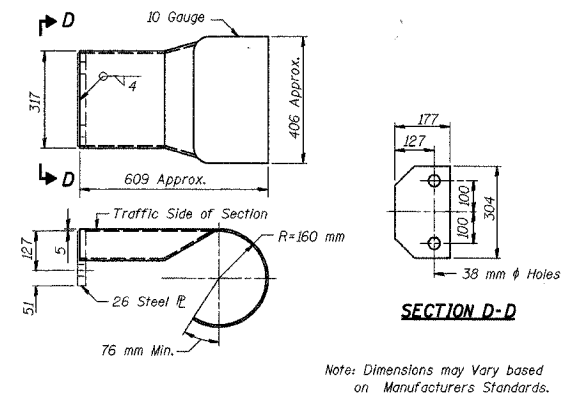
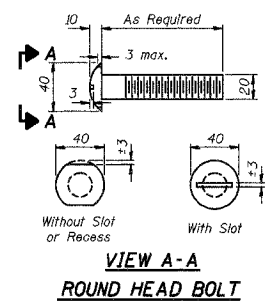
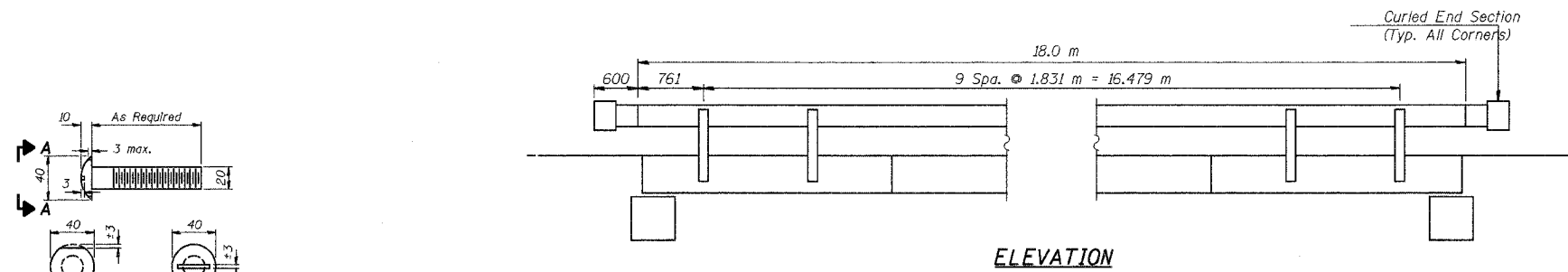
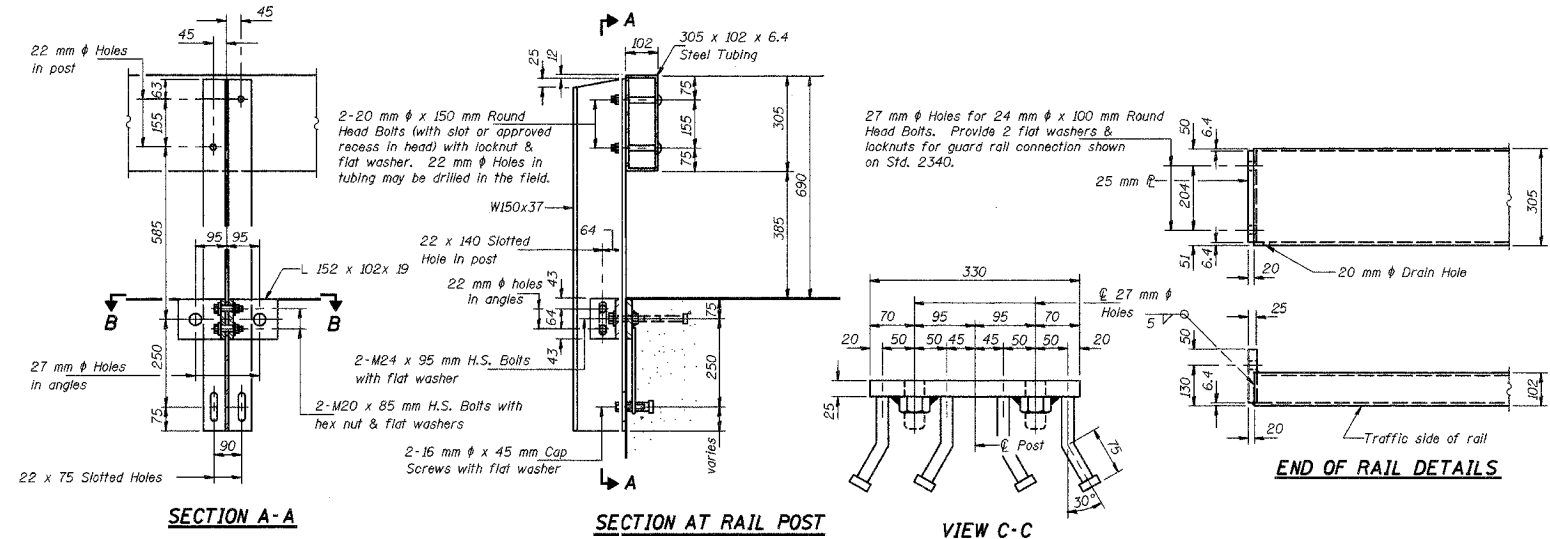


