

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANS FOR PROPOSED
FEDERAL-AID B.R.R. PROGRAM
LAWRENCE COUNTY
SECTION 05-05122-00-BR
DENISON ROAD DISTRICT
STRUCTURE NO. 051-3278
PROJECT NO. BROS-101(24)
JOB NO. C-97-052-06
TR 237

INDEX OF SHEETS

- 1 COVER SHEET
- 2 PLAN & PROFILE
- 3 CROSS SECTIONS
- 4-11 BRIDGE PLANS

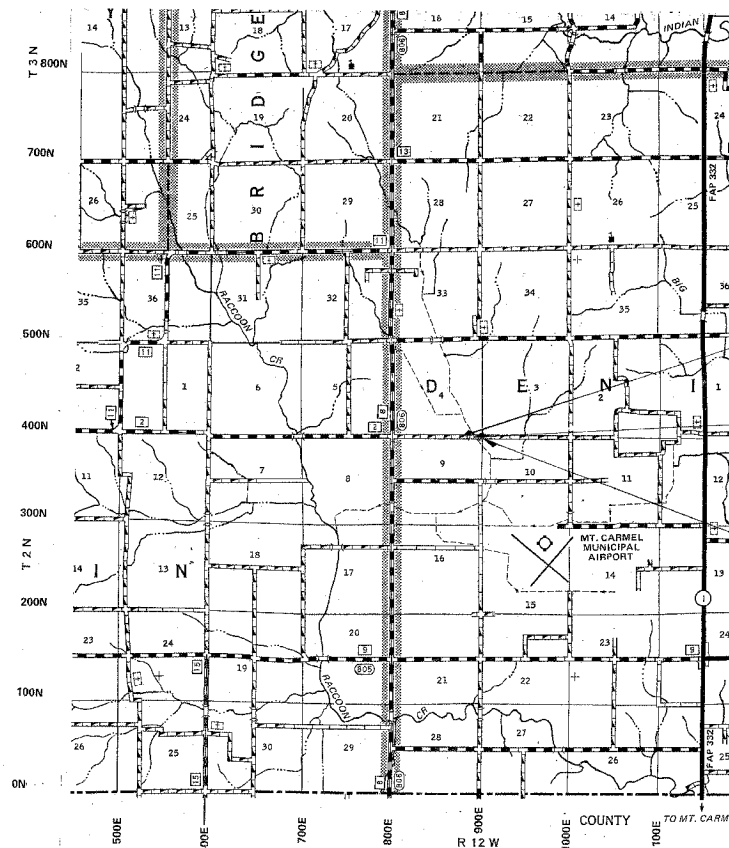
STANDARDS: 280001-02 - EROSION CONTROL
(SEE PROPOSAL) 702001-06 - TRAFFIC
BLR 21-6 - TRAFFIC
BLR 22-4 - TRAFFIC

SUMMARY OF QUANTITIES

| QTY | UNIT | ITEM | CODE NO |
|------|-------|---|----------|
| 28 | UNIT | TREE REMOVAL (OVER UNITS DIAMETER) | 20100210 |
| 122 | CU YD | EARTH EXCAVATION | 20200100 |
| 194 | CU YD | CHANNEL EXCAVATION | 20300100 |
| 801 | CU YD | FURNISHED EXCAVATION | 20400800 |
| 30 | CU YD | TRENCH BACKFILL | 20800150 |
| 0.60 | ACRE | SEEDING, CLASS 2 (SPECIAL) | 25001000 |
| 4 | EACH | TEMPORARY DITCH CHECKS | 28000300 |
| 80 | FOOT | PERIMETER EROSION BARRIER | 28000400 |
| 110 | TON | STONE DUMPED RIPRAP, CLASS A4 | 28100807 |
| 22 | TON | STONE RIPRAP DITCH | 28102600 |
| 1 | EACH | REMOVAL OF EXISTING STRUCTURES | 50100100 |
| 42.2 | CU YD | CONCRETE STRUCTURES | 50300225 |
| 2100 | SQ FT | PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH) | 50400305 |
| 4940 | POUND | REINFORCEMENT BARS | 50800105 |
| 150 | FOOT | STEEL RAILING, TYPE S1 | 50900205 |
| 1116 | FOOT | FURNISHING STEEL PILES HP 10X42 | 51201400 |
| 1116 | FOOT | DRIVING STEEL PILES | 51202700 |
| 2 | EACH | TEST PILE STEEL HP 10X42 | 51203400 |
| 11.2 | CU YD | CONCRETE ENCASEMENT | 51204315 |
| 1 | EACH | NAME PLATES | 51500100 |
| 78 | FOOT | PIPE CULVERTS, CLASS D, TYPE 1 15" | 542D0220 |
| 62 | FOOT | PIPE CULVERTS, CLASS D, TYPE 1 18" | 542D0223 |
| 44 | FOOT | PIPE CULVERTS, CLASS D, TYPE 1 36" | 542D0241 |
| 1 | L.SUM | MOBILIZATION | 67100100 |
| 1 | L.SUM | TRAFFIC CONTROL AND PROTECTION | 70101700 |
| 230 | TON | AGGREGATE SURFACE COURSE, TYPE B (CA-6) | XX003658 |
| 115 | TON | AGGREGATE SURFACE COURSE, TYPE B (CA-9) | XX003659 |

SCALES

- PLAN 1 INCH = 50 FEET
- PROFILE HORZ. 1 INCH = 50 FEET
- PROFILE VERT. 1 INCH = 10 FEET
- CROSS SECTION 1 INCH = 5 FEET



SECTION 05-05122-00-BR
BEGINS STA. 2+75

STA. 4+84 - STANDARD BRIDGE DESIGN
PROPOSED PRECAST PRESTRESSED CONCRETE DECK
BEAM BRIDGE. 3 SPANS @ 25' EACH, 28' RDWY., SKEW = 30' R.F.
EXISTING STR. NO. 051-3107
PROPOSED STR. NO. 051-3278

SECTION 05-05122-00-BR
ENDS STA. 8+00

FUNCTIONAL CLASS: RURAL LOCAL ROAD
ADT = 100
DESIGN SPEED = 30 MPH

CONTRACT NO. 95464

TOLL FREE JOINT UTILITY LOCATING
INFORMATION FOR EXCAVATORS (J.U.L.I.E.)
TELEPHONE NO. 1-800-892-0123

LOCATION MAP

APPROXIMATE SCALE: 1 INCH = 1 MILE
NET LENGTH = 525 L.F. = 0.010 MILES

PROFESSIONAL DESIGN FIRM #184-000832

Michael R. ...
ILLINOIS REGISTERED PROFESSIONAL ENGINEER # 31350
LICENSE EXPIRES NOVEMBER 2007

APPROVED 1-23, 2006

LOCAL AGENCY REPRESENTATIVE

PASSED 2/24, 2006

Manuel Kaol
DISTRICT SEVEN ENGINEER
OF LOCAL ROADS & STREETS

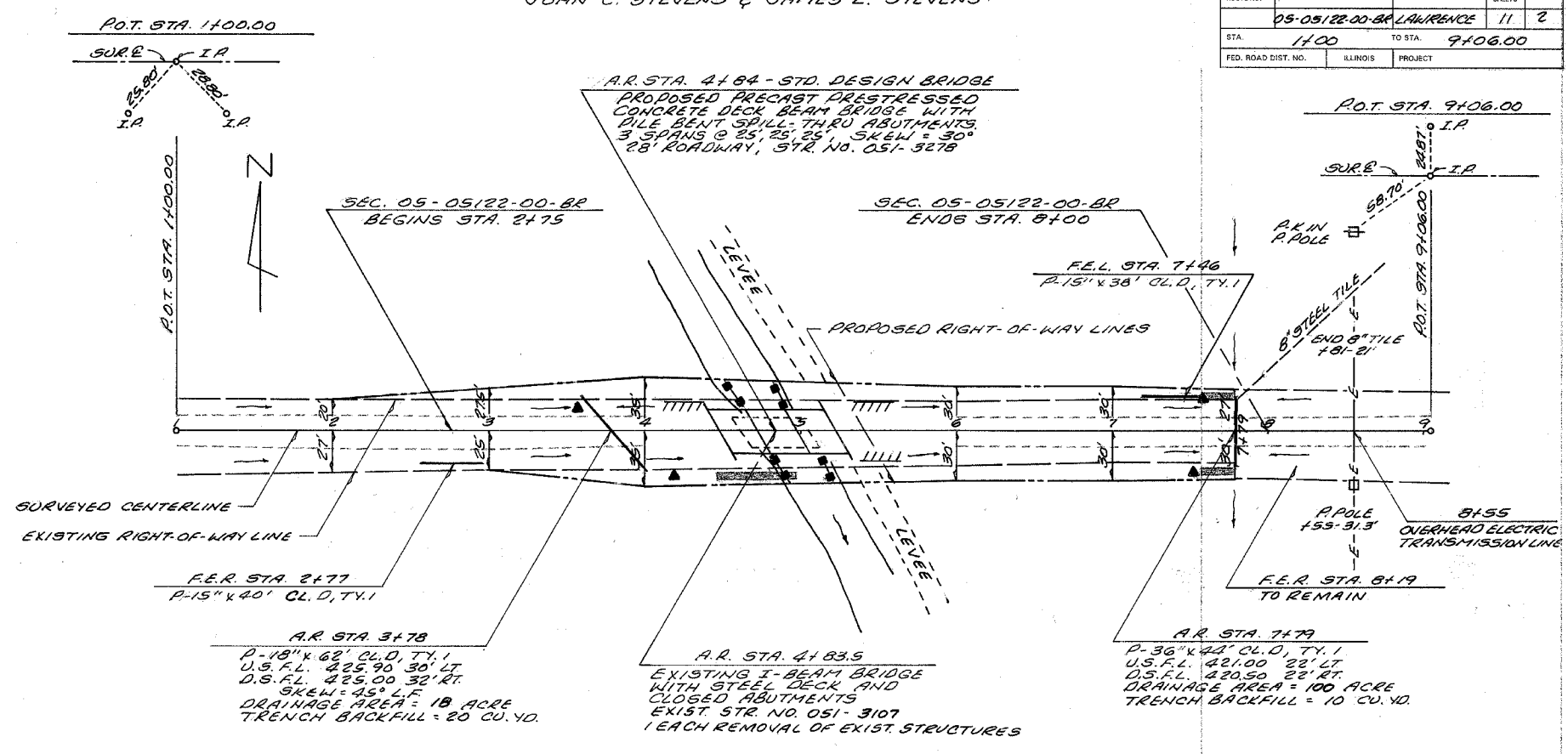
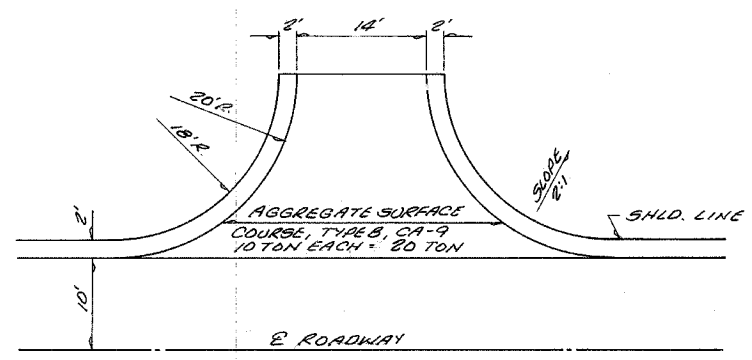
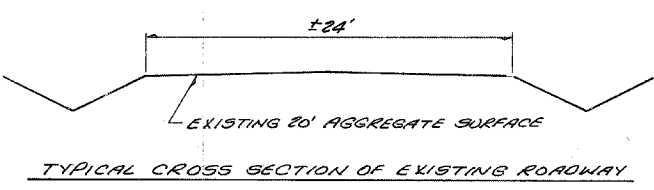
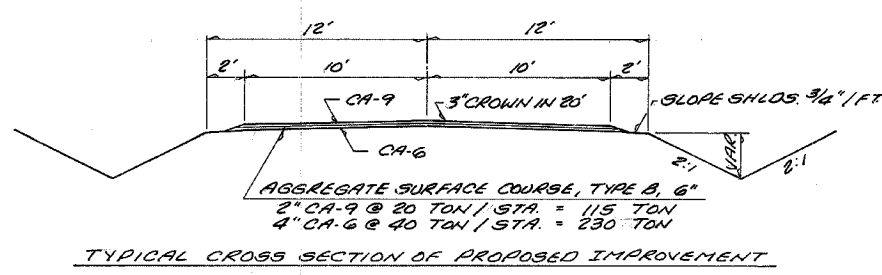
RELEASING FOR BID BASED ON LIMITED REVIEW

2/24, 2006

Christine M. Reed
DEPUTY DIRECTOR OF HIGHWAYS
REGION FOUR ENGINEER
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| | | | | |
|-------------------------|-----------------|---------|--------------|-------|
| F.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| 05-05122-00-BR LAWRENCE | | | 11 | 2 |
| STA. 1400 | TO STA. 9406.00 | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |

