l: Section modulus of one flange plate for lateral flange bending (in^3).

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

$M\ell$: Un-factored moment due to non-composite dead load (kip-ft).

$_s\ell$: Un-factored long-term composite (superimposed) dead load (kips/ft.).

$M_s\ell$: 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 $[M\ell + M_s\ell + \frac{5}{3} (M_\ell + M_I)]$

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

f_1: 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). $M\ell + M_s\ell + \frac{5}{3} (M_\ell + M_I)$

f_s (Total): Sum of stresses as computed from the moments below (ksi). 1.3 $[M\ell + M_s\ell + \frac{5}{3} (M_\ell + M_I)]$

F_{cr} (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_{cr}: Critical average flange stress (smaller of F_{cr1} or F_{cr2} 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 $_\ell +$ 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 4 FLARE
STRUCTURE NO. 016-0724

T·Y·LIN INTERNATIONAL

DESIGNED	-	PK			
CHECKED	-	AMD.			
DRAWN	-	PK			
CHECKED	-	AMD.			
DATE	-	08/02/10			

REVISIONS		
NAME		DATE

SHEET NO. 114
137 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55	0711.2R & 1011.1BR	COOK	200	144

CONTRACT NO. 60L39

FED. ROAD DIST. NO. 1   ILLINOIS   FED. AID PROJECT