

EXTERIOR GIRDER 1 MOMENT TABLE - UNIT III				
		0.4 Sp. 5	Pier 5	0.6 Sp. 6
I_s	(in ⁴)	79,647	142,313	73,864
$I_c(n)$	(in ⁴)	174,333	-	157,679
$I_c(3n)$	(in ⁴)	125,810	-	115,379
$I_c(cr)$	(in ⁴)	-	153,731	-
S_s	(in ³)	2,587	3,846	2,250
$S_c(n)$	(in ³)	3,317	-	2,902
$S_c(3n)$	(in ³)	3,038	-	2,653
$S_c(cr)$	(in ³)	-	3,945	-
S_{xc}	(in ³)	121	192	81
DC1	(k/')	1.10	1.26	1.08
M _{DC1}	(k)	2,509	4,686	734
DC2	(k/')	0.29	0.29	0.29
M _{DC2}	(k)	533	888	214
DW	(k/')	0.28	0.28	0.28
M _{DW}	(k)	862	1,178	265
$M_{\xi} + IM$	(k)	3,620	3,591	2,934
f_i (Strength I)	(ksi)	4.80	6.56	5.99
$M_u + 1/3 f_i S_{xc}$	(k)	11,624	15,439	6,879
$\phi_r M_n$	(k)	-	-	-
f_s DC1	(ksi)	11.64	14.62	3.91
f_s DC2	(ksi)	2.11	2.70	0.97
f_s DW	(ksi)	3.41	3.58	1.20
$f_s (\xi + IM)$	(ksi)	13.09	10.92	12.13
f_i (Service II)	(ksi)	3.69	5.09	4.50
$f_s + 1/2$ (Service II)	(ksi)	36.02	37.65	24.10
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50
$f_s + 1/3$ (Total)(Strength I)	(ksi)	46.81	48.33	31.13
$\phi_r F_n$	(ksi)	50.00	50.00	50.00
V _r	(k)	76.70	81.70	79.80

INTERIOR GIRDER 2 MOMENT TABLE - UNIT III				
		0.4 Sp. 5	Pier 5	0.6 Sp. 6
I_s	(in ⁴)	79,647	142,313	73,864
$I_c(n)$	(in ⁴)	180,279	-	162,774
$I_c(3n)$	(in ⁴)	130,167	-	119,232
$I_c(cr)$	(in ⁴)	-	155,098	-
S_s	(in ³)	2,587	3,846	2,250
$S_c(n)$	(in ³)	3,344	-	2,926
$S_c(3n)$	(in ³)	3,069	-	2,680
$S_c(cr)$	(in ³)	-	3,956	-
S_{xc}	(in ³)	121	192	81
DC1	(k/')	1.19	1.35	1.17
M _{DC1}	(k)	2,433	4,867	757
DC2	(k/')	0.29	0.29	0.29
M _{DC2}	(k)	401	736	130
DW	(k/')	0.41	0.41	0.41
M _{DW}	(k)	829	1,329	306
$M_{\xi} + IM$	(k)	2,779	2,990	2,229
f_i (Strength I)	(ksi)	4.00	6.12	4.75
$M_u + 1/3 f_i S_{xc}$	(k)	9,811	14,621	5,597
$\phi_r M_n$	(k)	-	-	-
f_s DC1	(ksi)	11.29	15.18	4.04
f_s DC2	(ksi)	1.57	2.23	0.58
f_s DW	(ksi)	3.24	4.03	1.37
$f_s (\xi + IM)$	(ksi)	9.97	9.07	9.14
f_i (Service II)	(ksi)	3.09	4.77	3.58
$f_s + 1/2$ (Service II)	(ksi)	30.60	35.62	19.66
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50
$f_s + 1/3$ (Total)(Strength I)	(ksi)	39.72	45.73	25.41
$\phi_r F_n$	(ksi)	50.00	50.00	50.00
V _r	(k)	53.30	59.30	56.90

EXTERIOR GIRDER 1 REACTION TABLE - UNIT III				
		Pier 4-N	Pier 5	Pier 6-S
R _{DC1}	(k)	84.4	198.9	47.2
R _{DC2}	(k)	18.4	43.2	12.1
R _{DW}	(k)	25.9	52.7	14.2
R _{ξ + IM}	(k)	116.9	171.4	105.7
R _{Total}	(k)	245.6	466.2	179.2

INTERIOR GIRDER 2 REACTION TABLE - UNIT III				
		Pier 4-N	Pier 5	Pier 6-S
R _{DC1}	(k)	79.3	281.7	49.8
R _{DC2}	(k)	13.5	48.7	8.4
R _{DW}	(k)	26.2	82.9	16.5
R _{ξ + IM}	(k)	103.3	210.2	96.9
R _{Total}	(k)	222.3	623.5	171.7

