INTERIOR GIRDER 3B MOMENT TABLE - UNIT II			
		Pier 3	0.6 Sp. 4
I_s	(in^4)	179,188	80,649
$I_c(n)$	(in^4)	-	169,079
$I_c(3n)$	(in^4)	-	126,315
$I_c(cr)$	(in^4)	192,121	-
S_s	(in^3)	4,778	2,321
$S_c(n)$	(in^3)	-	2,957
$S_c(3n)$	(in^3)	-	2,725
$S_c(cr)$	(in^3)	4,890	-
DC1	(k/')	1.42	1.27
M_{DC1}	('k)	5,325	2,289
DC2	(k/')	0.19	0.19
M_{DC2}	('k)	796	382
DW	(k/')	0.38	0.45
M_{DW}	('k)	1,425	795
M_{L+IM}	('k)	3,545	2,659
M_u (Strength I)	('k)	15,993	9,185
$\phi_f M_n$	('k)	22,269	-
f_s DC1	(ksi)	13.37	11.83
f_s DC2	(ksi)	1.95	1.68
f_s DW	(ksi)	3.50	3.50
f_s (L+IM)	(ksi)	8.70	10.79
f_s (Service II)	(ksi)	30.13	31.04
$0.95R_hF_{yf}$	(ksi)	47.50	47.50
f_s (Total)(Strength I)	(ksi)	-	41.03
$\phi_f F_n$	(ksi)	-	50.00
V_f	(k)	89.90	79.20

INTERIOR GIRDER 3B REACTION TABLE - UNIT II			
		Pier 3	Pier 4-S
R_{DC1}	(k)	288.1	78.6
R_{DC2}	(k)	44.4	10.8
R_{DW}	(k)	79.2	26.5
R_{L+IM}	(k)	233.7	128.2
R_{Total}	(k)	645.4	244.1

INTERIOR GIRDER 2B MOMENT TABLE - UNIT II		
		0.6 Sp. 4
I_s	(in^4)	85,695
$I_c(n)$	(in^4)	177,481
$I_c(3n)$	(in^4)	129,265
$I_c(cr)$	(in^4)	-
S_s	(in^3)	2,618
$S_c(n)$	(in^3)	3,376
$S_c(3n)$	(in^3)	3,066
$S_c(cr)$	(in^3)	-
DC1	(k/')	1.12
M_{DC1}	('k)	2,409
DC2	(k/')	0.19
M_{DC2}	('k)	597
DW	(k/')	0.36
M_{DW}	('k)	766
M_{L+IM}	('k)	3,597
M_u (Strength I)	('k)	11,201
$\phi_f M_n$	('k)	-
f_s DC1	(ksi)	11.04
f_s DC2	(ksi)	2.34
f_s DW	(ksi)	3.00
f_s (L+IM)	(ksi)	12.79
f_s (Service II)	(ksi)	33.00
$0.95R_hF_{yf}$	(ksi)	47.50
f_s (Total)(Strength I)	(ksi)	43.60
$\phi_f F_n$	(ksi)	50.00
V_f	(k)	146.10

INTERIOR GIRDER 2B REACTION TABLE - UNIT II		
		Pier 4-S
R_{DC1}	(k)	80.3
* R_{DC2}	(k)	12.9
R_{DW}	(k)	26.5
R_{L+IM}	(k)	158.3
R_{Total}	(k)	278.0

INTERIOR GIRDER 8B MOMENT TABLE - UNIT II			
		Pier 3	0.6 Sp. 4
I_s	(in^4)	179,188	80,649
$I_c(n)$	(in^4)	-	155,928
$I_c(3n)$	(in^4)	-	116,607
$I_c(cr)$	(in^4)	187,955	-
S_s	(in^3)	4,778	2,321
$S_c(n)$	(in^3)	-	2,895
$S_c(3n)$	(in^3)	-	2,657
$S_c(cr)$	(in^3)	4,855	-
DC1	(k/')	1.17	1.03
M_{DC1}	('k)	4,993	2,002
DC2	(k/')	0.19	0.19
M_{DC2}	('k)	960	199
DW	(k/')	0.26	0.33
M_{DW}	('k)	1,219	624
M_{L+IM}	('k)	3,600	3,382
M_u (Strength I)	('k)	15,570	9,606
$\phi_f M_n$	('k)	22,188	-
f_s DC1	(ksi)	12.54	10.35
f_s DC2	(ksi)	2.37	0.90
f_s DW	(ksi)	3.01	2.82
f_s (L+IM)	(ksi)	8.90	14.02
f_s (Service II)	(ksi)	29.49	32.29
$0.95R_hF_{yf}$	(ksi)	47.50	47.50
f_s (Total)(Strength I)	(ksi)	-	42.82
$\phi_f F_n$	(ksi)	-	50.00
V_f	(k)	79.70	85.90

INTERIOR GIRDER 8B REACTION TABLE - UNIT II			
		Pier 3	Pier 4-S
R_{DC1}	(k)	253.8	69.9
* R_{DC2}	(k)	57.8	8.6
R_{DW}	(k)	61.2	21.7
R_{L+IM}	(k)	260.4	144.8
R_{Total}	(k)	633.1	245.1

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 ($in.^4$ 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-Strength I, and Service II) in uncracked sections due to short-term composite live loads ($in.^4$ and $in.^3$).

I (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 ($in.^4$ and $in.^3$).

I (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 ($in.^4$ and $in.^3$).

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_{L+IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{L+IM}$

$\phi_f M_n$: 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 (L+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).
$M_{L+IM} / S_c(n)$ or $M_{L+IM} / S_c(cr)$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).
$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3\ f_s(L+IM)$

$0.95R_hF_{yf}$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

f_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
$1.25\ (f_{sDC1} + f_{sDC2}) + 1.5\ f_{sDW} + 1.75\ f_s(L+IM)$

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

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

* Includes Overhead Sign Structure dead load

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AECOM

USER NAME = floresg	DESIGNED - DD	REVISED	
	CHECKED - ATB	REVISED	
PLOT SCALE = N.T.S.	DRAWN - MRK	REVISED	
PLOT DATE = 5/7/2014	CHECKED - DD	REVISED	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER MOMENT AND REACTION TABLES 2 – UNIT II
STRUCTURE NO. 016–1705
SHEET NO. S-82 OF S-165 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2013-010R	COOK	747	398
		CONTRACT NO. 60W28		
	ILLINOIS FED. AID PROJECT			