JOHN C. STEVENS & JAMES L. STEVENS



JOHN C. STEVENS & JAMES L. STEVENS

EARTHWORK SCHEDULE

| | |
|-----------------------------------|--------------|
| EARTH EXCAVATION = | 122 CU. YD. |
| EARTH EXCAVATION ADJUSTED 25% = | 92 CU. YD. |
| CHANNEL EXCAVATION = | 194 CU. YD. |
| CHANNEL EXCAVATION ADJUSTED 25% = | 146 CU. YD. |
| EMBANKMENT | 1039 CU. YD. |
| FURNISHED EXCAVATION = | 801 CU. YD. |

CONSTRUCT TRANSITIONS

- FROM EXIST. ROADWAY TO PROP. 24' ROADWAY FROM STA. 2100 TO STA. 2175
- FROM STA. 8100 TO STA. 8150
- FROM PROP. 24' ROADWAY TO PROP. 28' ROADWAY FROM STA. 3190 TO STA. 4146
- FROM STA. 5122 TO STA. 5172

8155 OVERHEAD ELECTRIC TRANSMISSION LINE
NEW IN POWER POLE 31.3' RT. STA. 8155

SEEDING CLASS 2 (SPECIAL)
STA 210 - 8150 = 0.6 ACRES

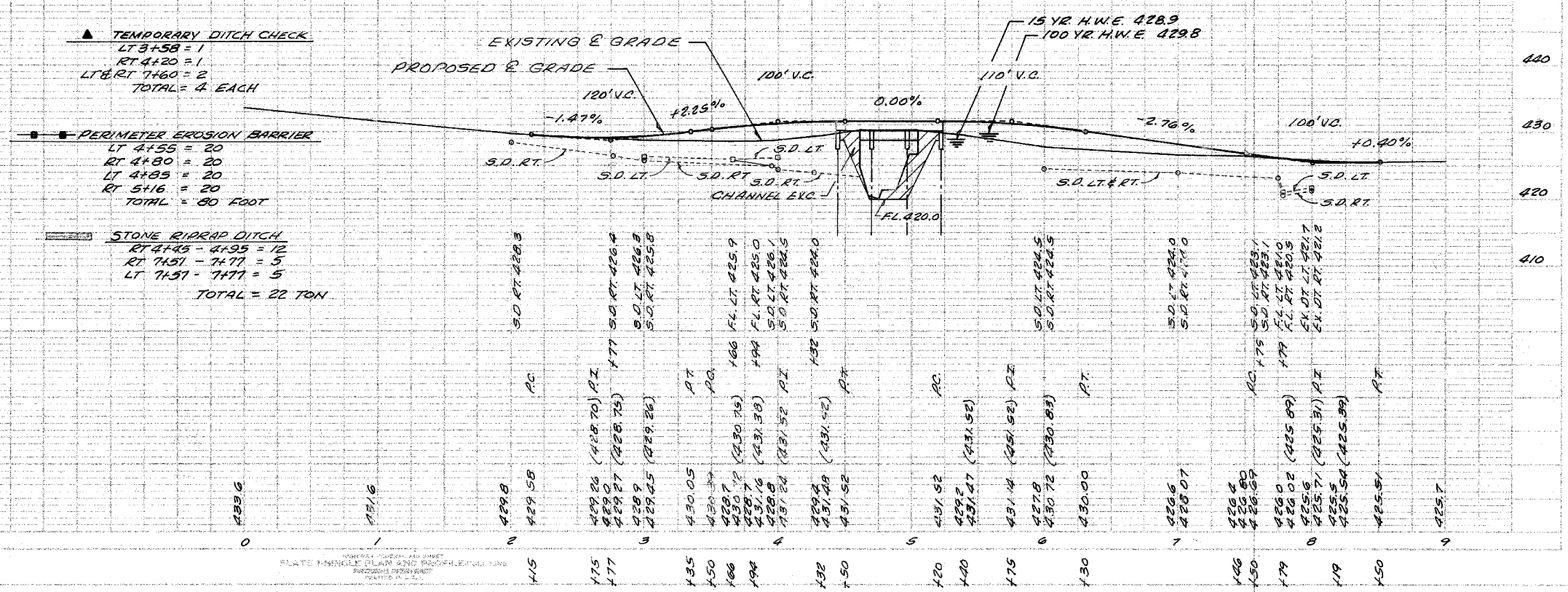
TREE REMOVAL (OVER 15 UNITS DIA.) = 28 UNITS DIA.

TEMPORARY DITCH CHECK
LT 3+58 = 1
RT 4+20 = 1
LT & RT 7+60 = 2
TOTAL = 4 EACH

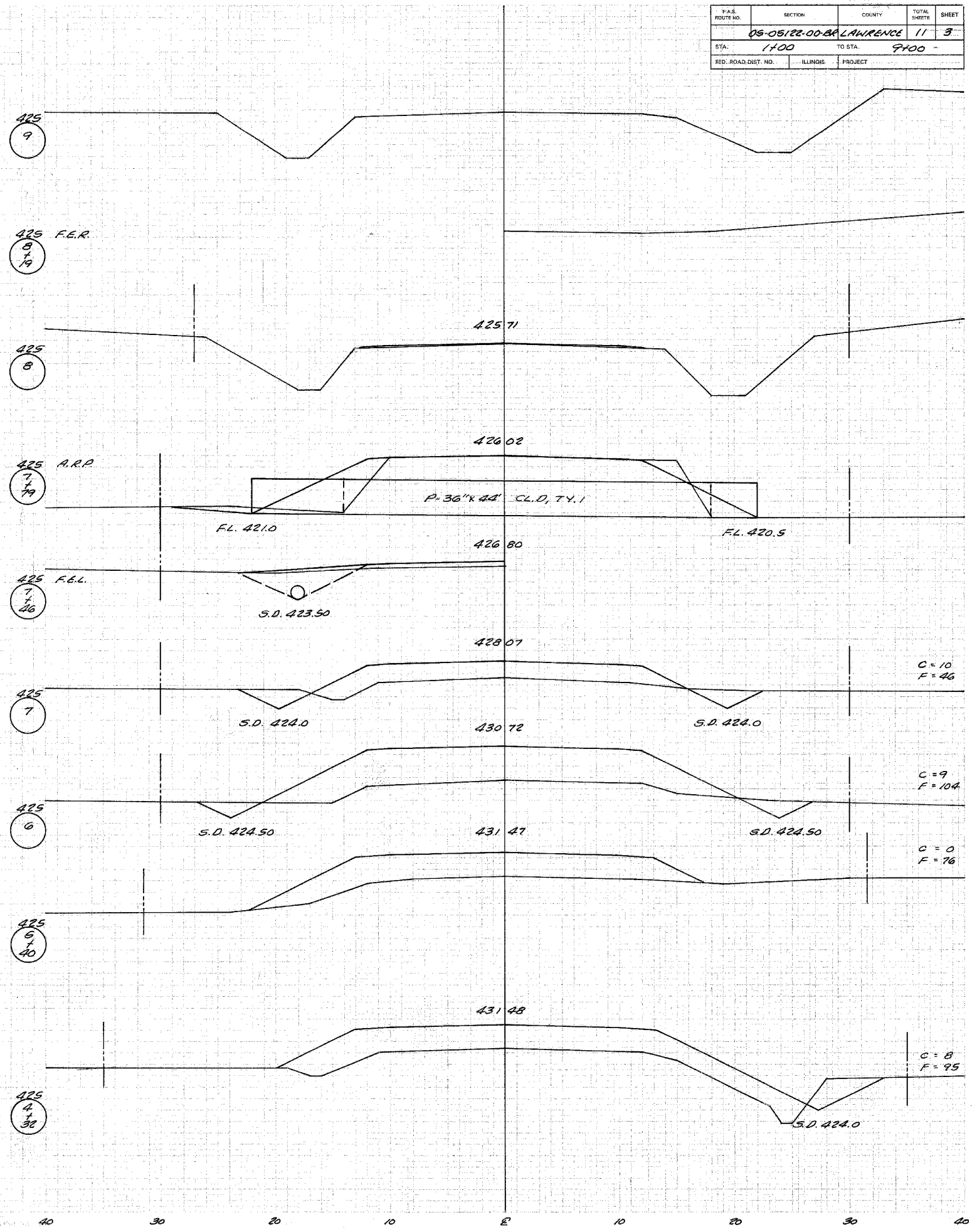
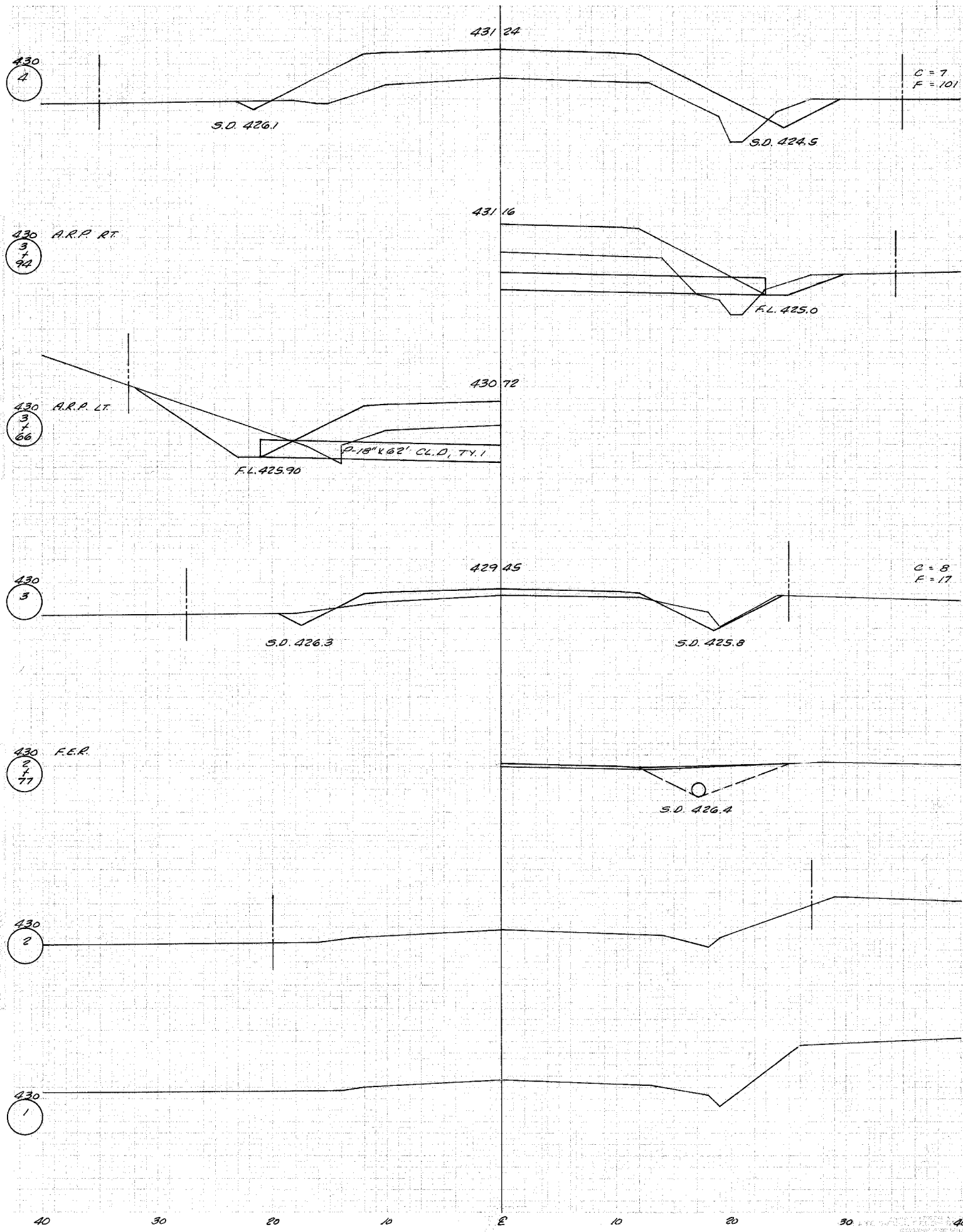
PERIMETER EROSION BARRIER
LT 4+55 = 20
RT 4+80 = 20
LT 4+85 = 20
RT 5+16 = 20
TOTAL = 80 FOOT