Contract # 91231

| RTE. NO. | SECTION        | COUNTY | TOTAL SHEETS | SHEET NO. |
|----------|----------------|--------|--------------|-----------|
| 408      | 97-21117-00-BR | SHELBY | 12           | 7         |



Note: Dimensions may Vary based on Manufacturers Standards.



**NOTES**

Hollow structural steel tubing shall conform to the requirements of ASTM designation A-500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 20 J-m at -18 °C.

All other steel shapes and plates shall conform to the requirements of AASHTO M-270 Grade 250 except posts and angles shall conform to AASHTO M-270 Grade 345.

Bolts, cap screws, and nuts shall conform to the requirement of ASTM designation A-307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M-164M.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with AASHTO M-232.

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

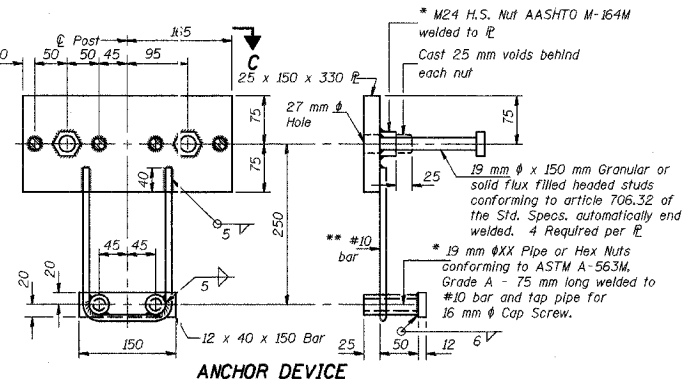
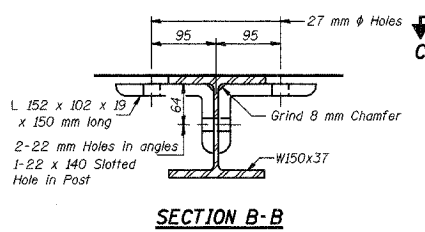
Railing shall be in accordance with Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per meter for STEEL RAILING, TYPE S-1.

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

The lower portion of the post flange in contact with concrete shall receive two coats of asphalt paint conforming to Section 760.07 Type II or place 3 mm fabric bearing pad between the post and concrete.

The M20 high strength bolts used to connect the 152 x 102 x 19 angles to the post shall be tightened in accordance with Article 505.04(F)(3) of the Standard Specifications. The M24 high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 16 mm diameter cap screws in bottom of posts shall be tightened to a snug fit only.

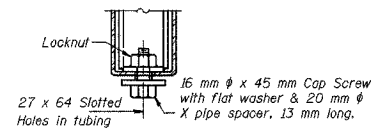
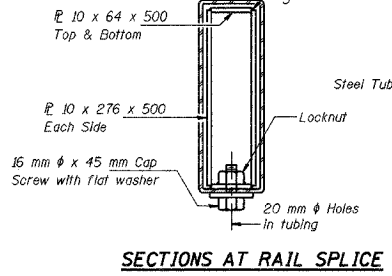
All dimensions are in millimeters (mm) except as noted.



R-23A (M) 7-1-94 (3.3 m Maximum Post Spacing)

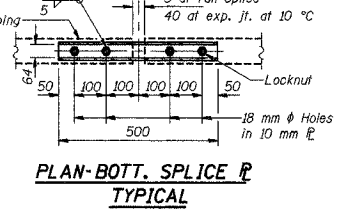
\* Threaded areas shall be plugged or blocked off during casting of beam.

\*\* Whenever the lower insert assemblies interfere with strand locations, the #10 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 12 mm.



**BILL OF MATERIAL**

| Item                   | Unit | Quantity |
|------------------------|------|----------|
| Steel Railing Type S-1 | m    | 36       |



**TYPE S-1 STEEL RAILING**

**TYPE S-1 STEEL RAIL**  
T.R. 408  
SHELBY COUNTY  
SECTION 97-21117-00-BR  
STA. 10+000.000

**RC ENGINEERS, LTD.**  
CONSULTING ENGINEERS  
DESIGNED: G.R. DRAWN: D.J.R.  
CHECKED: J.W.G. CHECKED: J.W.G.