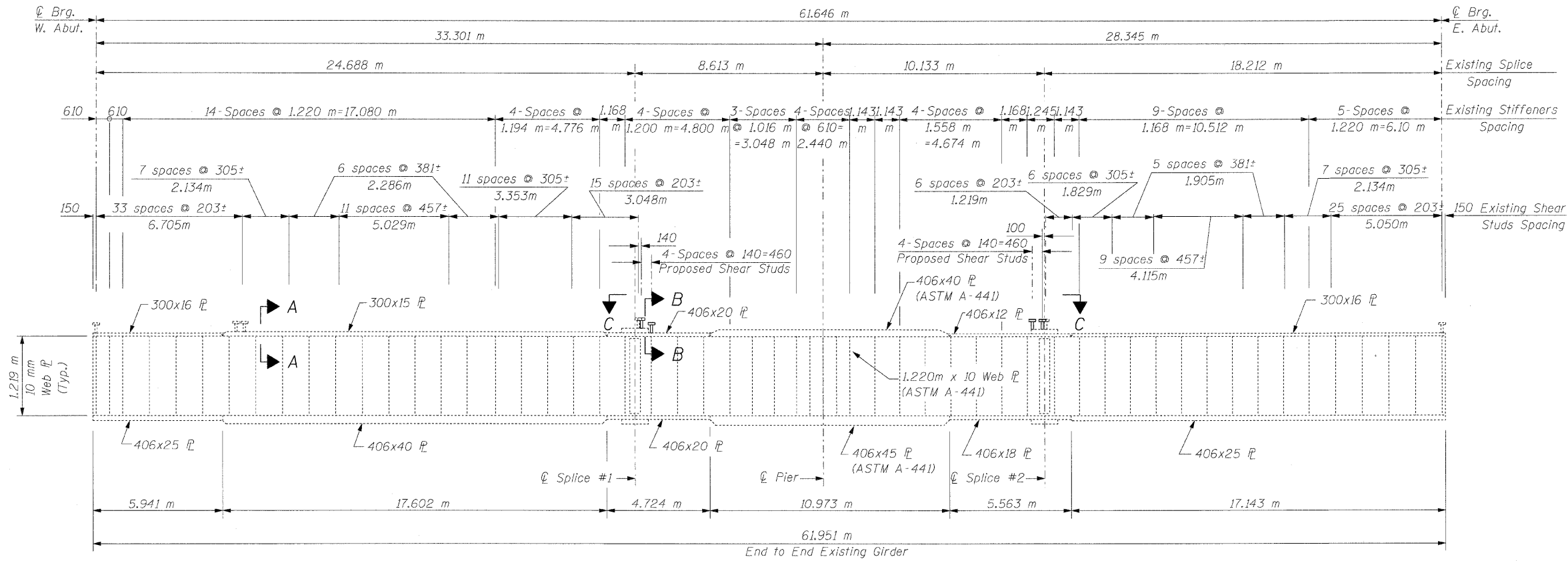


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

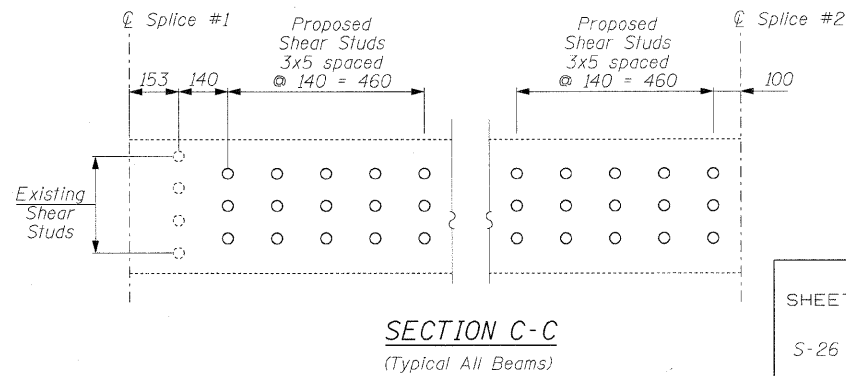
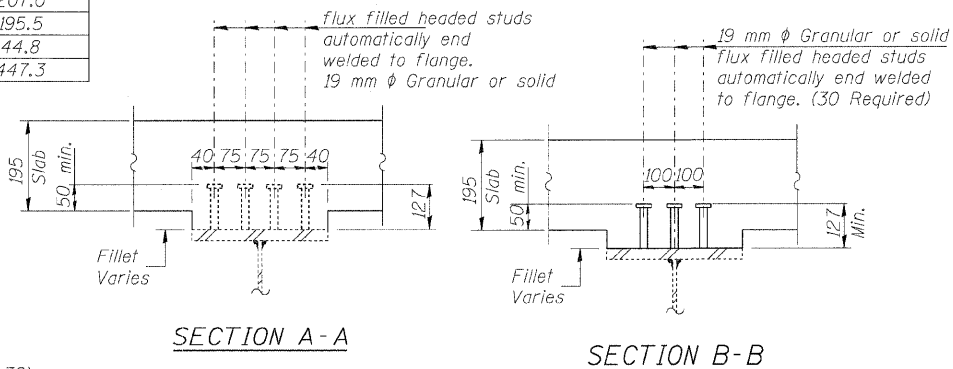