STONE RIPRAP DITCH
RT 4+15 - 4+25 = 12
RT 7+51 - 7+77 = 5
LT 7+97 - 7+77 = 5
TOTAL = 22 TON

UTILITIES
NONE

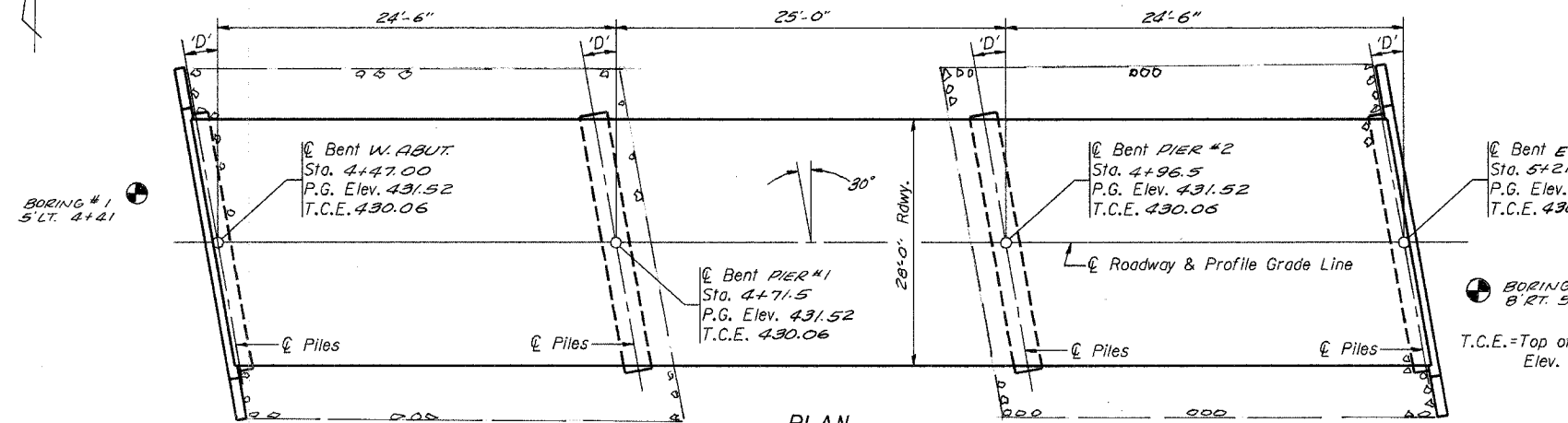
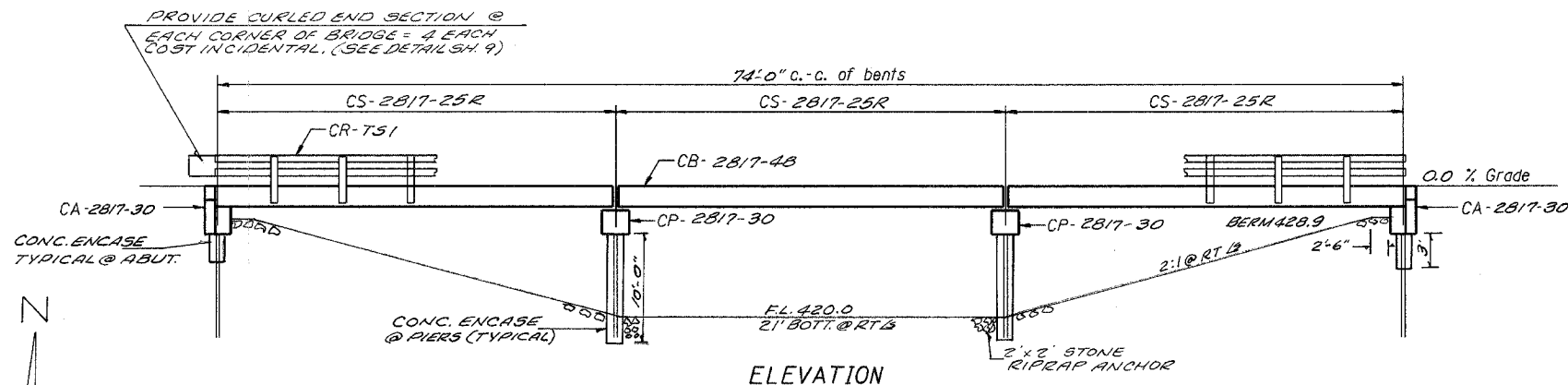


| P.A.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
|---------------------|------------------|--------|--------------|-------|
| 05-05122-00-80 | LAWRENCE | 11 | 3 | |
| STA. 1+00 | TO STA. 9+00 | | | |
| FED. ROAD DIST. NO. | ILLINOIS PROJECT | | | |



| | | | | |
|-----------------------|----------|-------------------|-----------|--------------|
| ROUTE NO. | SECTION | COUNTY | SHEET NO. | TOTAL SHEETS |
| | | LAWRENCE | 11 | 4 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | FED. AID PROJECT- | | |
| SEC. 05-05122-00-BR | | | | |

-B.M.-
Existing Structure
Salvage



GENERAL NOTES

- The Contractor shall drive 2 test piles, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
- See Special Provisions for boring logs.
- A Corrosion Inhibitor, as covered in the Special Provisions, shall be used in the concrete for precast prestressed concrete deck beams.

TOTAL BILL OF MATERIAL

| Item | Unit | Super | Sub. | | Total |
|---|---------|-------|-------|--------|-------|
| | | | Piers | Abuts. | |
| Removal of Existing Structures | Each | | | | 1 |
| Bituminous Concrete Surface Course Superpave | Ton | | | | |
| Waterproofing Membrane System | Sq. Yd. | | | | |
| Concrete Structures | Cu. Yd. | | 20.0 | 22.2 | 42.2 |
| Precast Prestressed Concrete Deck Beams (17" Depth) | Sq. Ft. | 2100 | | | 2100 |
| Steel Bridge Rail, Type SM | Foot | | | | |
| Steel Railing, Type S-1 | Foot | 150 | | | 150 |
| Reinforcement Bars | Pound | | 2060 | 2880 | 4940 |
| Furnishing STEEL PILES HP10X42 | Foot | | 558 | 558 | 1116 |
| Driving STEEL PILES | Foot | | 558 | 558 | 1116 |
| Test Piles STEEL HP10X42 | Each | | 1 | 1 | 2 |
| Name Plates | Each | | | 1 | 1 |
| Concrete Encasement | Cu. Yd. | | 8.6 | 2.6 | 11.2 |
| Portland Cement Mortar Fairing Course | Foot | | | | |
| STONE DUMPED RIPRAP CLA-4 | TON | | | 110 | 110 |

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications - 17th ed.

LOADING HS20-44

Allow 25#/sq. ft. for future wearing surface.

SEISMIC DATA

Seismic Performance Category (SPC) =
Bedrock Acceleration Coefficient (A) =
Site Coefficient (S) =

PILE DATA (2-PIERS)

Type STEEL HP 10X42
Capacity Tons REFUSAL
Estimated Length 62 Feet
Number Required 10 (Includes 1 Test Pile located in Bent #1 (PIER #1))

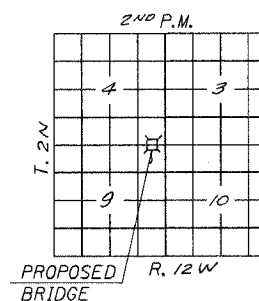
PILE DATA (2-ABUTS.)

Type STEEL HP 10X42
Capacity Tons REFUSAL
Estimated Length 62 Feet
Number Required 10 (Includes 1 Test Pile located in Bent #1 E. ABUT.)

STATION 4+84
-CREEK-
SEC. 05-05122-00-BR BUILT 20
PROJECT BR05-101(24)
LAWRENCE COUNTY
LOADING HS20
STR. NO. 051-3278

LETTERING FOR NAME PLATE

Locate Name Plate at S.W. Corner of Bridge (See Std. CN)



LOCATION SKETCH

WATERWAY INFORMATION

| Drainage Area = 5.98 Sq. Mi. | | Low Grade Elev. = 425.5 @ Sta. 8+50 | | | | |
|------------------------------|-----------|-------------------------------------|------------------------------|--------------------------|-------------------------|----------------------------|
| Flood | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. Exist. Prop. | Nat. H.W.E. Exist. Prop. | Head - Ft. Exist. Prop. | Headwater El. Exist. Prop. |
| Design | 15 | 1210 | 237 326 | 428.9 0.3 | 0.1 | 429.2 429.0 |
| Base | 100 | 1934 | 237 331 | 429.8 0.3 | 0.3 | 430.1 430.1 |
| Overtopping | | | | | | |
| Max. Calc. | 500 | 2520 | | 430.4 | 0.4 | 430.8 |

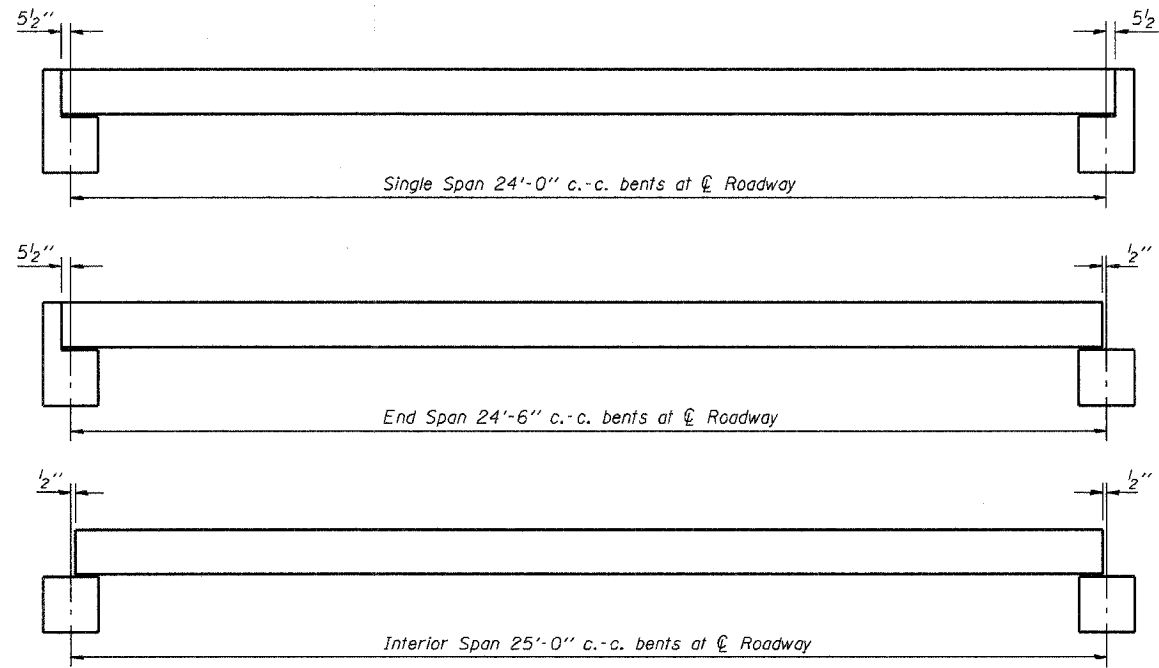
INDEX OF SHEETS

- General Plan & Elevation
- Standard CS-2817-25
- Standard CB-2817-48
- Standard CA-2817-30
- Standard CP-2817-30
- Standard CR-TS1
- Standard CN
- Standard CK-1
- Standard

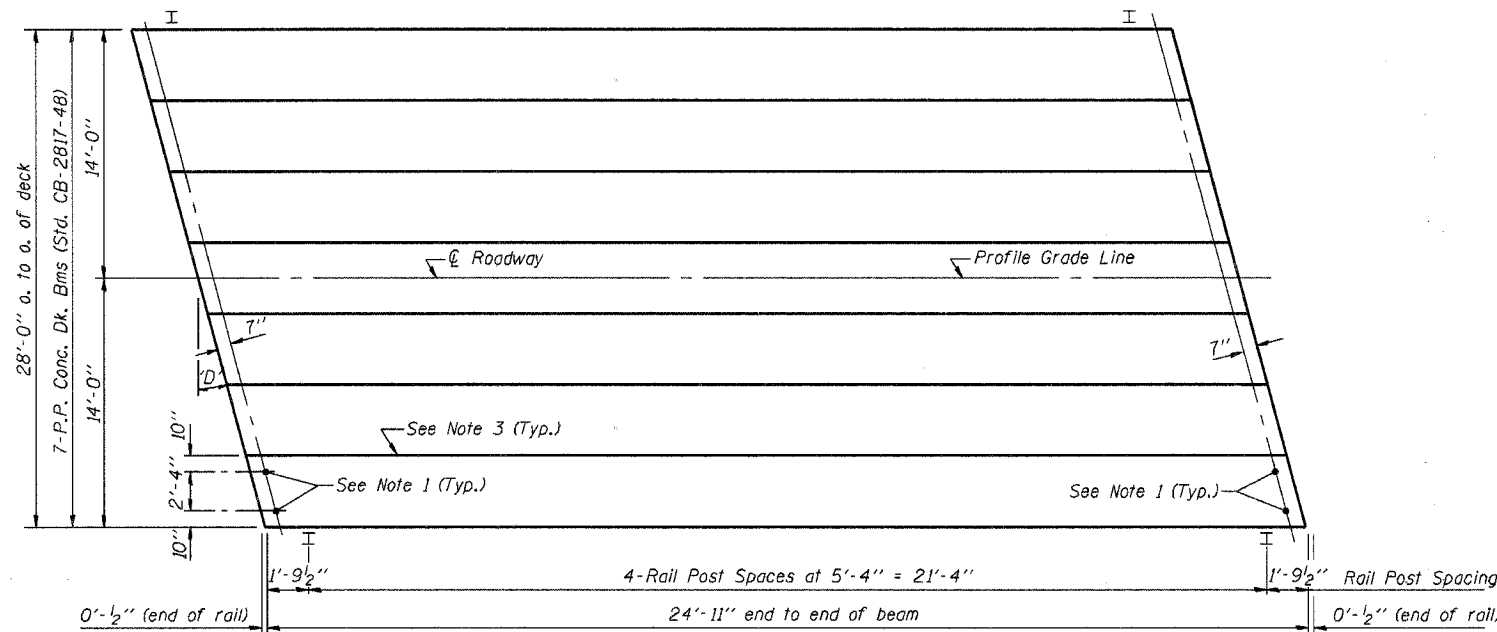
GENERAL PLAN & ELEVATION

T.R. ROUTE 237
OVER _____
SECTION 05-05122-00-BR
LAWRENCE COUNTY
STATION 4+84

| | | | | |
|---------------------|----------------|----------|--------------|-------|
| F.A.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| | 05-05122-00-BR | LAWRENCE | 11 | 5 |
| STA. | TO STA. | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |



