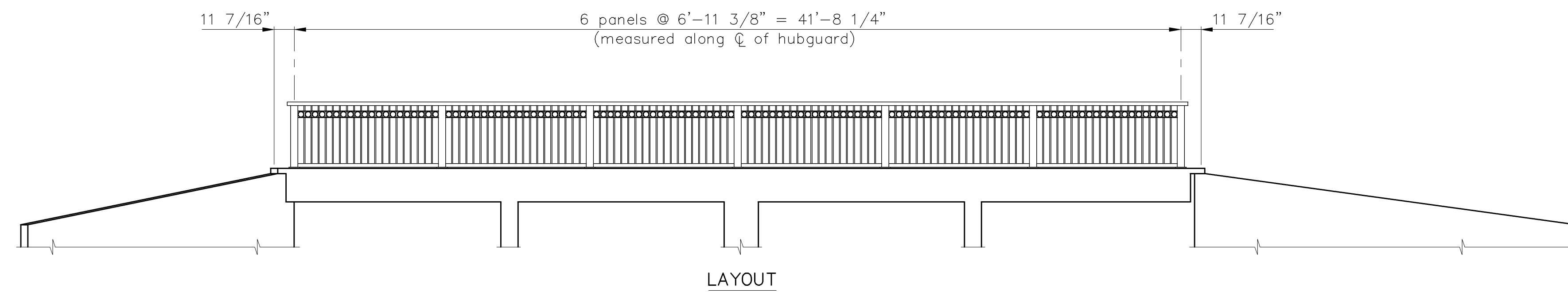
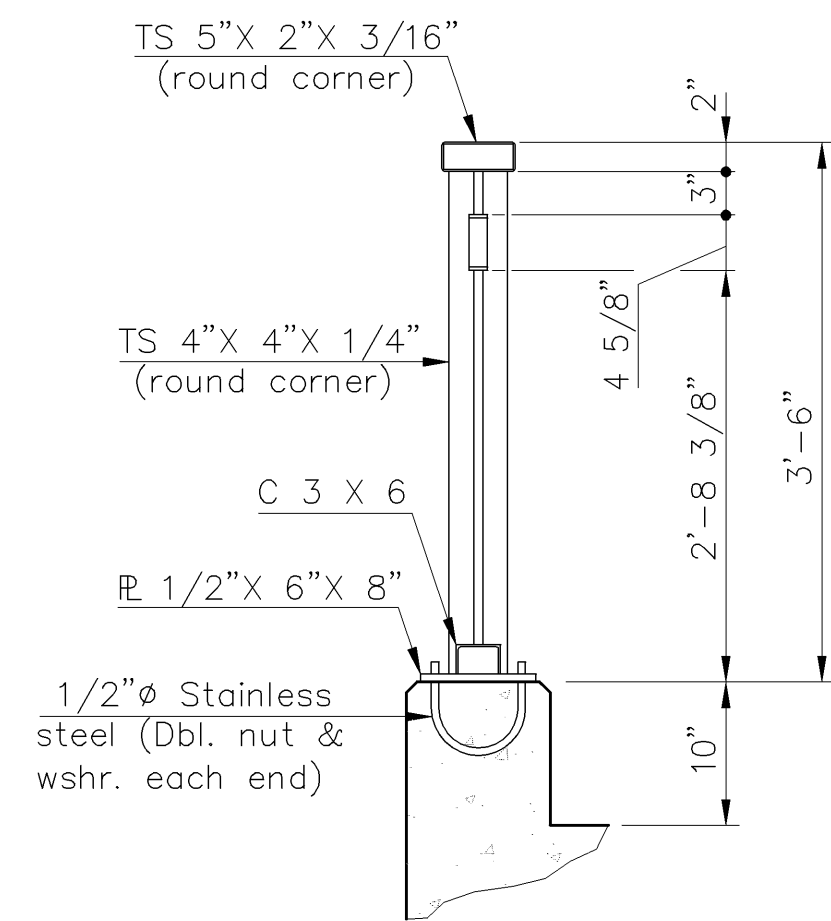


N.S. Indicates near surface  
 F.S. Indicates for surface  
 E.S. Indicates each surface

