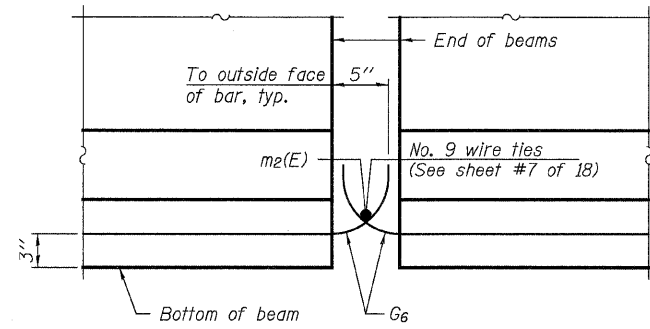


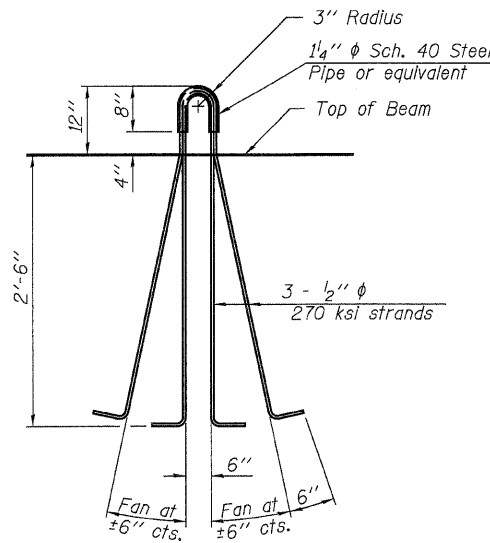
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 11
OF 18

| | | | | |
|---------------------|-----------|------------------|--------------------|-----------|
| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
| 326 | (123)BR-3 | LIVINGSTON | 354 | 133 |
| FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | CONTRACT NO. 66601 | |



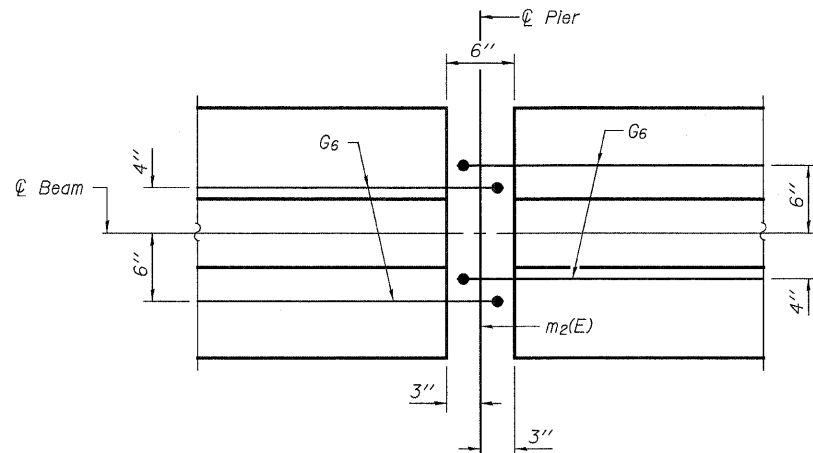
ELEVATION OF BEAM AT PIER



LIFTING LOOP DETAIL

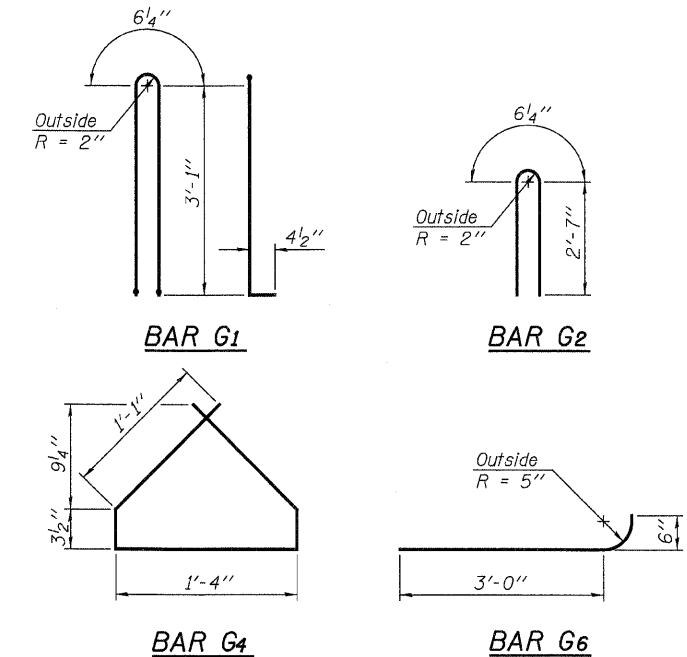
NOTES

Inserts for 3/4" ϕ threaded dowel rods, when specified, are to be two strut, coil type for interior beams and single coil, flared loop type for exterior beams.
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
Non-prestressing steel shall conform to ASTM A 706 (IL MOD), Grade 60.
A minimum 2 1/2" ϕ lifting pin shall be used to engage the lifting loops during handling.
Cut G₆ bars when necessary to maintain 1 1/2" clearance.
The bottom plates and studs shall be galvanized according to AASHTO M11.
Threaded rods shall be ASTM F 1554 Grade 55.
The cut strands at each beam end shall be given two coats of zinc dust spray or paint meeting the requirements of ASTM A 780. The zinc dust spray or paint shall be applied before corrosion appears and allowed to dry according to the manufacturer's specifications prior to another coat of zinc. A concrete sealer meeting the requirements of Section 587 of the Standard Specifications shall be applied to all portions of the I-beam or Bulb-T beam, except the top surface of the top flange and the bottom surface of the bottom flange, starting at each beam end and extending out a distance of 36 inches. The sealer shall be applied after visible crack growth has subsided. This work shall be performed by the producer and included with the cost of the beam.