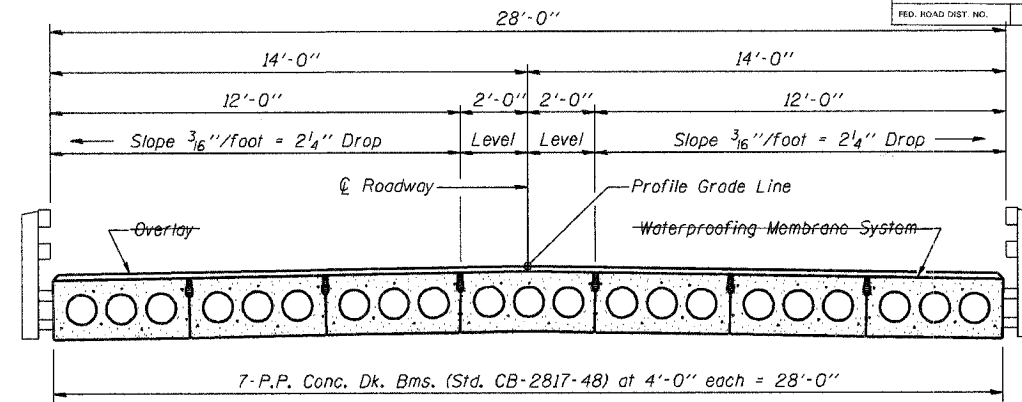
TYPICAL ELEVATIONS



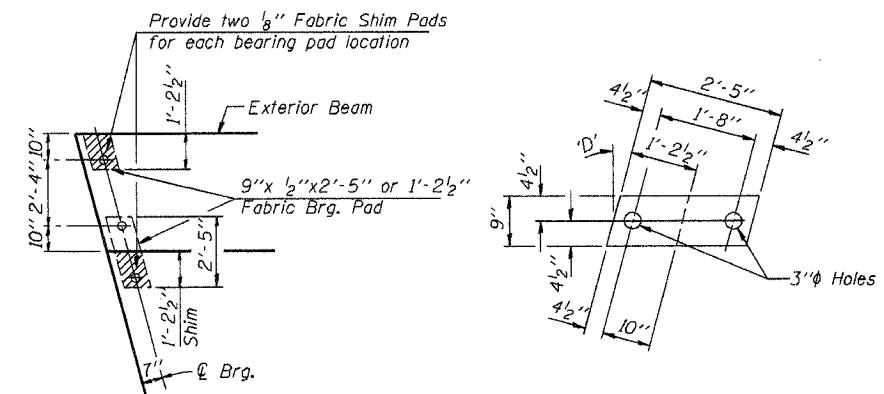
PLAN
(‘D’ = Designated Skew Angle)

NOTES

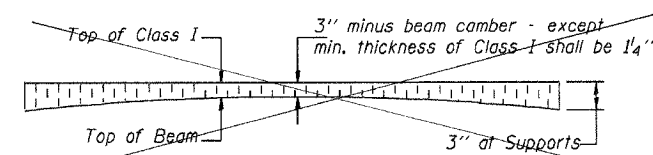
1. After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
2. Nominal 1" joint at centerline pier shall be filled with non-shrink grout.
3. Longitudinal keys shall be grouted with non-shrink grout.



CROSS SECTION



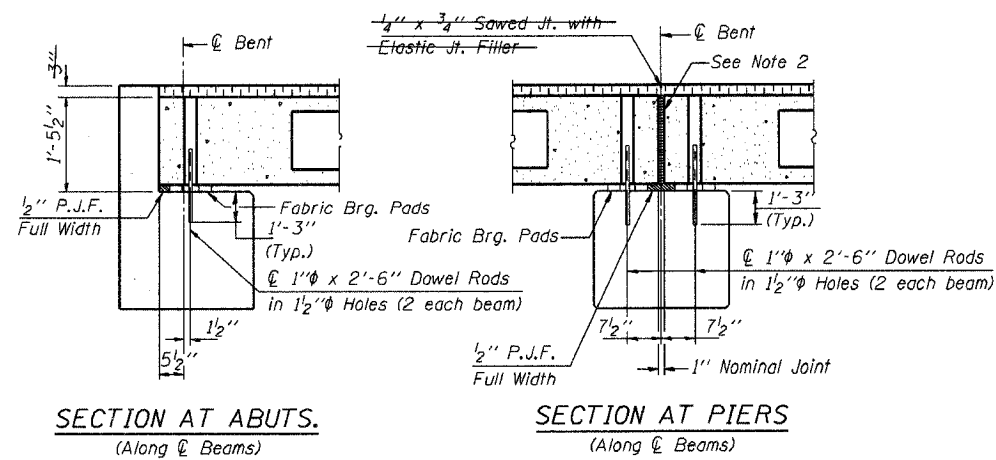
1/2" FABRIC BRG. PAD DETAILS



PROFILE OF OVERLAY

DIMENSIONS 'A' AND 'B'

| 'D' | 5° | 10° | 15° | 20° | 25° | 30° |
|-----|--------|--------|--------|--------|--------|--------|
| A | 1 1/2" | 1 5/8" | 1 3/4" | 1 7/8" | 2 1/4" | 2 5/8" |
| B | 7 1/2" | 7 5/8" | 7 3/4" | 8" | 8 1/4" | 8 5/8" |



SECTION AT ABUTS.
(Along centerline Beams)

SECTION AT PIERS
(Along centerline Beams)

QUANTITIES FOR ONE SPAN

| | |
|-------------------------------|---------------|
| P.P. Conc. Dk. Bm. 17" Dp. | 700 Sq. Ft. |
| Steel Railing | 50 Ft. |
| Waterproofing Membrane System | 77.8 Sq. Yds. |
| Portland Cement Mortar | |
| Fairing Course | 150 Ft. |

Note: Quantity of overlay for one span = 12.8 Tons

P.P.C. DECK BEAM
SUPERSTRUCTURE

| | | | |
|----------------------|----------|----------|-------|
| 28' RDWY. | 17" BMS. | 25' SPAN | RIGHT |
| STANDARD CS-2817-25R | | | |

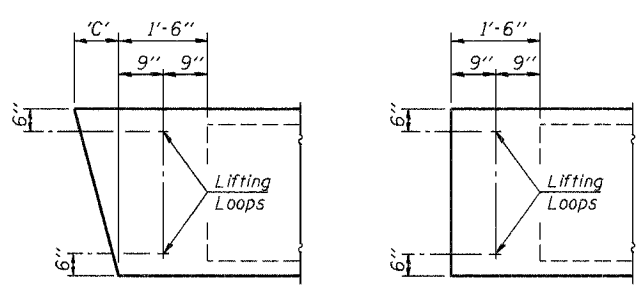
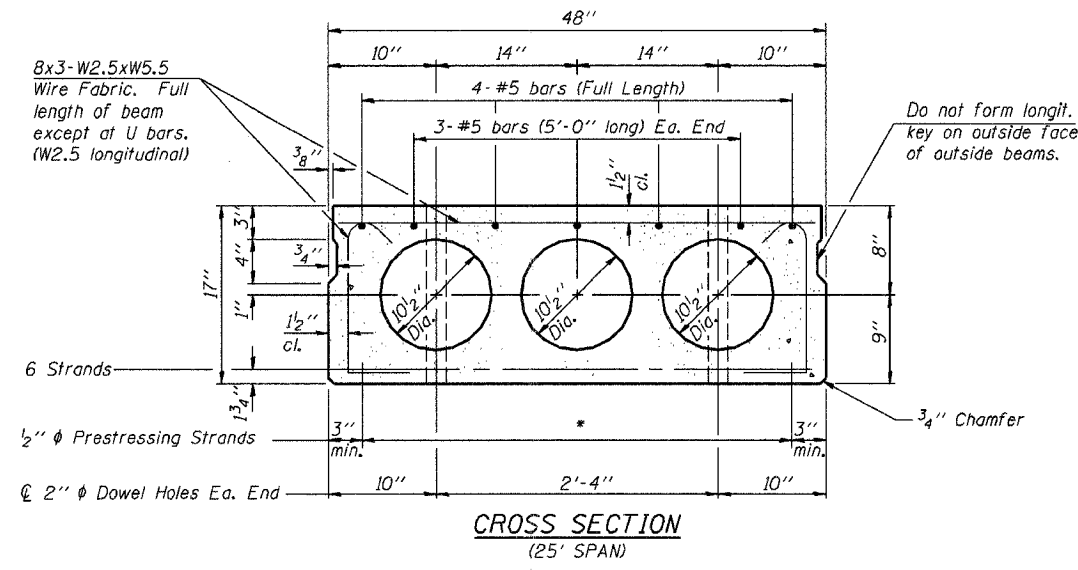
Illinois Department of Transportation

PASSED APRIL 4, 2005
 Thomas S. Romagosa
 Engineer of Bridge Design

APPROVED APRIL 4, 2005
 Ralph E. Chubb
 Engineer of Bridges and Structures

1861-1-1 03/05/SS

| | | | | |
|---------------------|----------|---------|--------------|-------|
| F.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| 05-05/22-00-BR | LAWRENCE | | 11 | 6 |
| STA. | TO STA. | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |



END BLOCK DETAILS

Each beam shall have four Lifting Loops, two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.

DIMENSION 'C'

| | | | | | | | |
|------------------------|----|-------|-------|--------|--------|--------|--------|
| Skew Angle 'D' | 0° | 5° | 10° | 15° | 20° | 25° | 30° |
| Dimension 'C' (Inches) | 0 | 4 1/4 | 8 1/2 | 12 7/8 | 17 1/2 | 22 3/8 | 27 3/4 |

*** TRANSVERSE STRAND PLACEMENT GUIDELINES**

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be 1/2".
4. The minimum clearance from strand to void shall be 1/2".

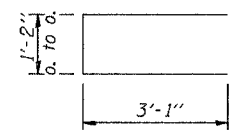
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.

NOTES

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
5. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. The finished surface shall be free of depressions or high spots with sharp corners and the top edge of keys shall be rounded or chamfered a minimum of 1/4".
6. Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between the top of the beam and the bottom edge of the key.

DESIGN STRESSES

- $f'_c = 5,000$ p.s.i.
- $f'_ti = 4,000$ p.s.i.
- $f'_s = 270,000$ p.s.i. (1/2" ϕ Strand)
- $f_{si} = 201,960$ p.s.i. (1/2" ϕ Strand)
- $f_y = 60,000$ p.s.i.