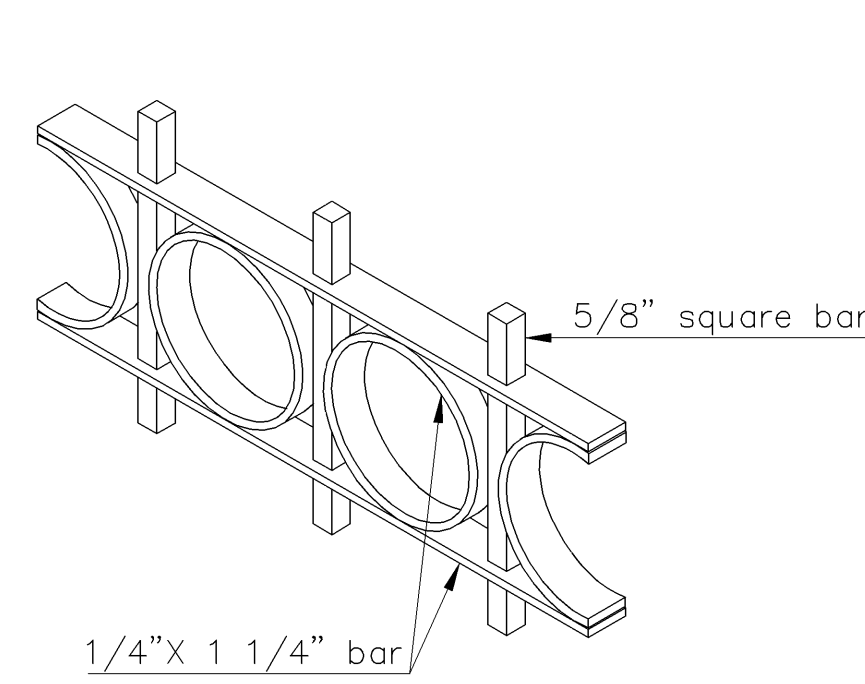
|        |              |      |           |              |
|--------|--------------|------|-----------|--------------|
| STATE  | PROJECT NO.  | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 87 N-0302-01 | 2004 | 49        | 106          |



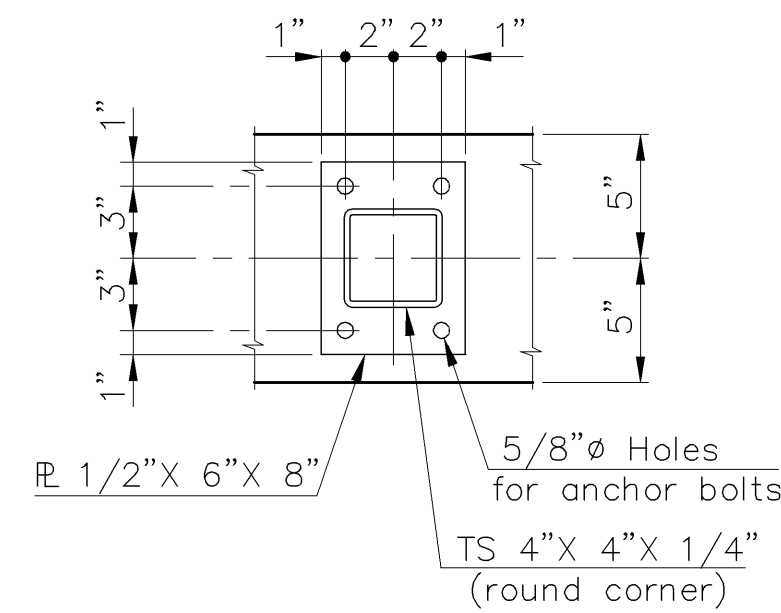
LAYOUT



TYPICAL SECTION



ISOMETRIC DETAIL



BASE PLATE

STEEL HANDRAIL DETAILS

GENERAL NOTES

Structural tubing for the top rail and posts shall conform to ASTM A500, Grade B. All remaining structural steel shall conform to ASTM A709 (Grade 250).

