STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

		BEAMS 2-5 MOMENT TABLE						
		0.4 Span 1	Pier 1	0.5 Span 2	Pier 2	0.5 Span 3	Pier 3	0.6 Span 4
I_s	(in^4)	6,710	8,811	6,710	8,811	6,710	8,811	6,710
$I_c(n)$	(in^4)	22,118	-	22,118	-	22,118	-	22,118
$I_c(3n)$	(in^4)	15,590	-	15,590	-	15,590	-	15,590
S_s	(in^3)	405	521	405	521	405	521	405
$S_c(n)$	(in^3)	682	-	682	-	682	-	682
$S_c(3n)$	(in^3)	604	-	604	-	604	-	604
ℓ	(k/')	0.846	1.189	0.846	1.189	0.846	1.189	0.846
$M\ell$	('k)	203	503	181	509	181	503	203
$s\ell$	(k/')	0.317	-	0.317	-	0.317	-	0.317
$M_s\ell$	('k)	86	-	88	-	88	-	86
ML	('k)	399	242	434	263	434	242	399
MI	('k)	109	54	110	66	110	64	109
$\frac{5}{3}[ML + I]$	('k)	847	510	907	548	907	510	847
M_a	('k)	1,477	1317	1,529	1,374	1,529	1,317	1,477
* M_u	('k)	2,224	-	2,744	-	2,744	-	2,189
f_s ℓ non-comp	(ksi)	6.0	11.6	5.4	11.7	5.4	11.6	6.0
f_s ℓ (comp)	(ksi)	1.7	-	1.7	-	1.7	-	1.7
f_s $\frac{5}{3}[ML + MI]$	(ksi)	14.9	11.7	16.0	12.6	16.0	11.7	14.9
f_s (Overload)	(ksi)	22.6	23.3	23.1	24.3	23.1	23.3	22.6
** f_s (Total)	(ksi)	-	30.3	-	31.6	-	30.3	-
VR	(k)	53.9	-	43.3	-	43.3	-	53.9

	BEAMS 2-5 REACTION TABLE					
		Abut. A	Pier 1	Pier 2	Pier 3	Abut. B
R ℓ	(k)	26.8	85.5	85.3	85.5	26.8
R L	(k)	38.9	44.6	45.1	44.6	38.9
R I	(k)	10.6	8.7	8.3	8.7	10.6
R Total	(k)	76.3	138.8	138.7	138.8	76.3

		BEAM 10 MOMENT TABLE						
		0.4 Span 1	Pier 4	0.5 Span 2	Pier 5	0.5 Span 3	Pier 6	0.6 Span 4
I_s	(in^4)	7,450	7,450	7,450	9,576	7,450	7,450	7,450
$I_c(n)$	(in^4)	23,793	-	23,793	-	23,793	-	23,793
$I_c(3n)$	(in^4)	16,670	-	16,670	-	16,670	-	16,670
S_s	(in^3)	447	447	447	563	447	447	447
$S_c(n)$	(in^3)	741	-	741	-	741	-	741
$S_c(3n)$	(in^3)	655	-	655	-	655	-	655
ℓ	(k/')	0.858	1.175	0.858	1.200	0.858	1.175	0.858
$M\ell$	('k)	167	511	239	644	226	496	172
$s\ell$	(k/')	0.317	-	0.317	-	0.317	-	0.317
$M_s\ell$	('k)	71	-	111	-	106	-	72
ML	('k)	374	248	485	299	477	243	374
MI	('k)	103	64	118	73	118	63	104
$\frac{5}{3}[ML + I]$	('k)	795	520	1,005	620	992	510	797
M_a	('k)	1,343	1,340	1,762	1,643	1,721	1,308	1,353
* M_u	('k)	3,094	1,542	2,529	-	2,514	1,542	3,094
f_s ℓ non-comp	(ksi)	4.5	13.7	6.4	13.7	6.1	13.3	4.6
f_s ℓ (comp)	(ksi)	1.3	-	2.0	-	1.9	-	1.3
f_s $\frac{5}{3}[ML + MI]$	(ksi)	12.9	14.0	16.3	13.2	16.1	13.7	12.9
f_s (Overload)	(ksi)	18.7	27.7	24.7	26.9	24.1	27.0	18.8
** f_s (Total)	(ksi)	-	-	-	35.0	-	-	-
VR	(k)	54.4	-	44.4	-	44.2	-	54.1