MIN. BAR LAP
#5 bars = 1'-8"

Illinois Department of Transportation

PASSED APRIL 4, 2005

Theresa S. Romagosa
Engineer of Bridge Design

APPROVED APRIL 4, 2005

Ralph E. Anderson
Engineer of Bridges and Structures

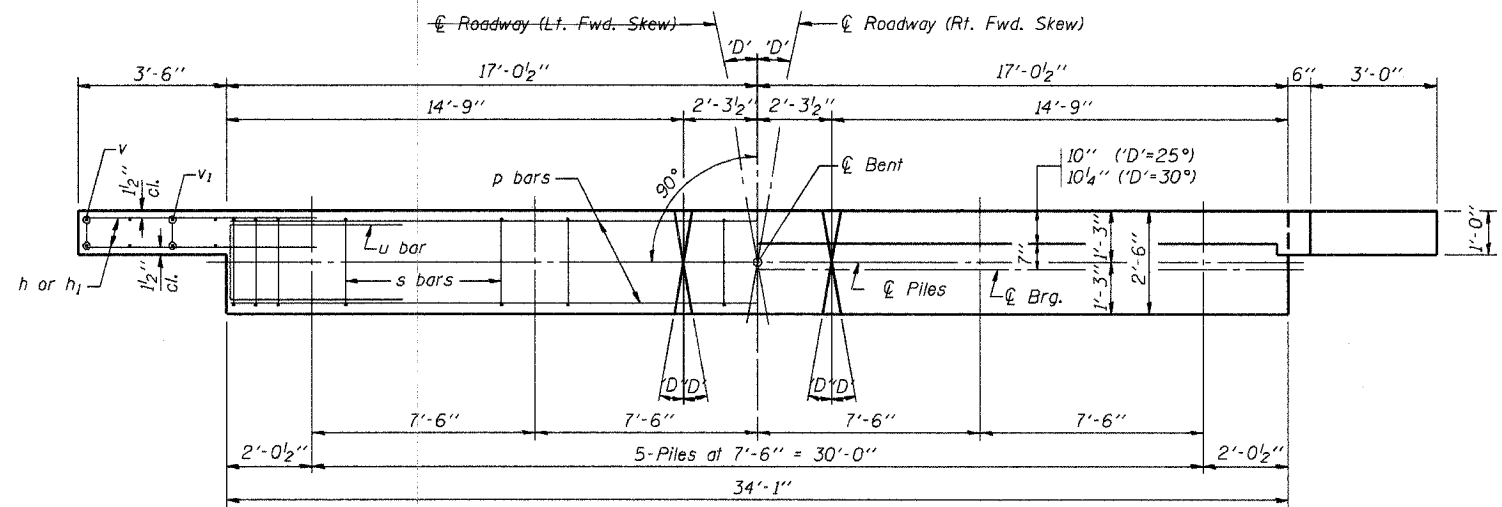
NOTE
The std. reinf. and dimensions shown on the 25' span cross section is typical for all spans, except as shown.

P.P.C. DECK BEAM DETAILS

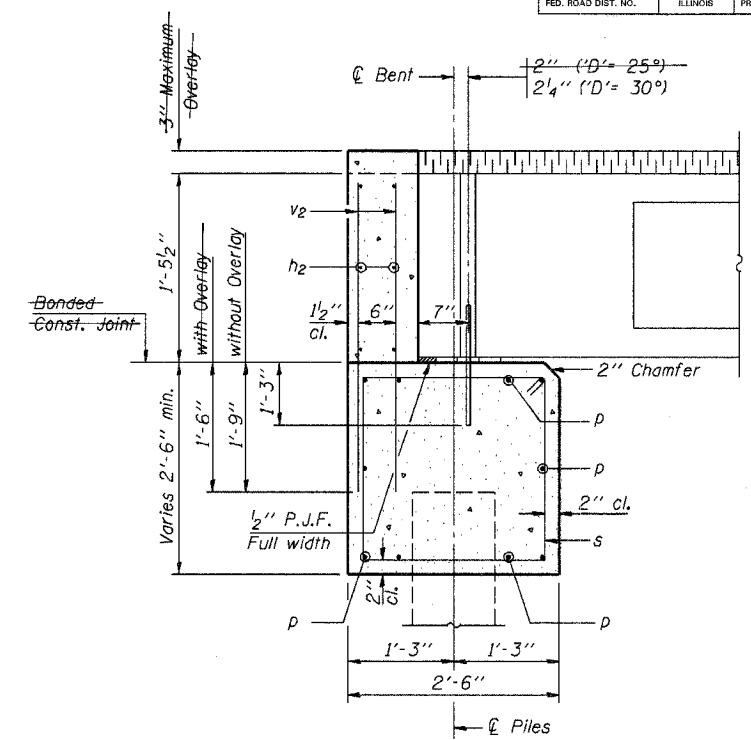
28' ROADWAY | 17" x 48" BEAMS

STANDARD CB-2817-48

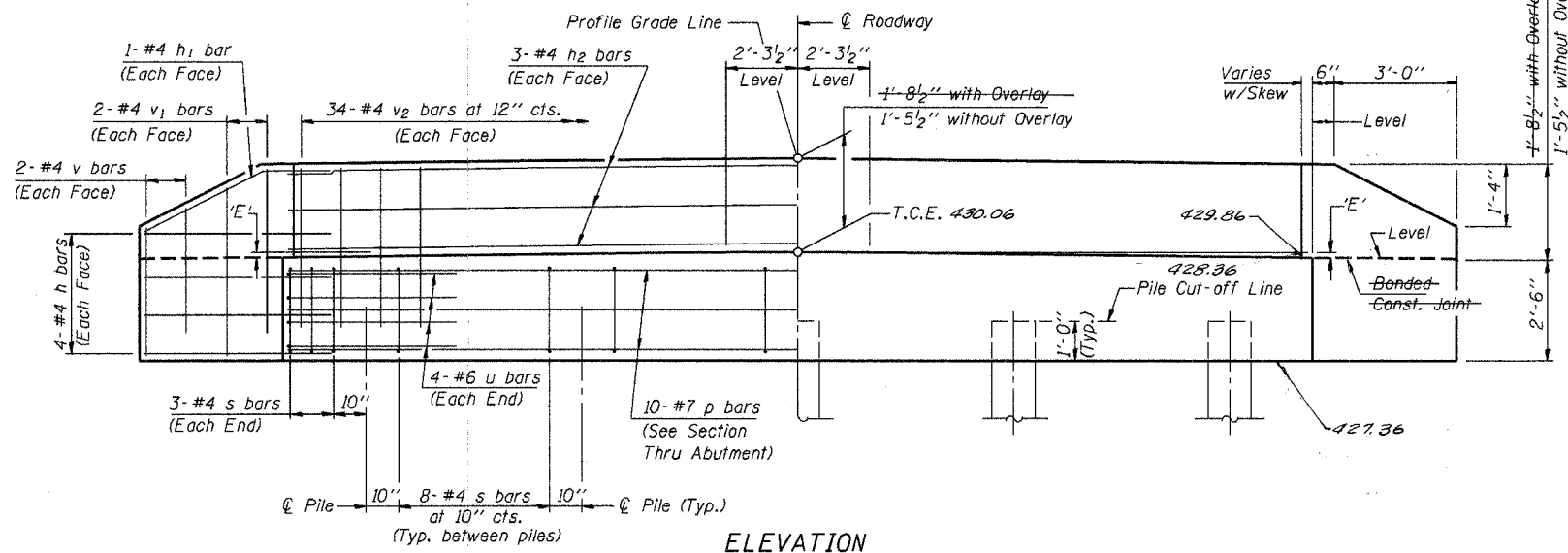
| | | | | |
|---------------------|----------|---------|--------------|-------|
| F.A.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| 05-05/22-00-BR | LAWRENCE | 11 | 7 | |
| STA. | TO STA. | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |



PLAN
(D=Designated Skew Angle)



SECTION THRU ABUTMENT
(At Right Angles)



ELEVATION

DIMENSION 'E'

| GRADE | 'D'=25° | | 'D'=30° | |
|---------------|-------------|---------------|-------------|---------------|
| | UPGRADE END | DOWNGRADE END | UPGRADE END | DOWNGRADE END |
| 0% | 2 1/2" | 2 1/2" | 2 3/8" | 2 3/8" |
| Over 0% to 1% | 2 1/8" | 2 1/8" | 2" | 2 7/8" |
| Over 1% to 2% | 1 3/8" | 3 5/8" | 1" | 3 3/4" |
| Over 2% to 3% | 5/8" | 4 3/8" | 1/8" | 4 5/8" |
| Over 3% to 4% | 0" | 5 1/8" | | |

NOTES

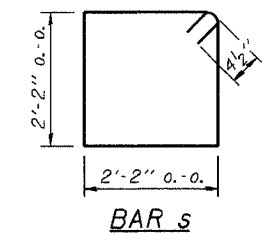
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

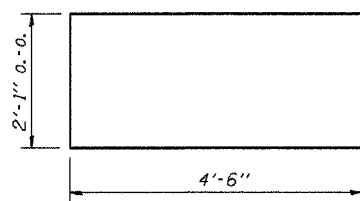
| SPAN | TONS |
|------|------|
| 25' | 25 |
| 30' | 25 |
| 35' | 25 |
| 40' | 27 |

DESIGN STRESSES

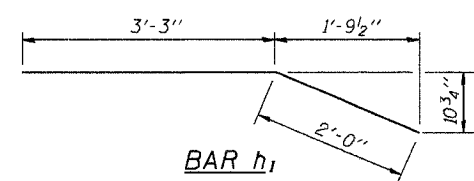
f'c = 3,500 psi
fy = 60,000 psi



BAR s



BAR u



BAR h1

BILL OF MATERIAL FOR ONE ABUTMENT

| Bar | No. | Size | Length | Shape |
|---------------------|-----|------|---------------|-------|
| h | 16 | #4 | 5'-0" | — |
| h1 | 4 | #4 | 5'-3" | — |
| h2 | 6 | #4 | 33'-9" | — |
| p | 10 | #7 | 33'-9" | — |
| s | 38 | #4 | 9'-5" | □ |
| u | 8 | #6 | 11'-1" | □ |
| v | 8 | #4 | 2'-6" | — |
| v1 | 8 | #4 | 3'-5" | — |
| v2 | 68 | #4 | 3'-1" | — |
| Concrete Structures | | | 11.1 Cu. Yds. | |
| Reinforcement Bars | | | 1440 Lb. | |

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas S. Nimga
Engineer of Bridge Design

APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

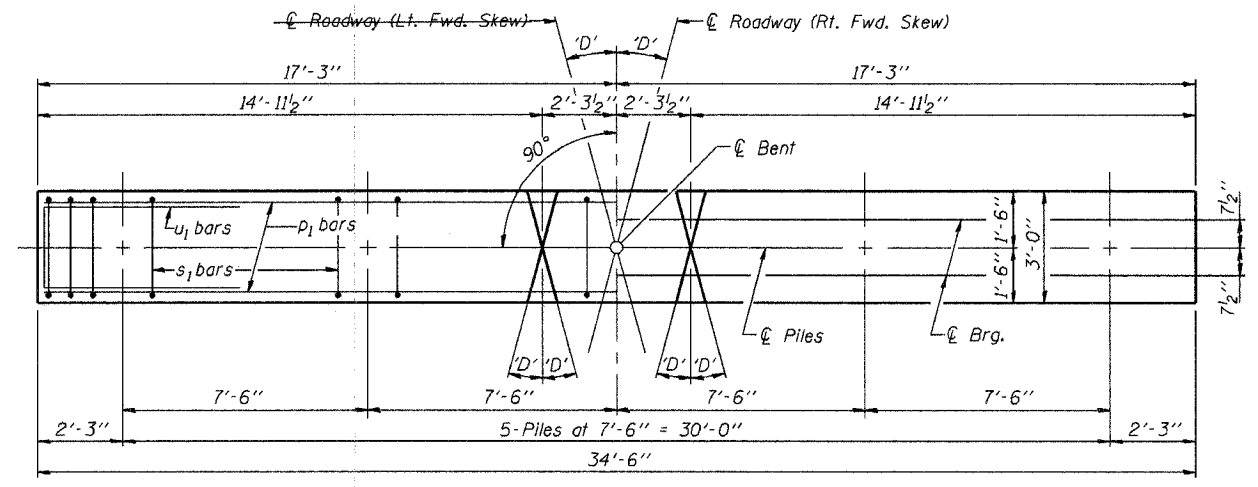
1861-1-1 03/05/51

P.P.C. DECK BEAMS
PILE BENT ABUTMENT

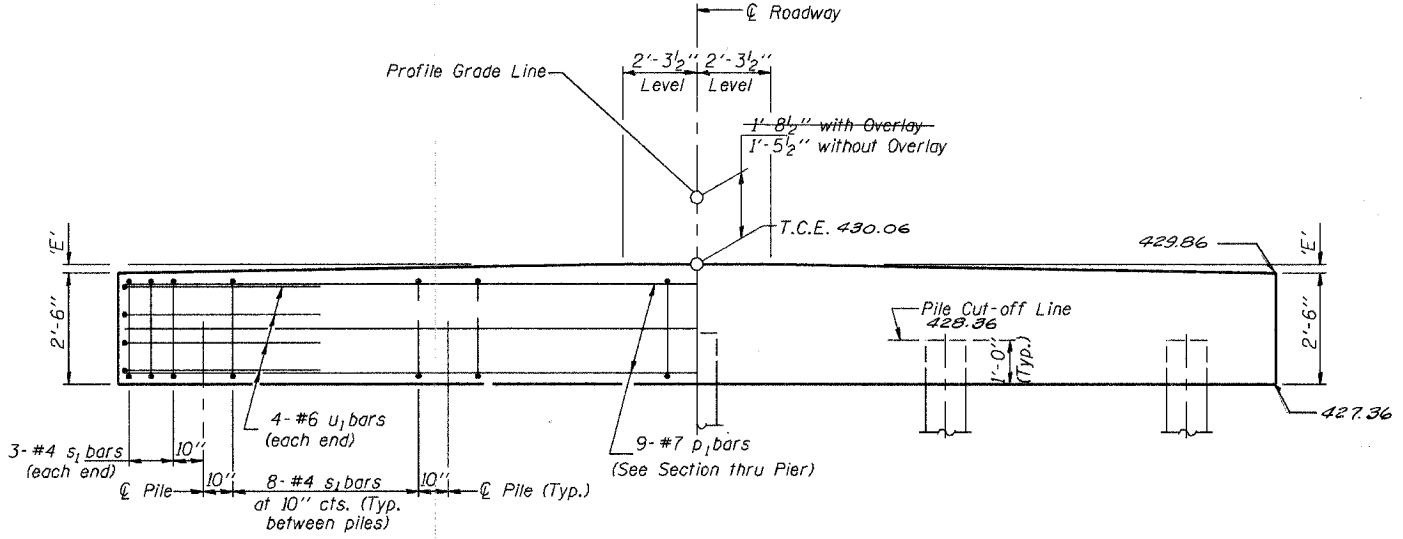
28' RDWY. 17" BMS. 'D'=25° OR 30°

STANDARD CA-2817-30

| | | | | |
|---------------------|----------|---------|--------------|-------|
| F.A.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| 05-05122-00-BR | LAWRENCE | 11 | B | |
| STA. | TO STA. | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |