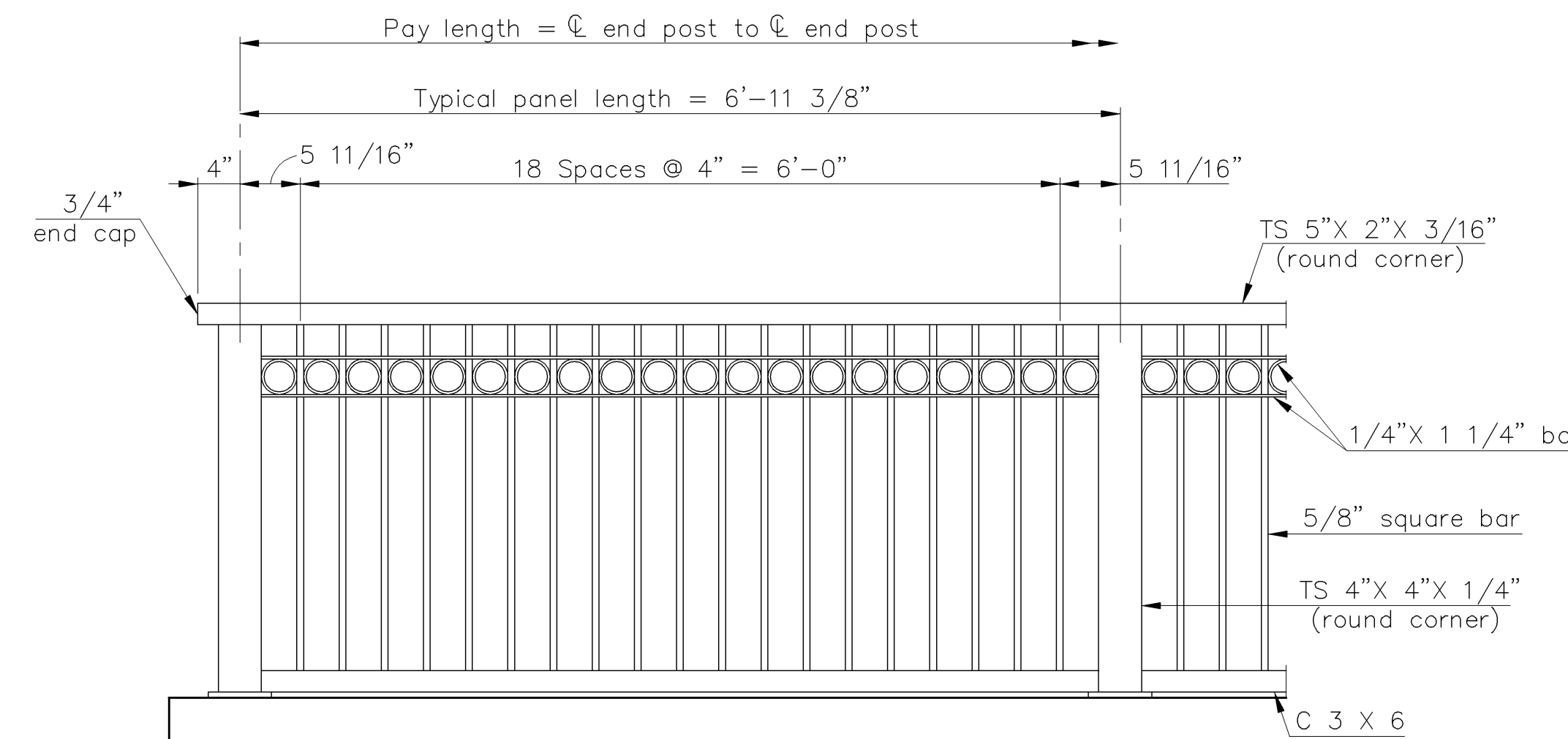
All elements of the rail assembly shall be galvanized and painted after fabrication. Galvanizing shall be done in accordance with the requirements of the KDOT Specifications. Furnish a three component paint system consisting of a 2 Component 98% Solids Polymeric Epoxy Amido-Amine Primer Tiecoat (1-2 mils dry film thickness) and a high-build polyurethane finish coat. Supply the finish coat in the color black. Furnish a finish coat that conforms to the following requirement:  
 High-Build Polyurethane Finish Coat.....  
 KDOT Special Provisions 90P-186-R2

Apply the paint system as recommended by the manufacturer. Touch-up the painted handrail in the field as necessary.

