

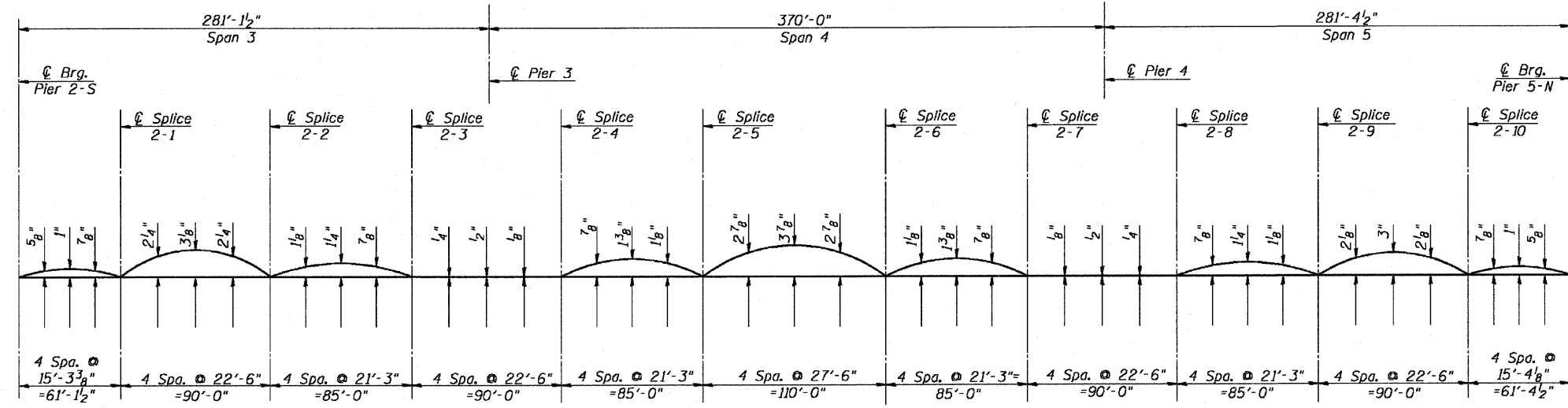
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



F.A.P. ROUTE NO.	SECTION	COUNTY	STATION	SHEET
786	109 BR	La Salle	351	248
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 48
89 SHEETS

Contract # 66607



CAMBER DIAGRAM UNIT 2 - GIRDERS 1 THRU 6

TOP OF WEB ELEVATIONS BEFORE DEFLECTION
(FOR FABRICATION ONLY)

	0.4 Sp. 3	Pier 3	0.5 Sp. 4	Pier 4	0.6 Sp. 5
I_s	223,089	398,233	331,076	398,233	223,089
$I_c(n)$	401,614	---	499,989	---	401,614
$I_c(3n)$	299,990	---	400,320	---	299,990
S_s	4,376	7,175	6,020	7,175	4,376
$S_c(n)$	5,546	---	6,963	---	5,546
$S_c(3n)$	4,982	---	6,468	---	4,982
Z	---	---	---	---	---
$\bar{\rho}$	1.209	1.848	1.348	1.848	1.209
$M\bar{\rho}$	5,794	19,665	7,488	19,685	5,809
$s\bar{\rho}$	0.413	---	0.413	---	0.413
$M_s\bar{\rho}$	2,087	---	2,492	---	2,093
M_L	3,730	5,069	4,585	5,072	3,735
M_{Imp}	459	568	463	568	459
$M_3 [M_L + M_{Imp}]$	6,982	9,395	8,413	9,400	6,990
M_o	19,321	37,778	23,911	37,811	19,360
M_u	---	---	29,013	---	---
$f_s \bar{\rho}$ (non-comp)	15.89	32.89	14.93	32.92	15.93
$f_s \bar{\rho}$ (comp)	5.03	---	4.62	---	5.04
$f_s \bar{\rho} [M_L + M_{Imp}]$	15.11	15.71	14.50	15.72	15.12
f_s (Overload)	36.02	48.60	34.05	48.64	36.10
f_s (Total)	46.83	63.18	---	63.24	46.92
VR	87.1	---	83.6	---	87.1

- 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 (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).
- Z: Plastic Section Modulus of the steel section in non-composite areas (in.³).
- $\bar{\rho}$: Un-factored non-composite dead load (kips/ft.).
- $M\bar{\rho}$: Un-factored moment due to non-composite dead load (kip-ft.).
- $s\bar{\rho}$: Un-factored long-term composite (superimposed) dead load (kips/ft.).
- $M_s\bar{\rho}$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- M_L : Un-factored live load moment (kip-ft.).
- M_{Imp} : Un-factored moment due to impact (kip-ft.).
- M_o : Factored design moment (kip-ft.).
 $1.3 [M\bar{\rho} + M_s\bar{\rho} + \frac{5}{3} (M_L + M_{Imp})]$
- 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).
 $M\bar{\rho} + M_s\bar{\rho} + \frac{5}{3} (M_L + M_{Imp})$
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M\bar{\rho} + M_s\bar{\rho} + \frac{5}{3} (M_L + M_{Imp})]$
- VR: Maximum $\bar{\rho}$ + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

Location	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
Pier 2-S	533.21	533.32	533.42	533.33	533.23	533.09
Splice 2-1	536.66	536.75	536.86	536.77	536.66	536.55
Splice 2-2	540.30	540.39	540.49	540.40	540.29	540.18
Splice 2-3	542.19	542.29	542.39	542.31	542.20	542.07
Pier 3	543.09	543.20	543.30	543.21	543.11	542.97
Splice 2-4	544.07	544.18	544.28	544.20	544.09	543.96
Splice 2-5	545.67	545.76	545.86	545.78	545.67	545.55
Splice 2-6	545.67	545.76	545.86	545.78	545.67	545.55
Splice 2-7	544.07	544.18	544.28	544.20	544.09	543.96
Pier 4	543.09	543.20	543.30	543.21	543.11	542.97
Splice 2-8	542.19	542.29	542.40	542.31	542.20	542.07
Splice 2-9	540.30	540.39	540.49	540.40	540.30	540.19
Splice 2-10	536.68	536.77	536.87	536.78	536.67	536.56
Pier 5-N	533.19	533.30	533.40	533.31	533.21	533.07

	Pier 2-S	Pier 3	Pier 4	Pier 5-N
$R\bar{\rho}$ (k)	163	624	625	164
R_L (k)	65	162	162	65
Imp. (k)	8	18	18	8
R_{Total} (k)	236	804	805	237

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

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

CAMBER DIAGRAM
UNIT 2
IL. 170 F.A.P. 786 OVER
ILLINOIS RIVER AT SENECA
PUBLIC WATERS
LA SALLE COUNTY, SECTION 109 BR
STATION 79+0.42
STRUCTURE NO. 050-0246