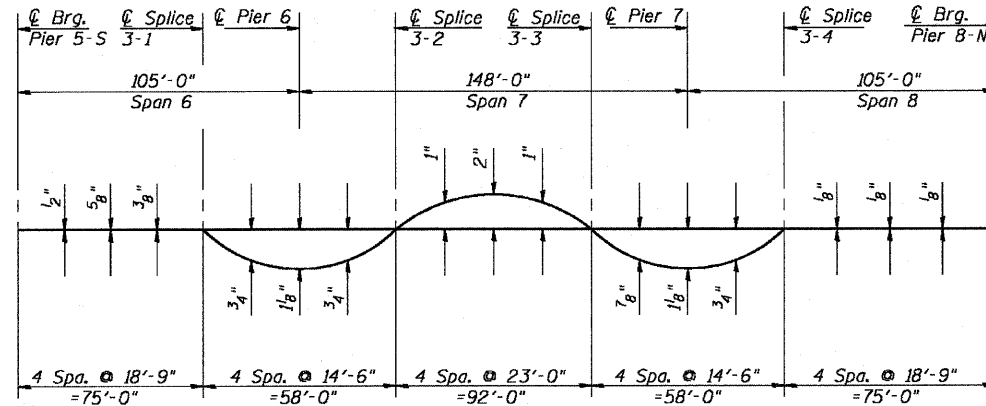


STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

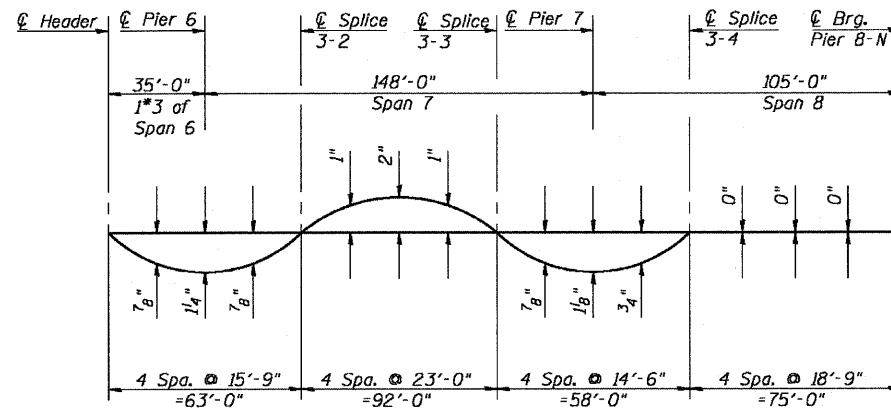


F.A.P. ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
786	109 BR	La Salle	351	251
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract # 66607



**CAMBER DIAGRAM UNIT 3 (GIRDERS 1 THRU 5 & 6)**  
(Dimensions given along @ roadway)



**CAMBER DIAGRAM UNIT 3 (GIRDER 5A)**  
(Dimensions given along @ roadway)

**TOP OF WEB ELEVATIONS BEFORE DEFLECTION  
(FOR FABRICATION ONLY)**

Location	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 5-A	Girder 6
Pier 5-S	533.10	533.21	533.32	533.22	533.10	-----	532.98
Header	-----	-----	-----	-----	-----	529.41	-----
Splice 3-1	529.24	529.35	529.46	529.36	529.24	529.16	529.11
Pier 6	527.80	527.91	528.01	527.92	527.80	527.70	527.61
Splice 3-2	526.62	526.73	526.84	526.74	526.62	526.64	526.53
Splice 3-3	523.00	523.11	523.21	523.12	523.00	522.86	522.72
Pier 7	521.97	522.08	522.19	522.09	521.97	521.83	521.68
Splice 3-4	521.07	521.18	521.28	521.19	521.07	520.91	520.75
Pier 8-N	519.22	519.33	519.43	519.34	519.22	519.04	518.85

DESIGNED - CLS
CHECKED - OPY
DRAWN - JHR
CHECKED - RJC

**INTERIOR GIRDER MOMENT TABLE (UNIT 3 - BEAM 4)**

	0.4 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.6 Sp. 8
$I_s$	28,300	43,047	28,300	43,047	28,300
$I_c(n)$	72,515	---	72,515	---	72,515
$I_c(3n)$	52,540	---	52,540	---	52,540
$S_s$	970	1,367	970	1,367	970
$S_c(n)$	1,402	---	1,402	---	1,402
$S_c(3n)$	1,264	---	1,264	---	1,264
Z	---	---	---	---	---
$\rho$	0.919	1.357	0.919	1.392	0.919
$M \rho$	545	2,374	843	2,389	545
$s \rho$	0.423	---	0.398	---	0.428
$M_s \rho$	292	---	441	---	304
$M_t$	867	887	1,050	887	867
$M_{imp}$	188	177	192	177	188
$S_3 [M_t + M_{imp}]$	1,758	1,773	2,070	1,773	1,758
$M_o$	3,374	5,392	4,360	5,411	3,390
$M_u$	5,842	---	5,842	---	5,842
$f_s \rho$ non-comp	6.74	20.84	10.43	20.97	6.74
$f_s \rho$ comp	2.77	---	4.19	---	2.89
$f_s S_3 [M_t + M_{imp}]$	15.05	15.57	17.72	15.57	15.05
$f_s$ (Overload)	24.56	36.41	32.33	36.54	24.68
$f_s$ (Total)	---	47.33	---	47.50	---
VR	61.8	---	48.9	---	61.8

