

INTERIOR GIRDER MOMENT TABLE (GIRDER 3 & 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
$I_s$	(in <sup>4</sup> )	19,446	35,309	19,446	35,309	19,446	35,309	19,446	35,309
$I_c(n)$	(in <sup>4</sup> )	47,087	-	47,087	-	47,087	-	47,087	-
$I_c(3n)$	(in <sup>4</sup> )	34,534	-	34,534	-	34,534	-	34,534	-
$S_s$	(in <sup>3</sup> )	933	1,471	933	1,471	933	1,471	933	1,471
$S_c(n)$	(in <sup>3</sup> )	1,236	-	1,236	-	1,236	-	1,236	-
$S_c(3n)$	(in <sup>3</sup> )	1,139	-	1,139	-	1,139	-	1,139	-
DC1	(k/')	0.988	1.096	0.988	1.096	0.988	1.096	0.988	1.096
M <sub>DC1</sub>	(k)	792	1,714	562	1,596	621	1,596	562	1,714
DC2	(k/')	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160
M <sub>DC2</sub>	(k)	143	216	127	217	127	216	143	216
DW	(k/')	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362
M <sub>DW</sub>	(k)	327	496	292	498	291	498	292	496
M <sub>ℓ + IM</sub>	(k)	1,566	1,405	1,552	1,426	1,572	1,426	1,552	1,405
M <sub>u</sub> (Strength I)	(k)	4,400	5,616	4,015	5,508	4,123	5,508	4,015	5,616
* $\phi_r M_n, \phi_r M_{nc}$	(k)	6,245	-	6,245	-	6,245	-	6,245	-
f <sub>s</sub> DC1	(ksi)	10.19	13.98	7.23	13.02	7.99	13.02	7.23	13.98
f <sub>s</sub> DC2	(ksi)	1.51	1.76	1.34	1.77	1.34	1.77	1.51	1.76
f <sub>s</sub> DW	(ksi)	3.45	4.05	3.08	4.06	3.07	4.06	3.08	4.05
f <sub>s</sub> 1.3(ℓ+IM)	(ksi)	19.76	14.90	19.59	15.12	19.84	15.12	19.59	14.90
f <sub>s</sub> (Service II)	(ksi)	34.91	34.70	31.24	33.97	32.24	33.97	31.24	34.91
** f <sub>s</sub> (Total)(Strength I)	(ksi)	-	45.82	-	44.93	-	44.93	-	45.82
V <sub>r</sub>	(k)	-	-	-	-	-	-	-	-

\* Compact sections  
 \*\* Non-Compact and slender sections

INTERIOR GIRDER REACTION TABLE (GIRDER 3 & 4)							
	W. Abut.	Pier 1	Pier 2	Pier 3	Pier 4	E. Abut.	
R <sub>DC1</sub>	(k)	40.4	139.6	133.4	133.4	139.6	40.4
R <sub>DC2</sub>	(k)	6.8	21.2	21.0	21.0	21.2	6.8
R <sub>DW</sub>	(k)	15.3	48.1	47.6	47.6	48.1	15.3
R <sub>ℓ + IM</sub>	(k)	91.8	190.0	194.5	194.5	190.0	91.8
R <sub>Total</sub>	(k)	154.3	398.9	396.5	396.5	398.9	154.3

INTERIOR GIRDER MOMENT TABLE (GIRDER 2A & 5A)						
	0.5 Sp. 3	Pier 3	0.6 Sp. 4	Pier 4	0.6 Sp. 5	
$I_s$	(in <sup>4</sup> )	19,446	35,309	19,446	35,309	19,446
$I_c(n)$	(in <sup>4</sup> )	40,312	-	42,892	-	45,178
$I_c(3n)$	(in <sup>4</sup> )	29,299	-	31,119	-	32,900
$S_s$	(in <sup>3</sup> )	933	1,471	933	1,471	933
$S_c(n)$	(in <sup>3</sup> )	1,188	-	1,207	-	1,223
$S_c(3n)$	(in <sup>3</sup> )	1,083	-	1,104	-	1,123
DC1	(k/')	0.690	0.821	0.801	0.931	0.906
M <sub>DC1</sub>	(k)	524	1,196	421	1,452	735
DC2	(k/')	0.160	0.160	0.160	0.160	0.160
M <sub>DC2</sub>	(k)	137	239	125	238	148
DW	(k/')	0.203	0.228	0.254	0.280	0.306
M <sub>DW</sub>	(k)	173	303	198	378	282
M <sub>ℓ + IM</sub>	(k)	1,048	1,047	1,153	1,181	1,378
M <sub>u</sub> (Strength I)	(k)	2,919	4,081	2,997	4,747	3,938
* $\phi_r M_n, \phi_r M_{nc}$	(k)	5,390	-	5,920	-	6,086
f <sub>s</sub> DC1	(ksi)	6.74	9.76	5.41	11.84	9.45
f <sub>s</sub> DC2	(ksi)	1.52	1.95	1.36	1.94	1.58
f <sub>s</sub> DW	(ksi)	1.92	2.47	2.15	3.08	3.01
f <sub>s</sub> 1.3(ℓ+IM)	(ksi)	13.76	11.10	14.90	12.52	17.58
f <sub>s</sub> (Service II)	(ksi)	23.88	25.28	23.82	29.39	31.62
** f <sub>s</sub> (Total)(Strength I)	(ksi)	-	33.29	-	38.72	-
V <sub>r</sub>	(k)	24.1	-	16.6	-	27.6