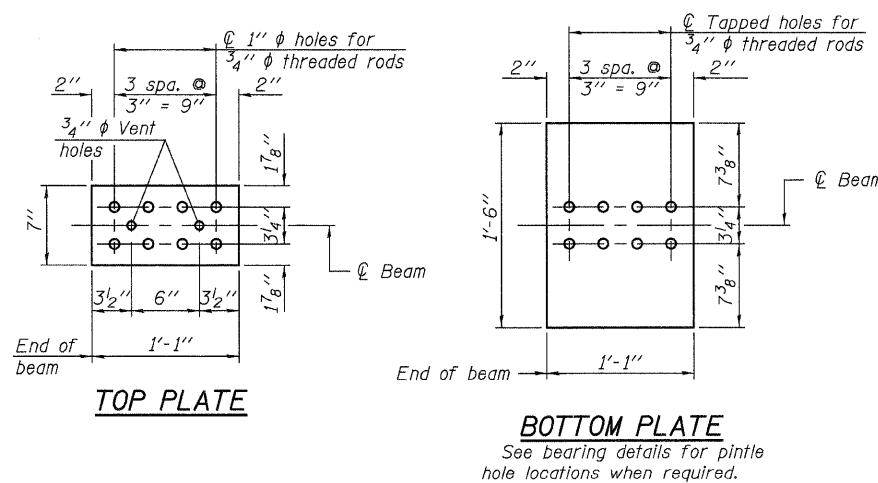
PLAN OF BEAM AT PIER

| INTERIOR BEAM MOMENT TABLE | | | |
|----------------------------|---------------------------|-------------|------------|
| | 0.4 Sp. #1 0.6 Sp. #3 | Pier 1 or 2 | 0.5 Sp. #2 |
| Strand Pattern | | | |
| I | (in ⁴) 48647 | | 48647 |
| I' | (in ⁴) 170070 | | 170070 |
| S _b | (in ³) 3165 | | 3165 |
| S _b ' | (in ³) 5850 | | 5850 |
| S _t | (in ³) 2358 | | 2358 |
| S _t ' | (in ³) 24555 | | 24555 |
| I _c | (k ⁴) 1.022 | | 1.022 |
| M _Q | (k) 460 | | 565 |
| s _Q | (k ⁴) 0.483 | 0.483 | 0.483 |
| M _{sQ} | (k) 135 | 200 | 80 |
| M _L | (k) 396 | 311 | 362 |
| M (Imp) | (k) 107 | 82 | 94 |



BILL OF MATERIAL

| Item | Unit | Total |
|---|------|-------|
| Furnishing and Erecting Precast Prestressed Concrete I-Beams, 36" | Ft. | 1137 |



| INTERIOR BEAM REACTION TABLE | | | |
|------------------------------|----------|--------------------------------|--------------------------------|
| | Abut. | Pier 1 Span 1 Pier 2 Span 3 | Pier 1 Span 2 Pier 2 Span 2 |
| R _Q | (k) 30.7 | 30.7 | 34.0 |
| R _{sQ} | (k) 11.4 | 18.0 | 16.5 |
| R _L | (k) 35.4 | 22.7 | 22.7 |
| Imp. | (k) 9.5 | 6.0 | 6.0 |
| R (Total) | (k) 87.0 | 77.4 | 79.2 |

I and I' are the moment of inertia and composite moment of inertia of the beam section.
S_b and S_b' are the non-composite and composite section modulus for the bottom fiber of the prestressed beam.
S_t and S_t' are the non-composite and composite section modulus for the top fiber of the prestressed beam.
M_Q is the moment due to dead loads on the non-composite prestressed beam. It is conservatively calculated at 0.5 of the span.
M_{sQ} is the moment due to dead loads on the composite section.
M_L is the moment due to live load on the composite section.
M (Imp) is the moment due to live load impact on the composite section.

JD Johnson, Depp & Quisenberry
CONSULTING ENGINEERS
Springfield, Illinois

| | |
|---------------|------------------|
| DESIGNED: CDB | DRAWN: P. Ray |
| CHECKED: DCD | CHECKED: CDB/DCD |

PI-4-36D

7-15-05 (with 12-21-06 Revisions)

36" PPC I-BEAM DETAILS
ILLINOIS 47 OVER
NORTH FORK VERMILION RIVER
FAP ROUTE 326 SECTION (123)BR-3
LIVINGSTON COUNTY
STATION 949+25.00
STRUCTURE NO. 053-0179

FILE: J:\DC\10136 IL47 Livingston Ph2\1-VermilionRiver\I-beam\details.dgn
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