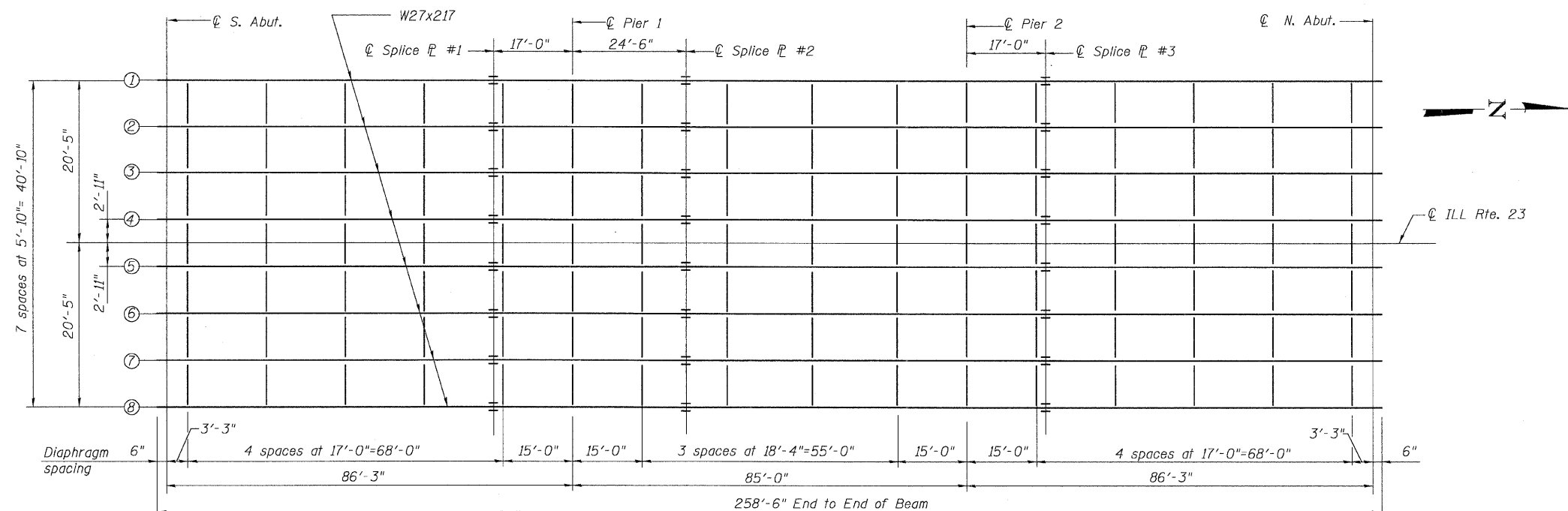


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| | | | | | |
|-----------------------|----------|-------------------|--------------|-----------|--------------|
| ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. | SHEET NO. 12 |
| F.A.P. 324 | 23B-1 | MCHENRY | 97 | 52 | 25 SHEETS |
| FED. ROAD DIST. NO. 1 | ILLINOIS | FED. AID PROJECT- | | | |

Contract # 62892



FRAMING PLAN

| | 0.4 Sp. 1 or 0.6 Sp. 3 | Piers | 0.5 Sp. 2 |
|-----------------------------|---------------------------|-------|-----------|
| I_s | (in ⁴) 8,910 | 8,910 | 8,910 |
| $I_c(n)$ | (in ⁴) 20,915 | 8,910 | 20,915 |
| $I_c(3n)$ | (in ⁴) 14,847 | 8,910 | 14,847 |
| S_s | (in ³) 627 | 627 | 627 |
| $S_c(n)$ | (in ³) 881 | 627 | 881 |
| $S_c(3n)$ | (in ³) 783 | 627 | 783 |
| DC1 | (k/ft) 0.844 | 0.844 | 0.844 |
| M _{DC1} | (k) 506 | 620 | 142 |
| DC2 | (k/ft) 0.113 | 0.113 | 0.113 |
| M _{DC2} | (k) 71 | 74 | 28 |
| DW | (k/ft) 0.275 | 0.275 | 0.275 |
| M _{DW} | (k) 174 | 180 | 68 |
| M _{ℓ + Imp} | (k) 1,015 | 711 | 787 |
| M _u (Strength I) | (k) 2,758 | 2,381 | 1,693 |
| $\phi_r M_n, \phi_r M_{nc}$ | (k) 3,880 | — | 3,880 |
| f_s DC1 | (ksi) 9.68 | 11.87 | 2.72 |
| f_s DC2 | (ksi) 1.09 | 1.42 | 0.43 |
| f_s DW | (ksi) 2.67 | 3.45 | 1.04 |
| f_s 1.3($\ell + I$) | (ksi) 17.97 | 17.69 | 13.94 |
| f_s (Service II) | (ksi) 31.41 | 34.43 | 18.13 |
| f_s (Total)(Strength I) | (ksi) — | 45.61 | — |
| V _r | (k) 20.11 | — | 17.14 |

| | Abut. | Pier |
|----------------------|------------|--------|
| R _{DC1} | (k) 29.99 | 79.45 |
| R _{DC2} | (k) 4.02 | 10.53 |
| R _{DW} | (k) 9.78 | 25.63 |
| R _{ℓ + Imp} | (k) 71.92 | 109.54 |
| R _{Total} | (k) 115.71 | 225.15 |

| Loc. Beam | ℄ S. Abut. | ℄ Pier 1 | ℄ Pier 2 | ℄ N. Abut. | ℄ Splice No.1 | ℄ Splice No.2 | ℄ Splice No.3 |
|-----------|------------|----------|----------|------------|---------------|---------------|---------------|
| Beam No.1 | 803.75 | 804.19 | 804.61 | 805.04 | 804.10 | 804.31 | 804.70 |
| Beam No.2 | 803.88 | 804.31 | 804.73 | 805.16 | 804.22 | 804.43 | 804.82 |
| Beam No.3 | 803.98 | 804.42 | 804.84 | 805.27 | 804.33 | 804.54 | 804.93 |
| Beam No.4 | 804.07 | 804.51 | 804.93 | 805.36 | 804.42 | 804.63 | 805.02 |
| Beam No.5 | 804.07 | 804.51 | 804.93 | 805.36 | 804.42 | 804.63 | 805.02 |
| Beam No.6 | 803.98 | 804.42 | 804.84 | 805.27 | 804.33 | 804.54 | 804.93 |
| Beam No.7 | 803.88 | 804.31 | 804.73 | 805.16 | 804.22 | 804.43 | 804.82 |
| Beam No.8 | 803.75 | 804.19 | 804.61 | 805.04 | 804.10 | 804.31 | 804.70 |

- 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 (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-Strength I, and Service II) 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-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).
- DC1: Un-factored non-composite dead load (kips/ft.).
- M_{DC1}: 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_{DC2}: 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_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
- M_{ℓ + Imp}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
- M_u (Strength I): Factored design moment (kip-ft.).
- $\phi_r M_n$: 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_s (Service II): Sum of stresses as computed from the moments below (ksi).
- f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
- V_r: Factored shear range computed according to Article 6.10.10.

Note:

All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

| | |
|----------|-----|
| DESIGNED | WLA |
| CHECKED | CJB |
| DRAWN | DRP |
| CHECKED | PJM |

FRAMING PLAN
ILL. ROUTE 23 OVER
KISHWAUKEE RIVER
F.A.P. RT. 324
MCHENRY COUNTY
STATION 69+02.50
STRUCTURE NO. 056-0001



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