EXISTING GIRDER ELEVATION
All steel ASTM A36 unless otherwise noted

| | | 0.40 Sp #1 | Pier | 0.60 Sp. #2 |
|----------------------------|-------------------------|------------|--------|-------------|
| I_s | (10^6 mm^4) | 9,560 | 16,976 | 6,841 |
| $I_c (n)$ | (10^6 mm^4) | 28,195 | | 20,809 |
| $I_c (3n)$ | (10^6 mm^4) | 19,535 | | 14,869 |
| S_s | (10^3 mm^3) | 20,340 | 25,839 | 13,493 |
| $S_c (n)$ | (10^3 mm^3) | 27,724 | | 19,285 |
| $S_c (3n)$ | (10^3 mm^3) | 25,603 | | 17,765 |
| Z | (10^3 mm^3) | | | |
| D | (kN/m) | 12.8 | 14.0 | 12.2 |
| M_R | (kN·m) | 988 | 2,880 | 486 |
| s_R | (kN/m) | 8.89 | | 8.89 |
| M_{sR} | (kN·m) | 764 | | 440 |
| M_L | (kN·m) | 1,137 | 909 | 959 |
| $M (Imp)$ | (kN·m) | 243 | 201 | 220 |
| $M_3 [M_L + M (Imp)]$ | (kN·m) | 2,300 | 1,850 | 1,965 |
| M_a | (kN·m) | 5,267 | 6,148 | 3,758 |
| M_u | (kN·m) | 6,539 | | 4,548 |
| $f_s \ell$ non-comp | (MPa) | 49 | 111 | 36 |
| $f_s \ell$ (comp) | (MPa) | 30 | | 25 |
| $f_s \ell [M_L + M (Imp)]$ | (MPa) | 83 | 72 | 102 |
| f_s (Overload) | (MPa) | 161 | 183 | 163 |
| f_s (Total) | (MPa) | | 238 | |
| VR | (kN) | 236 | | 221 |

| | | W. Abut | Pier | E. Abut |
|-------------|------|---------|---------|---------|
| R_R | (kN) | 280.2 | 870.4 | 207.0 |
| R_L | (kN) | 204.5 | 308.8 | 195.5 |
| R_I | (kN) | 43.7 | 68.3 | 44.8 |
| R (Total) | (kN) | 528.4 | 1,247.6 | 447.3 |

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Total & Overload).
 $I_c(n)$ and $S_c(n)$ are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.
 $I_c(3n)$ and $S_c(3n)$ are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)
 VR is the maximum Live Load + Impact shear range in span.
 Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.
 M_a (Applied Moment) = $1.3[M_R + M_{sR} + \frac{1}{3}(M_L + M_{Imp})]$.
The Plastic Moment capacity (M_u) is computed according to AASHTO 10.48.1 and 10.50.1.1.
 f_s (Overload) is the sum of the stresses due to $M_R + M_{sR} + \frac{1}{3}(M_L + M_{Imp})$.
 f_s (Total) (Non-compact section) is the sum of the stresses due to $1.3[M_R + M_{sR} + \frac{1}{3}(M_L + M_{Imp})]$.



BILL OF MATERIALS

| ITEM | UNIT | QUANTITY |
|-----------------------|------|----------|
| Stud Shear Connectors | Each | 180 |

**EXISTING GIRDER ELEVATION
& DETAILS
STRUCTURE NO. 016-2034**

| SHEET NO. S-15 | F.A.I. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|-----------------------------------------------|-------------|-----------|--------|--------------|-----------|
| | 57 | 1818.3B-R | COOK | 58 | 39 |
| S-26 SHEETS | | | | | |
| CONTRACT NO. 60862 | | | | | |
| FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT | | | | | |

| |
|----------------|
| DESIGNED - EKM |
| CHECKED - SCD |
| DRAWN - RD |
| CHECKED - EKM |

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