PLAN
(D' = Designated Skew Angle)



ELEVATION

DIMENSION 'E'

| GRADE | 'D'=25° | | 'D'=30° | |
|---------------|-------------|---------------|-------------|---------------|
| | UPGRADE END | DOWNGRADE END | UPGRADE END | DOWNGRADE END |
| 0% | 2 1/2" | 2 1/2" | 2 3/8" | 2 3/8" |
| Over 0% to 1% | 2 1/8" | 2 7/8" | 2" | 2 7/8" |
| Over 1% to 2% | 1 3/8" | 3 5/8" | 1" | 3 3/4" |
| Over 2% to 3% | 5/8" | 4 3/8" | 1/8" | 4 5/8" |
| Over 3% to 4% | 0" | 5 1/8" | | |

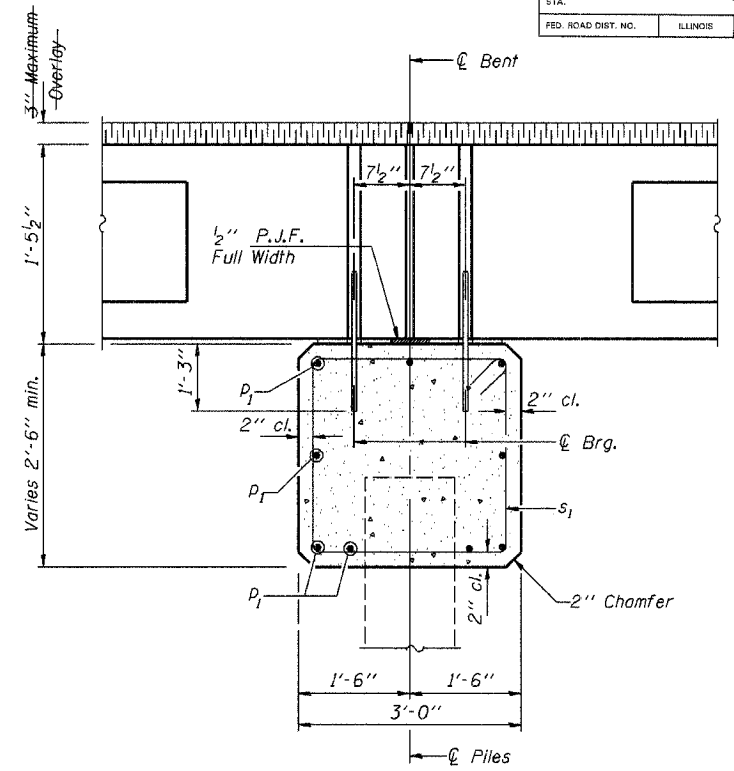
MAXIMUM PILE LOADS

| SPAN | TONS |
|------|------|
| 25' | 30 |
| 30' | 33 |
| 35' | 36 |
| 40' | 40 |

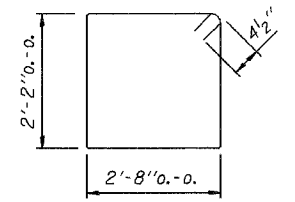
Longer of Either Span Supported by Pier.

DESIGN STRESSES

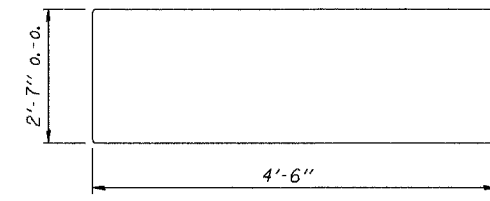
f'c = 3,500 psi
fy = 60,000 psi



SECTION THRU PIER
(At Right Angles)



BAR s1



BAR u1

BILL OF MATERIAL FOR ONE PIER

| Bar | No. | Size | Length | Shape |
|---------------------|-----|------|--------|----------|
| p1 | 9 | #7 | 34'-2" | — |
| s1 | 38 | #4 | 10'-5" | □ |
| u1 | 8 | #6 | 11'-7" | ▭ |
| Concrete Structures | | | 10.0 | Cu. Yds. |
| Reinforcement Bars | | | 1030 | Lb. |

NOTE

Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.

**P.P.C. DECK BEAMS
PILE BENT PIER**

28' RDWY. | 17" BMS. | 'D'=25° OR 30°

STANDARD CP-2817-30

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas S. Nmagalakki
Engineer of Bridge Design

APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

106-1-1 03/05/01

| | | | | |
|---------------------|----------|---------|--------------|-------|
| ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| 05-05/22-00-62 | LAWRENCE | 11 | 9 | |
| STA. | TO STA. | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |

NOTES

Hollow structural steel tubing shall conform to the requirements of ASTM designation A500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft.-lbs. at 0° F.

All other steel shapes and plates shall conform to the requirements of AASHTO M 270 Grade 36 except posts and angles shall conform to AASHTO M 270 Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of ASTM designation A307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M 164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 232.

All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication according to AASHTO M-111 and ASTM A 385. Galvanized rail shall not be painted.

Railing shall be according to Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL RAILING, TYPE S-1.

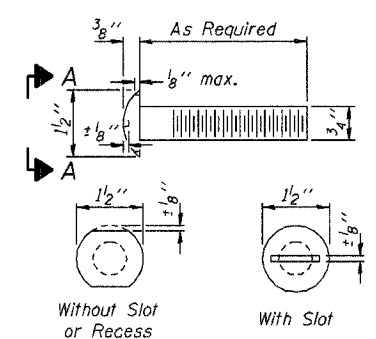
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

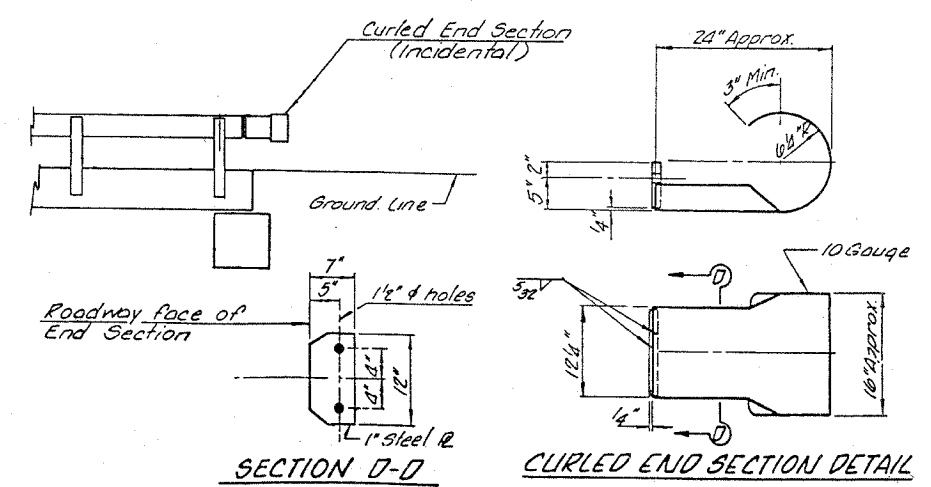
The 1/2" x 7" x 6" plates that come in contact with concrete shall either receive two coats of asphalt paint conforming to Section 1060.07 Type II, or 1/8" fabric bearing pads shall be placed between the plates and concrete.

The 3/4" high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04 (f)(2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

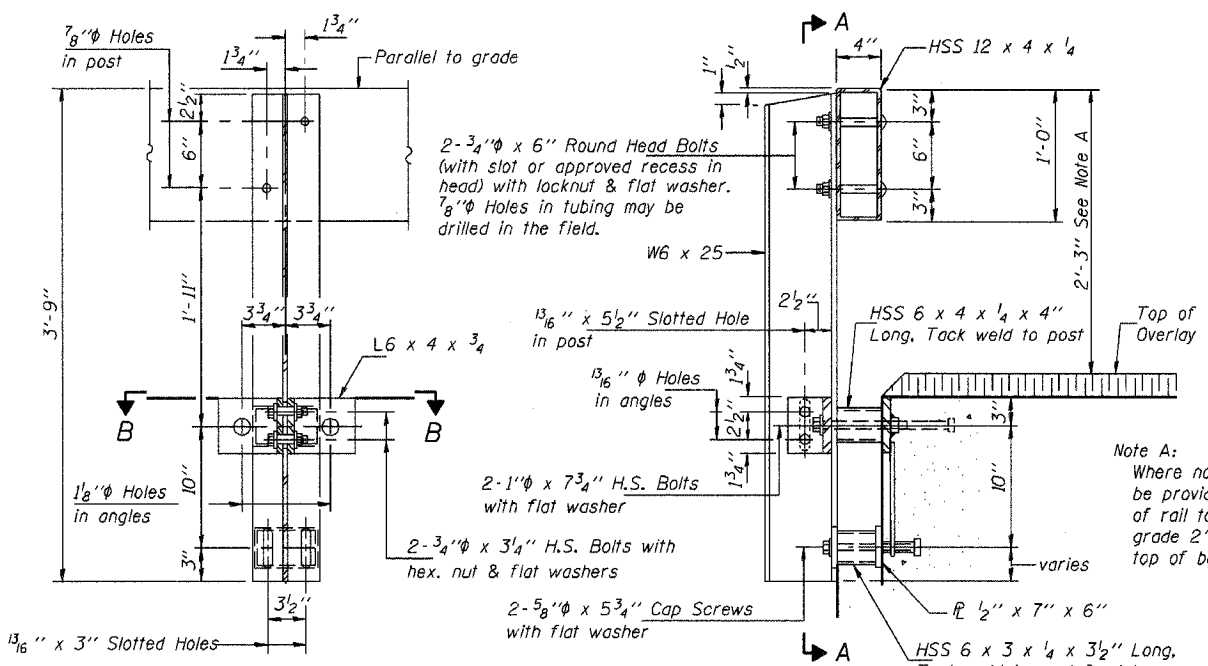
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6" or less.