**INTERIOR GIRDER REACTION TABLE UNIT 3 BEAM 4)**

	Pier 5-S	Pier 6	Pier 7	Pier 8-N
$R \rho$	48	192	194	49
$R_t$	46	76	76	46
Imp.	10	15	15	10
$R_{Total}$	104	283	285	105

- $I_s, S_s$ : 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<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 and Overload) 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 and Overload) 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 (in<sup>3</sup>).
- $\rho$ : Un-factored non-composite dead load (kips/ft.).
- $M \rho$ : Un-factored moment due to non-composite dead load (kip-ft.).
- $s \rho$ : Un-factored long-term composite (superimposed) dead load (kips/ft.).
- $M_s \rho$ : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- $M_t$ : Un-factored live load moment (kip-ft.).
- $M_{imp}$ : Un-factored moment due to impact (kip-ft.).
- $M_o$ : Factored design moment (kip-ft.).  
 $1.3 [M \rho + M_s \rho + \frac{5}{3} (M_t + M_{imp})]$
- $M_u$ : 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).  
 $M \rho + M_s \rho + \frac{5}{3} (M_t + M_{imp})$
- $f_s$  (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).  
 $1.3 [M \rho + M_s \rho + \frac{5}{3} (M_t + M_{imp})]$
- VR: Maximum  $\frac{1}{4}$  + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

**INTERIOR GIRDER MOMENT TABLE (UNIT 3 - BEAM 5)**

	0.4 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.6 Sp. 8
$I_s$	28,300	43,047	28,300	43,047	28,300
$I_c(n)$	71,363	---	71,073	---	73,767
$I_c(3n)$	51,567	---	51,316	---	53,684
$S_s$	970	1,367	970	1,367	970
$S_c(n)$	1,395	---	1,393	---	1,409
$S_c(3n)$	1,255	---	1,252	---	1,273
Z	---	---	---	---	---
$\rho$	0.873	1.239	0.863	1.397	0.969
$M \rho$	532	2,249	808	2,409	623
$s \rho$	0.423	---	0.398	---	0.428
$M_s \rho$	293	---	461	---	305
$M_t$	812	814	1,002	886	935
$M_{imp}$	176	163	183	177	203
$S_3 [M_t + M_{imp}]$	1,647	1,628	1,975	1,772	1,897
$M_o$	3,213	5,041	4,217	5,435	3,672
$M_u$	5,813	---	5,804	---	5,871
$f_s \rho$ non-comp	6.58	19.74	10.00	21.15	7.71
$f_s \rho$ comp	2.80	---	4.42	---	2.88
$f_s S_3 [M_t + M_{imp}]$	14.16	14.29	17.01	15.55	16.15
$f_s$ (Overload)	23.55	34.04	31.43	36.70	26.74
$f_s$ (Total)	---	44.25	---	47.71	---
VR	57.7	---	46.0	---	64.9

**INTERIOR GIRDER REACTION TABLE (UNIT 3 BEAM 5)**

	Pier 5-S	Pier 6	Pier 7	Pier 8-N
$R \rho$	47	183	194	52
$R_t$	43	71	78	49
Imp.	9	14	16	10
$R_{Total}$	99	268	288	111

**INTERIOR GIRDER MOMENT TABLE (UNIT 3 - BEAM 5A)**

	Pier 6	0.5 Sp. 7	Pier 7	0.6 Sp. 8
$I_s$	43,047	28,300	43,047	28,300
$I_c(n)$	---	69,377	---	74,922
$I_c(3n)$	---	49,885	---	54,779
$S_s$	1,367	970	1,367	970
$S_c(n)$	---	1,383	---	1,415
$S_c(3n)$	---	1,240	---	1,282
Z	---	---	---	---
$\rho$	1.121	0.807	1.403	1.019
$M \rho$	1,915	737	2,387	682
$s \rho$	---	0.398	---	0.428
$M_s \rho$	---	471	---	299
$M_t$	666	819	794	999
$M_{imp}$	165	150	159	217
$S_3 [M_t + M_{imp}]$	1,385	1,615	1,588	2,027
$M_o$	4,290	3,670	5,168	3,910
$M_u$	---	5,763	---	5,896
$f_s \rho$ non-comp	16.81	9.12	20.95	8.44
$f_s \rho$ comp	---	4.56	---	2.80
$f_s S_3 [M_t + M_{imp}]$	12.16	14.01	13.94	17.19
$f_s$ (Overload)	28.97	27.69	34.90	28.42
$f_s$ (Total)	37.66	---	45.37	---
VR	---	42.0	---	67.6

**INTERIOR GIRDER REACTION TABLE (UNIT 3 - BEAM 5A)**

	***Header	Pier 6	Pier 7	Pier 8-N
$R \rho$	(k)	-36	161	194
$R_t$	(k)	-21	60	75
Imp.	(k)	-6	15	15
$R_{Total}$	(k)	-63	236	284

- \* Compact section
- \*\* Braced non-compact and partially braced section
- \*\*\* Reactions for the header are negative & represent maximum uplift. Note that the header is always subject to some uplift.

**CAMBER DIAGRAM  
UNIT 3  
IL. 170 F.A.P. 786 OVER  
ILLINOIS RIVER AT SENECA  
PUBLIC WATERS  
LA SALLE COUNTY, SECTION 109 BR  
STATION 79+04.42  
STRUCTURE NO. 050-0246**