\* Compact sections  
 \*\* Non-Compact and slender sections

INTERIOR GIRDER REACTION TABLE (GIRDER 2A & 5A)					
	Header	Pier 3	Pier 4	E. Abut.	
R <sub>DC1</sub>	(k)	27.0	99.7	117.8	36.6
R <sub>DC2</sub>	(k)	6.2	21.3	21.5	6.9
R <sub>DW</sub>	(k)	8.8	30.3	37.6	13.1
R <sub>ℓ + IM</sub>	(k)	62.2	129.4	143.3	80.2
R <sub>Total</sub>	(k)	104.2	280.7	320.2	136.8

DESIGNED	JOH
CHECKED	BAN
DRAWN	TC
CHECKED	JOH

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INTERIOR GIRDER MOMENT TABLE (GIRDER 2 & 5)									
	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
$I_s$	(in <sup>4</sup> )	19,446	35,309	19,446	35,309	19,446	35,309	19,446	35,309
$I_c(n)$	(in <sup>4</sup> )	47,087	-	47,087	-	47,087	-	47,087	-
$I_c(3n)$	(in <sup>4</sup> )	34,534	-	34,534	-	34,534	-	34,534	-
$S_s$	(in <sup>3</sup> )	933	1,471	933	1,471	933	1,471	933	1,471
$S_c(n)$	(in <sup>3</sup> )	1,236	-	1,236	-	1,188	-	1,208	-
$S_c(3n)$	(in <sup>3</sup> )	1,139	-	1,139	-	1,081	-	1,104	-
DC1	(k/')	0.988	1.096	0.988	1.096	0.829	0.962	0.879	1.014
M <sub>DC1</sub>	(k)	767	1,669	553	1,529	521	1,342	479	1,533
DC2	(k/')	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160
M <sub>DC2</sub>	(k)	150	205	130	220	115	196	125	218
DW	(k/')	0.362	0.362	0.362	0.322	0.283	0.295	0.308	0.321
M <sub>DW</sub>	(k)	300	506	294	494	256	414	244	443
M <sub>ℓ + IM</sub>	(k)	1,596	1,414	1,542	1,526	1,474	1,340	1,381	1,302
M <sub>u</sub> (Strength I)	(k)	4,389	5,576	3,993	5,598	3,759	4,888	3,538	5,132
* $\phi_r M_n, \phi_r M_{nc}$	(k)	6,245	-	6,245	-	6,010	-	6,086	-
f <sub>s</sub> DC1	(ksi)	9.86	13.62	7.11	12.47	6.70	10.95	6.16	12.51
f <sub>s</sub> DC2	(ksi)	1.58	1.67	1.37	1.79	1.28	1.60	1.36	1.78
f <sub>s</sub> DW	(ksi)	3.16	4.13	3.10	4.03	2.84	3.38	2.65	3.61
f <sub>s</sub> 1.3(ℓ+IM)	(ksi)	20.14	15.00	19.46	16.18	19.36	14.21	17.83	13.81
f <sub>s</sub> (Service II)	(ksi)	34.74	34.00	31.04	34.47	30.18	30.14	37.38	31.71
** f <sub>s</sub> (Total)(Strength I)	(ksi)	-	45.49	-	45.66	-	39.89	-	41.86
V <sub>r</sub>	(k)	-	-	-	-	-	-	-	-

\* Compact sections  
 \*\* Non-Compact and slender sections

INTERIOR GIRDER REACTION TABLE (GIRDER 2 & 5)							
	W. Abut.	Pier 1	Pier 2	Pier 3	Pier 4	E. Abut.	
R <sub>DC1</sub>	(k)	39.1	135.8	131.5	112.1	124.6	37.1
R <sub>DC2</sub>	(k)	6.7	21.5	22.5	20.8	21.5	6.8
R <sub>DW</sub>	(k)	15.3	48.7	47.0	38.5	43.0	14.2
R <sub>ℓ + IM</sub>	(k)	91.9	190.0	221.4	165.3	170.1	87.0
R <sub>Total</sub>	(k)	153.0	396.0	422.4	336.7	359.2	145.1

$I_s, S_s$ : 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<sup>4</sup> and in<sup>3</sup>).

$I_c(n), S_c(n)$ : 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) due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : 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) due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

Z: Plastic Section Modulus of the steel section in non-composite areas. Omit line in Moment Table if not used in design calculations (in<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).  
 M<sub>DC1</sub>: 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<sub>DC2</sub>: 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<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).  
 M<sub>ℓ + IM</sub>: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).  
 M<sub>u</sub> (Strength I): Factored design moment (kip-ft.).  
 $1.25(M_{DC1} + M_{DC2}) + 1.5M_{DW} + 1.75M_{ℓ + IM}$   
 $\phi_r M_n$ : Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).  
 $\phi_r M_{nc}$ : Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).  
 f<sub>s</sub> (Service II): Sum of stresses as computed from the moments below (ksi).  
 $M_{DC1} + M_{DC2} + M_{DW} + 1.3M_{ℓ + IM}$   
 f<sub>s</sub> (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).  
 $1.25(M_{DC1} + M_{DC2}) + 1.5M_{DW} + 1.75M_{ℓ + IM}$   
 V<sub>r</sub>: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

STRUCTURAL STEEL DETAILS  
 STRUCTURE NO. 099-4105

SHEET NO. 36	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	TR 55	90-16103-01-BR	WILL	255	180
60 SHEETS	SN 099-4105		CONTRACT NO. 83126		
	FED. ROAD DIST. NO. 7 ILLINOIS		FED. AID PROJECT BRS-		