



FRAMING PLAN

* Measured at right angles to Beam 11 at ϕ Bearing.

Notes:

- Existing end diaphragms at abutments shall be removed and replaced. New diaphragms shall be added between Beams 7 and 8. See Sheet 26 of 39 for diaphragm details.
- See Sheet 27 of 39 for Beam Straightening and Strengthening details.

		0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.5 Sp. 3	Pier 3	0.6 Sp. 4
I_s	(in ⁴)	9040	11877	15000	11877	9040	9040	9040
$I_c(n)$	(in ⁴)	23921	-	33861	-	23921	23921	23921
$I_c(3n)$	(in ⁴)	17427	-	24543	-	17427	17427	17427
S_s	(in ³)	504	648	836	648	504	504	504
$S_c(n)$	(in ³)	742	-	1134	-	742	742	742
$S_c(3n)$	(in ³)	668	-	1022	-	668	668	668
ϕ	(k/')	0.876	0.906	0.958	0.906	0.876	0.876	0.876
$M\phi$	(k)	14	453	447	460	62	234	195
$s\phi$	(k/')	0.291	0.291	0.291	0.291	0.291	0.291	0.291
$M_s\phi$	(k)	14	130	144	135	27	83	64
M_L	(k)	271	277	558	301	338	265	337
M_{IM}	(k)	80	73	132	76	91	73	95
$^5_3[M_L + i]$	(k)	585	583	1150	628	715	563	720
M_a	(k)	797	1516	2263	1590	1045	1144	1273
M_u	(k)	2792	1951	3761	1951	2792	2142	2792
$f_s \phi$ non-comp	(ksi)	0.3	8.4	6.4	8.5	1.5	5.6	4.6
$f_s \phi$ (comp)	(ksi)	0.3	2.4	1.7	2.5	0.5	1.5	1.1
$f_s ^5_3[M_L + M_I]$	(ksi)	9.5	10.8	12.2	11.6	11.6	9.1	11.6
f_s (Overload)	(ksi)	10.0	21.6	20.3	22.7	13.5	16.2	17.4
f_s (Total)	(ksi)	-	-	-	-	-	-	-
VR	(k)	58.0	-	49.3	-	52.6	63.2	56.7

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

	W. Abut.	Pier 1	Pier 2	Pier 3	E. Abut.	
$R\phi$	(k)	12.7	92.4	94.4	67.9	25.6
R_L	(k)	38.5	48.2	48.7	47.2	39.8
R_I	(k)	11.5	9.4	8.9	9.9	11.3
R_{Total}	(k)	62.7	150.0	152.0	125.0	76.7

		0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.5 Sp. 3	Pier 3	0.6 Sp. 4
I_s	(in ⁴)	7800	12299	10500	13236	7800	7800	7800
$I_c(n)$	(in ⁴)	12642	-	26897	-	21642	21642	21642
$I_c(3n)$	(in ⁴)	15868	-	19506	-	15868	15868	15868
S_s	(in ³)	439	668	580	715	439	439	439
$S_c(n)$	(in ³)	663	-	843	-	663	663	663
$S_c(3n)$	(in ³)	598	-	757	-	598	598	598
ϕ	(k/')	0.880	0.927	0.916	0.937	0.880	0.880	0.880
$M\phi$	(k)	1	488	378	499	47	226	200
$s\phi$	(k/')	0.291	0.291	0.291	0.291	0.291	0.291	0.291
$M_s\phi$	(k)	11	138	134	145	23	80	65
M_L	(k)	282	308	545	325	348	274	345
M_{IM}	(k)	84	81	129	82	93	75	97
$^5_3[M_L + i]$	(k)	610	648	1123	678	735	582	737
M_a	(k)	809	1657	2126	1719	1047	1154	1302
M_u	(k)	2128	-	3385	2402	2801	2129	2801
$f_s \phi$ non-comp	(ksi)	0.0	8.8	7.8	8.4	1.3	6.2	5.5
$f_s \phi$ (comp)	(ksi)	0.2	2.5	2.1	2.4	0.5	1.6	1.3
$f_s ^5_3[M_L + M_I]$	(ksi)	11.0	11.6	16.0	11.4	13.3	10.5	13.3
f_s (Overload)	(ksi)	11.3	22.9	25.9	22.2	15.0	18.3	20.1
f_s (Total)	(ksi)	-	29.7	-	-	-	-	-
VR	(k)	60.5	-	47.2	-	54.7	65.5	58.1

- 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 (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 and Overload) 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 and Overload) due to long-term composite (superimposed) dead loads (in⁴ and in³).
- ϕ : Un-factored non-composite dead load (kips/ft.).
- $M\phi$: Un-factored moment due to non-composite dead load (kip-ft.).
- $s\phi$: Un-factored long-term composite (superimposed) dead load (kips/ft.).
- $M_s\phi$: 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.).
- 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).
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
- VR: Maximum ϕ + impact shear range within the composite portion of the span for stud shear connector design (kips).

	W. Abut.	Pier 1	Pier 2	Pier 3	E. Abut.	
$R\phi$	(k)	11.8	92.7	94.9	66.8	25.8
R_L	(k)	39.6	49.8	50.2	48.4	40.8
R_I	(k)	11.7	9.8	9.2	10.1	11.5
R_{Total}	(k)	63.1	152.3	154.3	125.3	78.1



USER NAME =	DESIGNED - MTH	REVISED -
FILE NAME =	CHECKED - ADB	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN AND DESIGN DATA
STRUCTURE NO. 045-0037

SHEET NO. 25 OF 39 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
573	61HB-1-R	KANE	110	75
CONTRACT NO. 60K76			ILLINOIS FED. AID PROJECT	