	BEAM 10 REACTION TABLE					
		Abut. C	Pier 4	Pier 5	Pier 6	Abut. D
R ℓ	(k)	24.6	87.0	96.5	85.9	24.8
R L	(k)	38.6	44.8	47.5	44.8	38.6
R I	(k)	10.6	8.7	8.4	8.6	10.6
R Total	(k)	73.8	140.5	152.4	139.3	74.0

		BEAM 11 MOMENT TABLE						
		0.4 Span 1	Pier 4	0.5 Span 2	Pier 5	0.5 Span 3	Pier 6	0.6 Span 4
I_s	(in^4)	8,160	8,160	8,160	10,312	8,160	8,160	8,160
$I_c(n)$	(in^4)	25,381	-	25,381	-	25,381	-	25,381
$I_c(3n)$	(in^4)	17,692	-	17,692	-	17,692	-	17,692
S_s	(in^3)	487	487	487	602	487	487	487
$S_c(n)$	(in^3)	797	-	797	-	797	-	797
$S_c(3n)$	(in^3)	703	-	703	-	703	-	703
ℓ	(k/')	0.869	1.186	0.869	1.211	0.869	1.186	0.869
$M\ell$	('k)	162	541	264	670	224	497	176
$s\ell$	(k/')	0.317	-	0.317	-	0.317	-	0.317
$M_s\ell$	('k)	68	-	119	-	104	-	72
ML	('k)	372	256	502	306	477	244	374
MI	('k)	102	66	121	75	118	64	103
$\frac{5}{3}[ML + I]$	('k)	790	537	1,038	635	992	513	795
M_a	('k)	1,326	1,401	1,847	1,697	1,716	1,313	1,356
* M_u	('k)	3,302	1,677	2,791	-	2,744	1,677	3,302
f_s ℓ non-comp	(ksi)	4.0	13.3	6.5	13.4	5.5	12.2	4.3
f_s ℓ (comp)	(ksi)	1.2	-	2.0	-	1.8	-	1.2
f_s $\frac{5}{3}[ML + MI]$	(ksi)	11.9	13.2	15.6	12.7	14.9	12.6	12.0
f_s (Overload)	(ksi)	17.1	26.5	24.1	26.1	22.2	24.8	17.5
** f_s (Total)	(ksi)	-	-	-	33.9	-	-	-
VR	(k)	54.4	-	44.3	-	44.4	-	54.1

	BEAM 11 REACTION TABLE					
		Abut. C	Pier 4	Pier 5	Pier 6	Abut. D
R ℓ	(k)	24.3	89.7	98.9	86.3	25.1
R L	(k)	38.5	44.9	48.0	44.8	38.6
R I	(k)	10.7	8.6	8.4	8.6	10.6
R Total	(k)	73.5	143.2	155.3	139.7	74.3

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}).

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.).

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

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

M_a: Factored design moment (kip-ft.).
$1.3\left[M\ell + M_s\ell + \frac{5}{3}(ML + MI)\right]$

M_u: Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).

f_s (Overload): Sum of stresses as computed from the moments below (ksi).
$M\ell + M_s\ell + \frac{5}{3}(ML + MI)$

f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\left[M\ell + M_s\ell + \frac{5}{3}(ML + MI)\right]$

VR: Maximum L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

DESIGNED	SPK
CHECKED	
DRAWN	ASJ
CHECKED	SPK

* Compact section
** Braced non-compact and partially braced section

EXISTING BEAMS DESIGN DATA TABLES
STRUCTURE NO. 081-0024 (W.B.)
STRUCTURE NO. 081-0025 (E.B.)

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SHEET NO. 36	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
77 SHEETS	280	81-1(VB-1)R	ROCK ISLAND	503	372
			CONTRACT NO. 64815		
	FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		