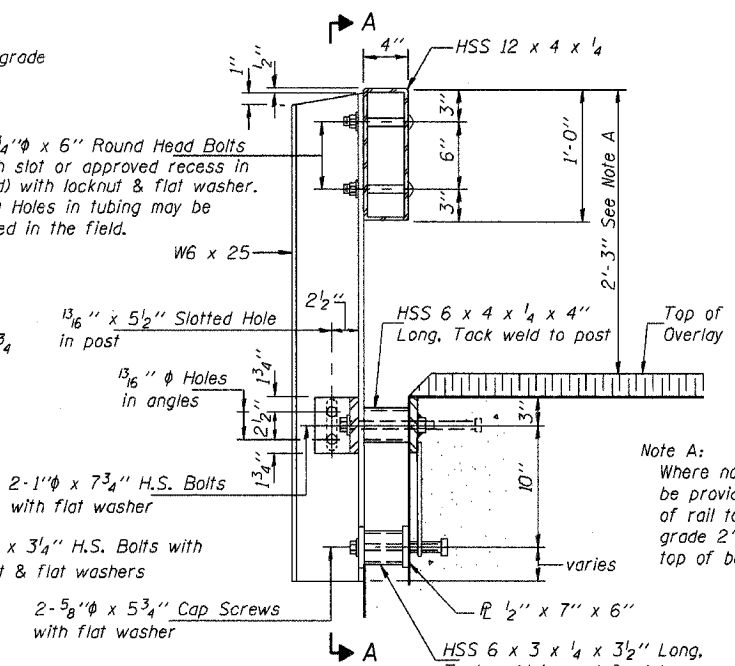
**VIEW A-A
ROUND HEAD BOLT**



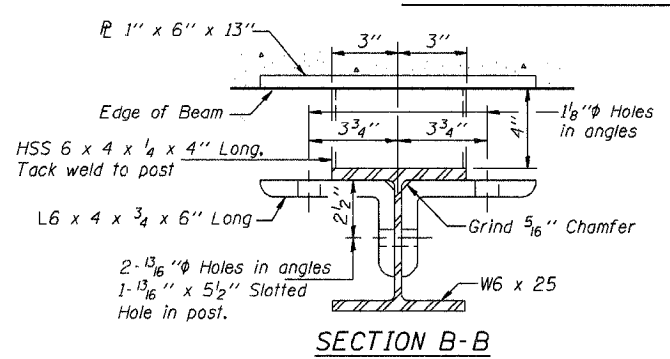
**SECTION D-D
CURLLED END SECTION DETAIL**



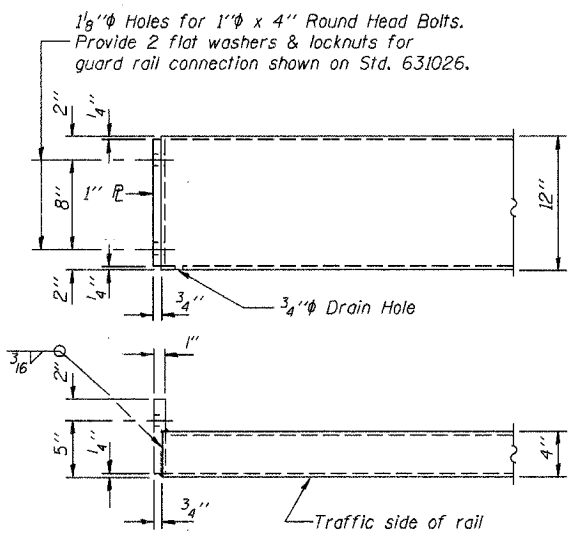
SECTION A-A



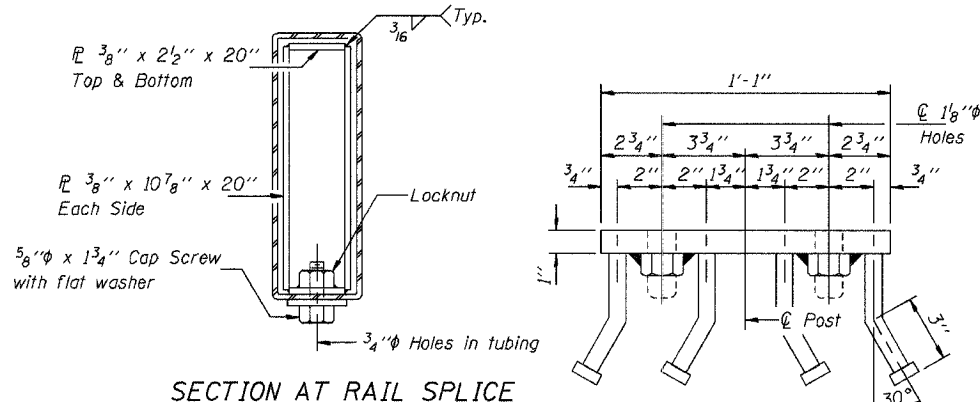
SECTION AT RAIL POST



SECTION B-B

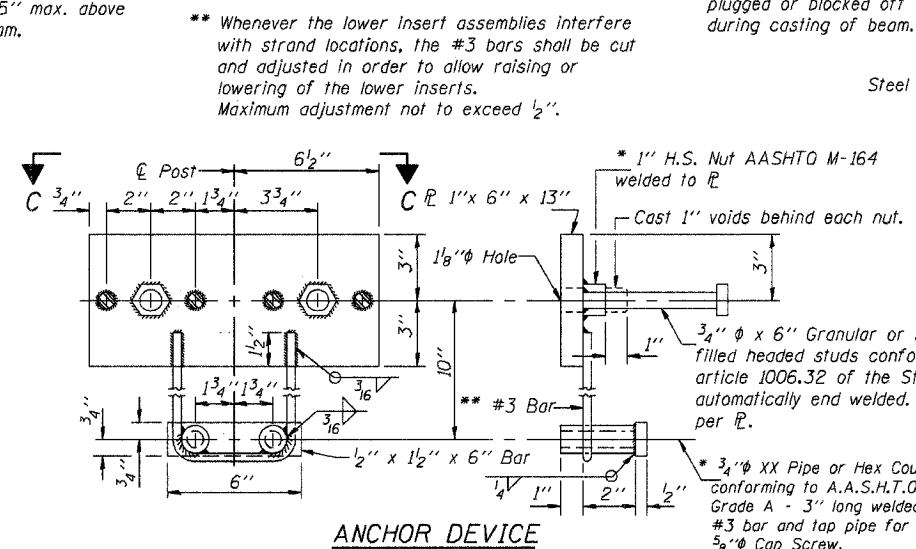


END OF RAIL DETAILS

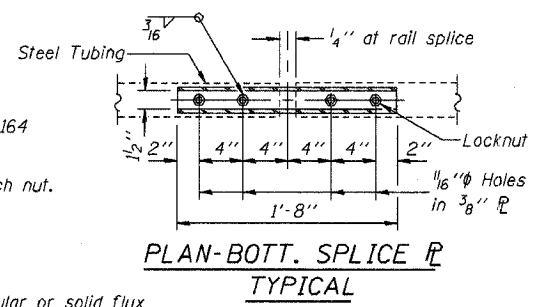


SECTION AT RAIL SPLICE

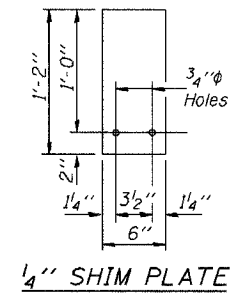
VIEW C-C



ANCHOR DEVICE



PLAN-BOTT. SPLICE TYPICAL



1/4 SHIM PLATE

Illinois Department of Transportation

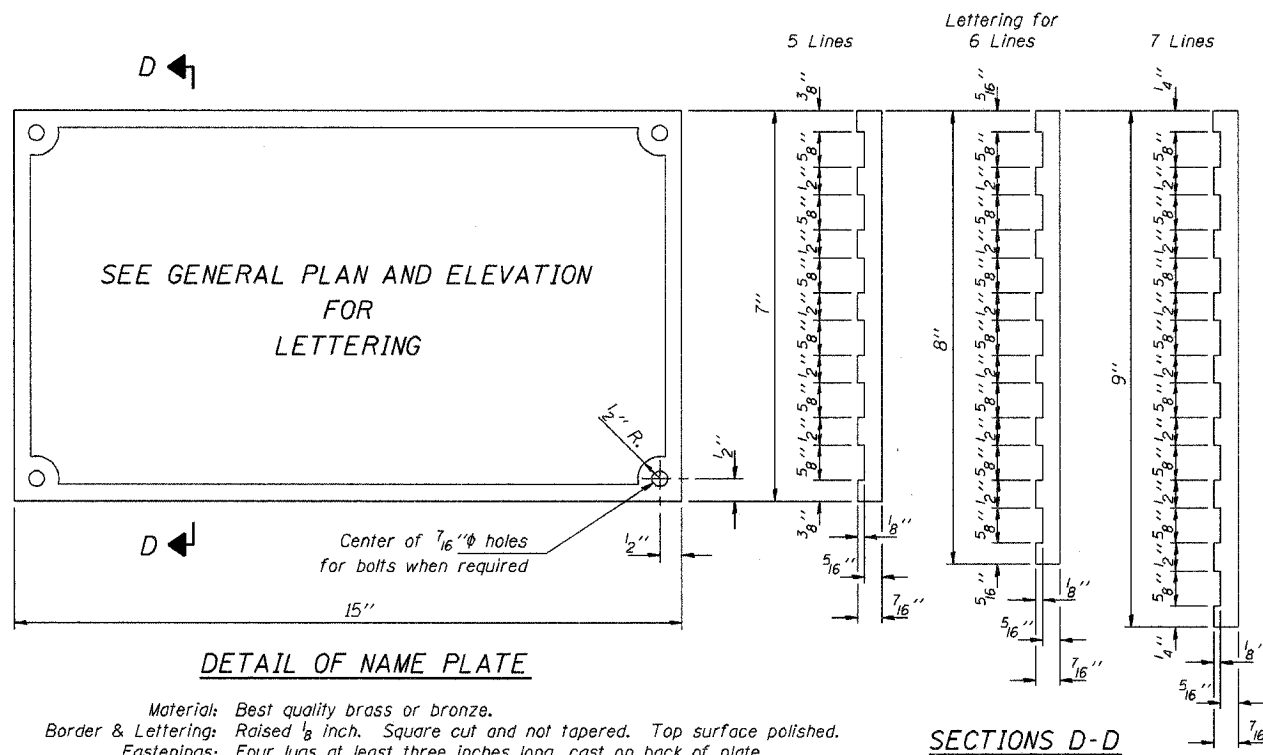
PASSED APRIL 4, 2005
 Thomas J. Nimga
 Engineer of Bridge Design

APPROVED APRIL 4, 2005
 Ralph E. Anderson
 Engineer of Bridges and Structures

15855
 186-1-1

**STEEL RAILING, TYPE S-1
STANDARD CR-TS1**

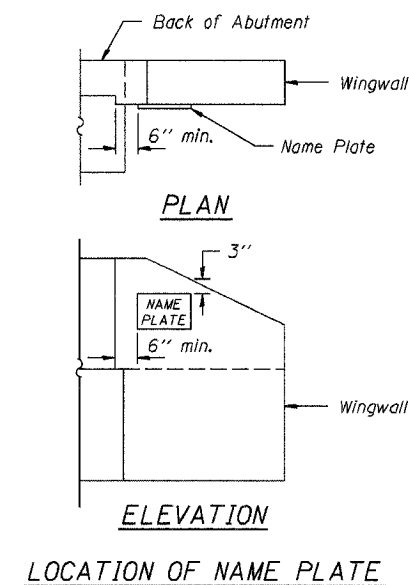
| | | | | |
|---------------------|-------------------------|----------|--------------|-------|
| F.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| | 05-05122-00-BR LAWRENCE | | 11 | 10 |
| STA. | | TO STA. | | |
| FED. ROAD DIST. NO. | | ILLINOIS | PROJECT | |



DETAIL OF NAME PLATE

Material: Best quality brass or bronze.
 Border & Lettering: Raised $\frac{1}{8}$ inch. Square cut and not tapered. Top surface polished.
 Fastenings: Four lugs at least three inches long, cast on back of plate.