INTERIOR GIRDER 5 MOMENT TABLE - UNIT III				
		0.4 Sp. 5	Pier 5	0.6 Sp. 6
I_s	(in ⁴)	63,237	131,942	63,237
$I_c(n)$	(in ⁴)	133,768	-	133,768
$I_c(3n)$	(in ⁴)	100,208	-	100,208
$I_c(cr)$	(in ⁴)	-	144,686	-
S_s	(in ³)	1,757	3,566	1,757
$S_c(n)$	(in ³)	2,308	-	2,308
$S_c(3n)$	(in ³)	2,108	-	2,108
$S_c(cr)$	(in ³)	-	3,679	-
S_{xc}	(in ³)	54	162	54
DC1	(k/')	1.14	1.32	1.14
M _{DC1}	(k)	1,400	3,907	658
DC2	(k/')	0.29	0.29	0.29
M _{DC2}	(k)	266	496	149
DW	(k/')	0.41	0.41	0.41
M _{DW}	(k)	493	1,043	276
$M_{\xi} + IM$	(k)	1,923	2,358	1,678
f_i (Strength I)	(ksi)	5.51	5.49	5.45
$M_u + 1/3 f_i S_{xc}$	(k)	6,286	11,491	4,457
$\phi_r M_n$	(k)	-	-	-
f_s DC1	(ksi)	9.56	13.15	4.50
f_s DC2	(ksi)	1.51	1.62	0.85
f_s DW	(ksi)	2.81	3.40	1.57
$f_s (\xi + IM)$	(ksi)	10.00	7.69	8.72
f_i (Service II)	(ksi)	4.24	4.28	4.13
$f_s + 1/2$ (Service II)	(ksi)	29.00	30.31	20.32
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50
$f_s + 1/3$ (Total)(Strength I)	(ksi)	37.39	38.85	26.12
$\phi_r F_n$	(ksi)	50.00	50.00	50.00
V _r	(k)	58.00	63.60	60.10

EXTERIOR GIRDER 6 MOMENT TABLE - UNIT III				
		0.4 Sp. 5	Pier 5	0.6 Sp. 6
I_s	(in ⁴)	63,237	131,942	63,237
$I_c(n)$	(in ⁴)	129,931	-	129,931
$I_c(3n)$	(in ⁴)	97,151	-	97,151
$I_c(cr)$	(in ⁴)	-	143,327	-
S_s	(in ³)	1,757	3,566	1,757
$S_c(n)$	(in ³)	2,289	-	2,289
$S_c(3n)$	(in ³)	2,086	-	2,086
$S_c(cr)$	(in ³)	-	3,667	-
S_{xc}	(in ³)	54	162	54
DC1	(k/')	1.05	1.23	1.05
M _{DC1}	(k)	1,191	3,821	726
DC2	(k/')	0.29	0.29	0.29
M _{DC2}	(k)	289	639	201
DW	(k/')	0.28	0.28	0.28
M _{DW}	(k)	408	917	226
$M_{\xi} + IM$	(k)	2,102	2,817	1,733
f_i (Strength I)	(ksi)	5.38	5.73	5.74
$M_u + 1/3 f_i S_{xc}$	(k)	6,237	12,190	4,634
$\phi_r M_n$	(k)	-	-	-
f_s DC1	(ksi)	8.14	12.86	4.96
f_s DC2	(ksi)	1.66	2.09	1.16
f_s DW	(ksi)	2.35	3.00	1.30
$f_s (\xi + IM)$	(ksi)	11.02	9.22	9.09
f_i (Service II)	(ksi)	4.12	4.45	4.35
$f_s + 1/2$ (Service II)	(ksi)	28.53	32.16	21.40
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50
$f_s + 1/3$ (Total)(Strength I)	(ksi)	36.85	41.23	27.41
$\phi_r F_n$	(ksi)	50.00	50.00	50.00
V _r	(k)	56.60	67.20	58.00

INTERIOR GIRDER 5 REACTION TABLE - UNIT III				
		Pier 4-N	Pier 5	Pier 6-S
R _{DC1}	(k)	56.7	215.3	42.3
R _{DC2}	(k)	10.6	31.6	8.5
R _{DW}	(k)	18.8	63.0	15.1
R _{ξ + IM}	(k)	97.6	172.3	94.1
R _{Total}	(k)	183.7	482.2	160.0

EXTERIOR GIRDER 6 REACTION TABLE - UNIT III				
		Pier 4-N	Pier 5	Pier 6-S
R _{DC1}	(k)	48.8	258.3	41.6
R _{DC2}	(k)	11.7	49.9	10.3
R _{DW}	(k)	14.5	64.5	11.4
R _{ξ + IM}	(k)	80.2	192.1	75.3
R _{Total}	(k)	155.2	564.8	138.6

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) 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-Strength I, and Service II) in uncracked sections 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-Strength I, and Service II) in uncracked sections due to long-term composite (superimposed) dead loads (in⁴ and in³).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in⁴ and in³).

S_{xc} : Section modulus about the major axis of section to the controlling flange, tension or compression, taken as yield moment with respect to the controlling flange over the yield strength of the controlling flange (in³).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

$M_{\xi} + IM$: Un-factored live load moment plus dynamic load allowance (impact)(kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).

$1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{\xi} + IM$

f_i : Factored calculated normal stress at edge of flange for controlling flange plate due to lateral bending, Strength I or Service II as applicable (ksi).

$\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

M_{DC1} / S_s

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

$M_{DC2} / S_c(3n)$ or $M_{DC2} / S_c(cr)$ as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

$M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.

$f_s (\xi + IM)$: Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).

$M_{\xi} + IM / S_c(n)$ or $M_{\xi} + IM / S_c(cr)$ as applicable.

$f_s + 1/2$ (Service II): Sum of stresses as computed below (ksi).

$f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s (\xi + IM) + 1/2$

0.95R_nF_{yr}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

$f_s + 1/3$ (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.25 (f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s (\xi + IM) + 1/3$

$\phi_r F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r: Maximum factored shear range in span computed according to Article 6.10.10.

Note:

M_{ξ} and R_{ξ} include the effects of centrifugal force and superelevation.

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USER NAME = floresg
 PLOT SCALE = N.T.S.
 PLOT DATE = 5/7/2014

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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

GIRDER MOMENT AND REACTION TABLES - UNIT III
 STRUCTURE NO. 016-1705

SHEET NO. S-86 OF S-165 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2013-010R	COOK	747	402
CONTRACT NO.			60W28	
ILLINOIS FED. AID PROJECT				