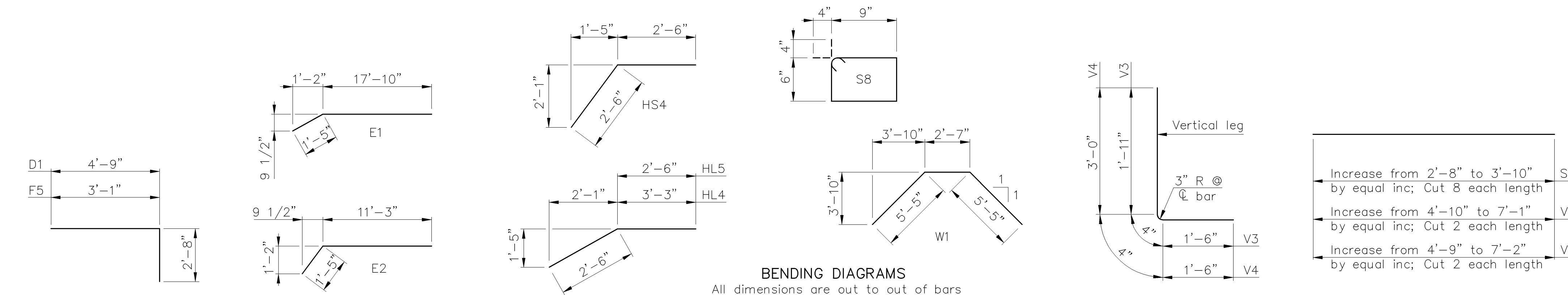
Metal handrails shall be constructed according to Section 709 of the Standard Specifications.

The rails shall be set parallel to the bridge wearing surface. All posts and pickets shall be set vertical. Shims may be used between the concrete and the base plates.

All top and bottom handrail-to-post welded connections shall be ground smooth. No field welding will be permitted. The Contractor shall submit shop drawings to the Engineer for approval prior to fabrication.



ELEVATION



BENDING DIAGRAMS

All dimensions are out to out of bars

BILL OF REINFORCING

| BAR    | C1     | C2     | D1    | E1     | E2     | F1     | F2     | F3     | F4     | F5    | HL1    | HL2    | HL3    | HL4   | HL5   | HL6   | HS1    | HS2    | HS3    | HS4   | HS5   | P1    | P2    | P3    | P4 |
|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|-------|----|
| SIZE   | #4     | #4     | #4    | #4     | #4     | #6     | #4     | #4     | #4     | #4    | #4     | #4     | #4     | #4    | #4    | #4    | #4     | #4     | #4     | #4    | #4    | #4    | #4    | #4    | #4 |
| NUMBER | 8      | 8      | 62    | 6      | 6      | 260    | 60     | 60     | 8      | 66    | 2      | 6      | 2      | 8     | 20    | 18    | 2      | 6      | 2      | 28    | 18    | 16    | 16    | 32    | 24 |
| LENGTH | 22'-6" | 14'-8" | 7'-5" | 19'-3" | 12'-8" | 43'-3" | 36'-7" | 28'-7" | 40'-8" | 5'-9" | 17'-8" | 17'-4" | 16'-0" | 5'-9" | 5'-0" | 3'-6" | 12'-0" | 11'-7" | 10'-9" | 5'-0" | 2'-6" | 3'-5" | 2'-9" | 1'-4" | 8" |

| BAR    | S1     | S2     | S3    | S4     | S5    | S6     | S7     | S8    | V1     | V2     | V3    | V4     | W1     | W2    | W3     | W4     | W5    |
|--------|--------|--------|-------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|
| SIZE   | #9     | #6     | #6    | #6     | #6    | #4     | #4     | #3    | #4     | #4     | #4    | #4     | #5     | #5    | #4     | #4     | #4    |
| NUMBER | 16     | 220    | 56    | 56     | 72    | 60     | 60     | 42    | 16     | 24     | 40    | 40     | 4      | 8     | 32     | 32     | 435   |
| LENGTH | 43'-3" | 43'-3" | 3'-1" | varies | 5'-3" | 36'-7" | 28'-4" | 3'-2" | varies | varies | 3'-9" | 4'-10" | 13'-5" | 7'-2" | 36'-7" | 28'-7" | 7'-2" |

GENERAL NOTES

LOADING: HS20-44 AASHTO SPECIFICATIONS, 1983 EDITION AND INTERIMS.