SECTIONS D-D



LOCATION OF NAME PLATE

Illinois Department of Transportation

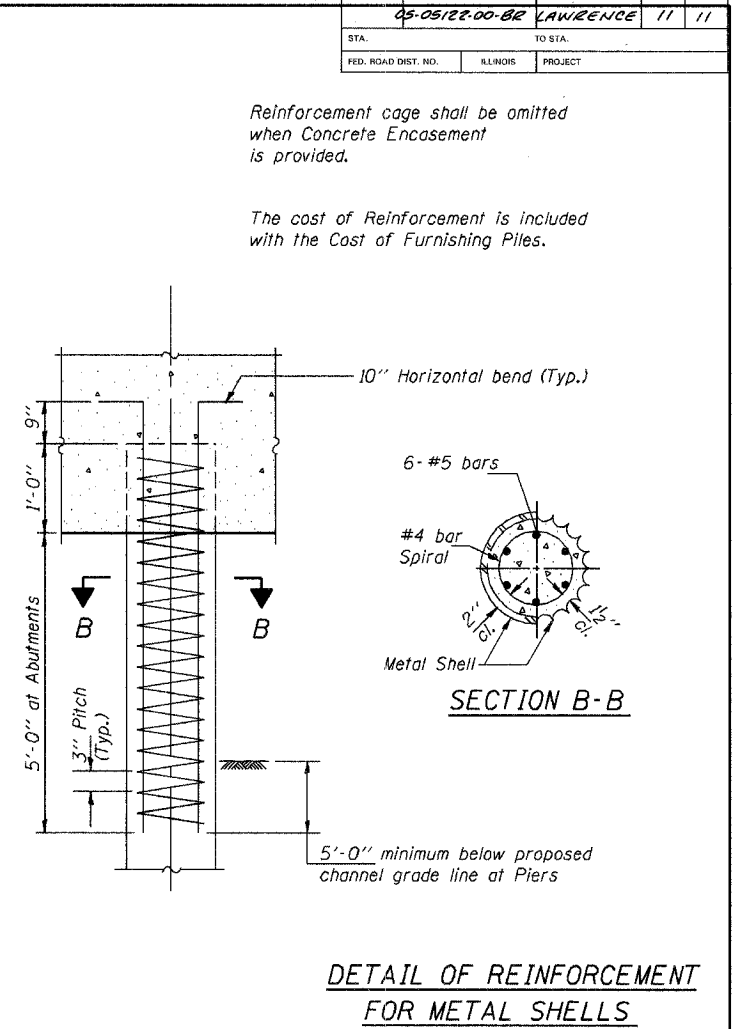
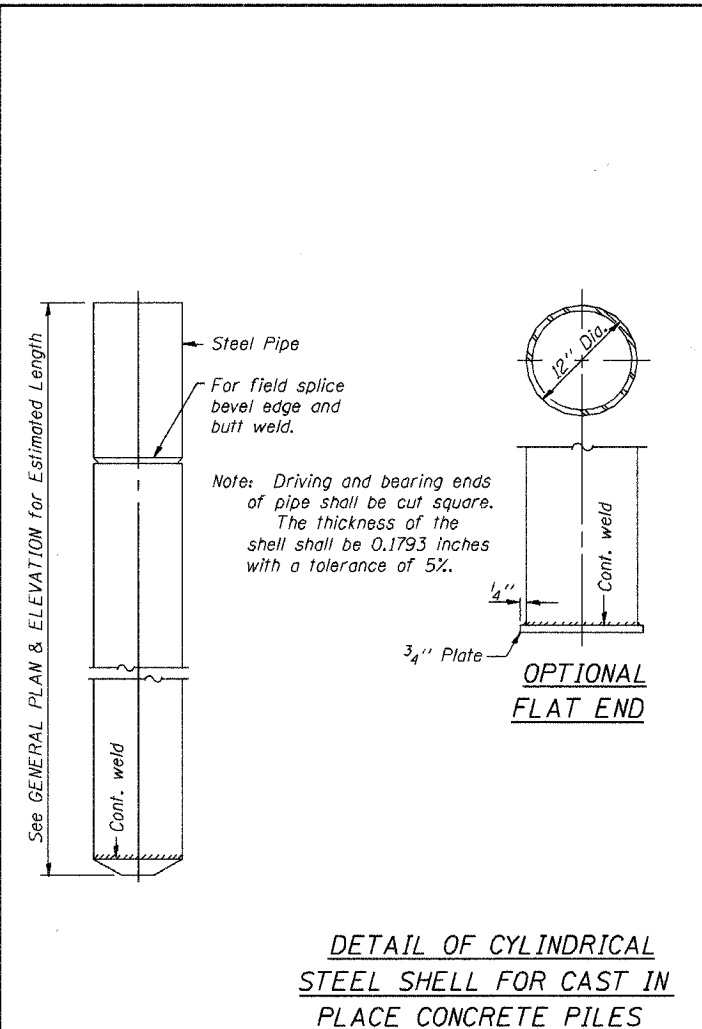
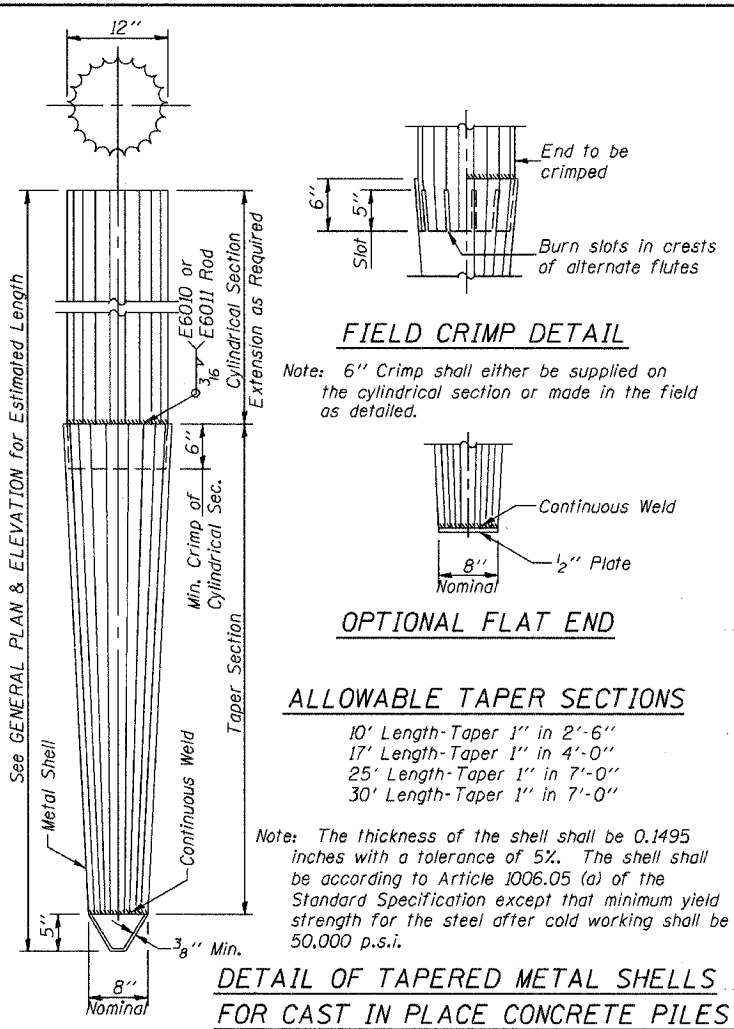
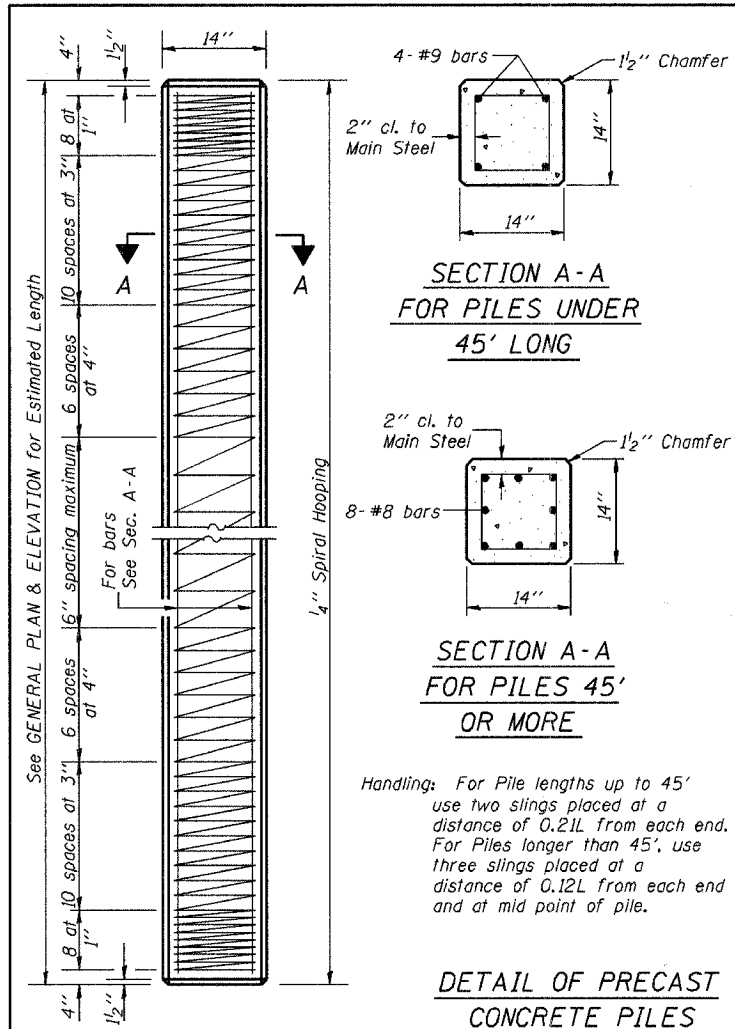
PASSED APRIL 4, 2005
Thomas S. Demaree
 Engineer of Bridge Design

APPROVED APRIL 4, 2005
Ralph E. Anderson
 Engineer of Bridges and Structures

ISSUED 7-1-1995

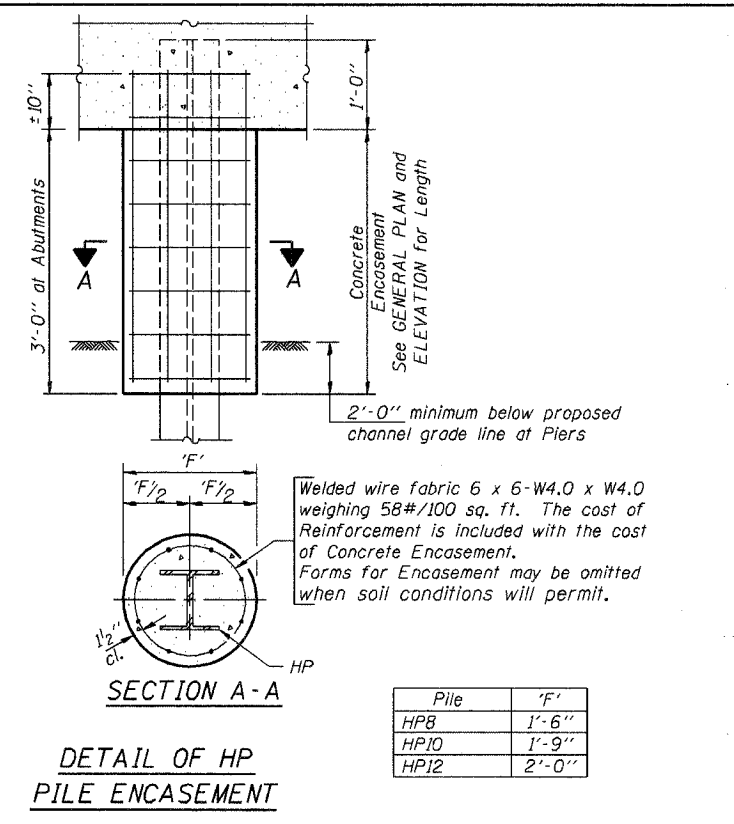
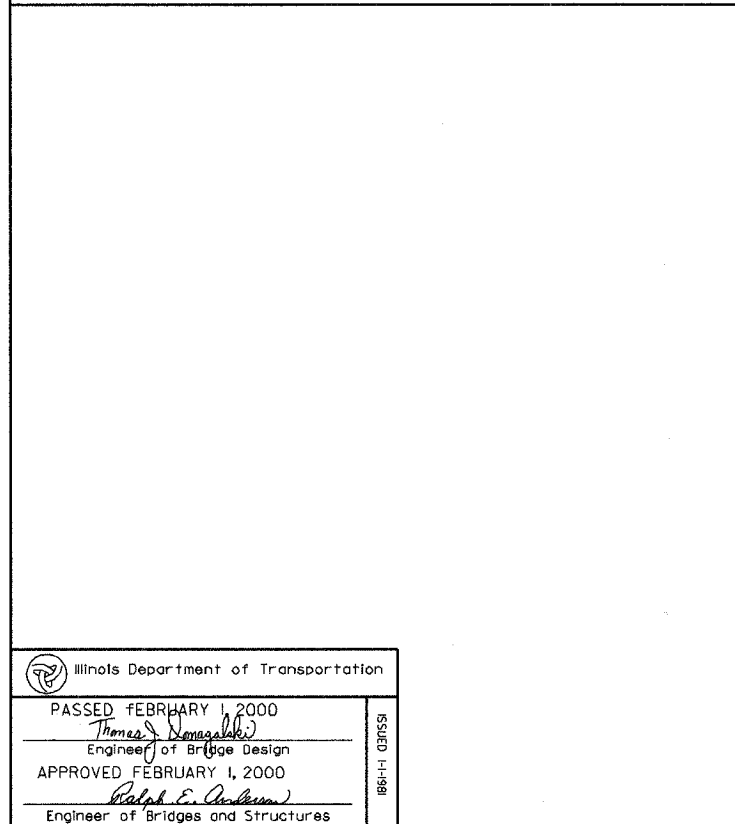
| |
|-------------|
| NAME PLATE |
| STANDARD CN |

| | | | | |
|---------------------|----------|---------|--------------|-------|
| F.A.S. ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET |
| 05-05122-00-82 | LAWRENCE | 11 | 11 | |
| STA. | TO STA. | | | |
| FED. ROAD DIST. NO. | ILLINOIS | PROJECT | | |



Reinforcement cage shall be omitted when Concrete Encasement is provided.

The cost of Reinforcement is included with the Cost of Furnishing Piles.



QUANTITIES/FT. OF ENCASEMENT (STEEL PILES)

| Pile Size | Item | Quantity |
|-----------|---------------------|------------|
| HP8 | Concrete Encasement | 0.063 C.Y. |
| HP10 | Concrete Encasement | 0.086 C.Y. |
| HP12 | Concrete Encasement | 0.112 C.Y. |

(METAL SHELL PILES)

| Pile Size | Item | Quantity |
|-----------|---------------------|------------|
| 12" Dia. | Concrete Encasement | 0.087 C.Y. |

Illinois Department of Transportation

PASSED FEBRUARY 1, 2000

Thomas J. Donagale
Engineer of Bridge Design

APPROVED FEBRUARY 1, 2000

Ralph E. Anderson
Engineer of Bridges and Structures

PILE DETAILS

STANDARD CX-1