UNIT STRESSES: CLASS AAA CONCRETE  $f'_c = 4,000$  psi  
 REINFORCING STEEL  $f_y = 60,000$  psi

FILL HEIGHT: UNLESS OTHERWISE NOTED, THE DESIGN FILL HEIGHT IS MEASURED FROM THE RIDING SURFACE AT THE CULVERT AND SHALL INCLUDE THE SURFACING.

CONCRETE: CLASS AAA CONCRETE SHALL BE USED THROUGHOUT. BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOUNDING.

REINFORCING: ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL SHALL BE TO CENTERLINE OF BAR UNLESS OTHERWISE NOTED.

FOUNDATION STABILIZATION: FOUNDATION STABILIZATION MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. THE DEPTH OF FOUNDATION STABILIZATION SHALL BE DETERMINED BY THE ENGINEER. FOUNDATION STABILIZATION SHALL BE SUBSIDIARY TO OTHER ITEMS OF THE CONTRACT.

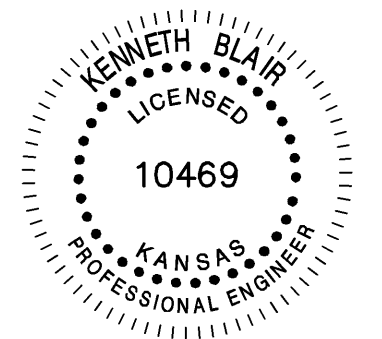
QUANTITIES: THE QUANTITIES SHOWN IN THE CULVERT SUMMARY INCLUDE THE CONCRETE AND REINFORCING REQUIRED TO PLUG THE EXISTING OPENINGS IN THE TOP SLAB.

FOUNDATION AND BACKFILL MATERIAL: SOILS JUDGED AS HIGH PLASTICITY CLAYS, FAT CLAYS, EXPANSIVE CLAYS OR ORGANIC CLAYS ARE UNSUITABLE FOR FOUNDATION AND/OR BACKFILL MATERIAL FOR WINGWALLS AND SHALL NOT BE USED. GRANULAR BACKFILL (WINGWALLS) SHALL BE REQUIRED.

WEEPHOLES: FREE DRAINING GRANULAR MATERIAL SHALL BE PLACED BEHIND ALL WEEPHOLES IN THE BARREL, WINGS AND SOIL SAVER IF APPLICABLE. THIS WORK AND MATERIAL SHALL BE SUBSIDIARY TO OTHER ITEMS OF THE CONTRACT.

| * SUMMARY OF QUANTITIES      |                |
|------------------------------|----------------|
| CLASS AAA CONCRETE           | 238.8 CU. YDS. |
| REINFORCING STEEL (GR. 60)   | 45,540 LBS.    |
| HANDRAIL (METAL)(42")        | 83.38 LIN. FT. |
| CLASS III EXCAVATION         | 155 CU. YDS.   |
| SLOPE PROTECTION (SHOT ROCK) | 90 CU. YDS.    |

\* For Information Only. All items required for construction of box structure are Subsidiary to the bid item "Gypsum Creek RCB Extension", L.S.



Note: Design fill height = 3.2'

PROJECT NO. 87 N-0302-01

4-9'X6' RCB EXTENSION

BRIDGE OVER W. BRANCH GYPSUM CREEK

STA. 43+64.4

CITY OF WICHITA

**Cook, Flatt & Strobel**  
 ENGINEERS, P.A.

|            |     |          |
|------------|-----|----------|
| DESIGNED   | KMB | SCALE    |
| DETAILED   | DEG | DATE     |
| QUANTITIES | DEG | SHEET OF |