TST-1-99 GENERAL NOTES:

GENERAL: THIS DRAWING PROVIDES DESIGN AND CONSTRUCTION DETAILS. THE PROJECT PLANS FOR EACH STRUCTURE SHALL PROVIDE NECESSARY ADDITIONAL MALLING DIMENSIONS INCLUDING RAILING LENGTHS, POST SPACINGS, POST LENGTHS AND ANY OTHER PERTINENT INFORMATION INCLUDING SPECIAL NOTES AND DETAILS. FOR ADDITIONAL GUARDRAIL DETAILS, SEE STC. CONSTR. (MOS. GR-1, GR-1-2 AND OTHER DRAWINGS) PERTAINING TO DESIGN OF SPECIFIC GUARDRAIL TYPES.

APPLICATION: THE STEEL TUBE RAILING SHALL BE USED ON STRUCTURES DESIGNED TO DRAIN SURFACE WATER OVER THE SIDES OF THE STRUCTURE. THIS RAILING IS NOT APPLICABLE TO COMPOSITE BOX BEAM BRIDGES WITH DESIGN OVERHANGS GREATER THAN 2' OR TOP FLANGE THICKNESS LESS THAN 3/8".


DESIGN SPECIFICATIONS: THIS DESIGN CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS. 1996, INCLUDING THE 1995 INTERIM SPECIFICATIONS, AND THE DOT BID DESIGN MANUAL.

DESIGN DATA:

NETWORKING STEEL - MINIMUM YIELD STRENGTH = 60,000 PSI
STEEL TUBES - MINIMUM YIELD STRENGTH = 46,000 PSI
ALL OTHER STEEL - MINIMUM YIELD STRENGTH = 50,000 PSI

MATERIALS: FURNISH SHAPED STRUCTURAL TUBING ACCORDING TO TO-10 (ASTM A550, GRADE B3). IN LIEU OF THE "DROP WEIGHT TENSION TEST" (ASTM E211), THE MANUFACTURER MAY CHOOSE TO SUPPLY TUBING THAT MEETS THE TOUGHNESS REQUIREMENTS ACCORDING TO ASHTO T266, "NOTCHED BAR IMPACT TESTING BY METALLIC MATERIALS [101]." THE CRITICAL IMPACT REQUIREMENTS SHALL BE 15 FT-LBS AT 4°F, FOR EACH HEAT SUPPLIED.

FURNISH STRUCTURAL STEEL SHAPES, PLATES, AND PLATE WASHERS ACCORDING TO T1112.
FURNISH ASH SHANKS, NON METALLIC GROUT ACCORDING TO CMS 705.40.

BOLTING/BRACING: GALVANIZE ALL SHAPED STRUCTURAL TUBES, POSTS, PLATES, HARDWARE AND ACCESSORIES IN ACCORDANCE WITH T1112. PRIOR TO GALVANIZING, WOOD ALL STRUCTURAL TUBING ENDS AND REMOVE BURNS FROM ALL STEEL TUBES, SHAPES AND PLATES.

HORIZONTAL CURVATURE: THIS STANDARD IS APPLICABLE TO STRUCTURES HAVING A RAILING CURVATURE BIAS O F NO MORE THAN 20 FEET, FOR A RADIUS OF LESS THAN 20 FEET. THE DESIGN SHALL BE SPECIAL FOR ALL CURVING STRUCTURES, HEAT CURVE THE HORIZONTAL RAIL ELEMENTS ACCORDING TO THE ASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

TUBE SPLICES: LOCATE SPLICES SO THAT EACH TUBE SEGMENT IS CONNECTED TO NOT LESS THAN TWO POSTS. STADDLE SPLICES IN THE TOP AND BOTTOM TUBES TO AVOID OCCURRENCES IN THE SAME PANEL.

FASTENERS: PROVIDE MATERIAL CONFORMING TO THE FOLLOWING:

- ALL ANCHOR BOLTS, SLEEVE NUTS, NUTS AND WASHERS SHALL CONFORM TO CMS F71-09 (ASTM A325). THE THREAD LENGTH REQUIREMENT OF A325 MAY BE WAIVED.
- END MOLDING STUDS SHALL CONFORM TO CMS F600.
- THE TUBE RAIL TO POST CONNECTION BOLTS AND NUTS SHALL CONFORM TO CMS F1110 (ASTM A350). REFER TO STANDARD CONSTRUCTION DRAWING GR-3.6 FOR THE BRIDGE TERMINAL ASSEMBLY CONNECTION HARDWARE.

THE HEX CAP SCREWS (BOLT1), HEX NUTS AND WASHERS SHALL CONFORM TO CMS A449.

BOLT BEAMS: THE DISTANCE FROM THE CENTERLINE OF A GUARDRAIL POST TO THE ADJACENT END OF THE BEAM OR TO THE CENTERLINE OF A TIE MODSHALL NOT BE LESS THAN 1'-8".

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Basis OF PAYMENT: THE DEPARTMENT WILL CONSIDER THE COSTS ASSOCIATED WITH FURNISHING AND INSTALLING STEEL TUBES, POST ANCHOR DEVICES, ANCHOR PLATES, TUBE SPICE PLATES, STEEL SHEET PLATES, GUARDRAIL CONNECTION PLATES, ANCHOR BOLTS, GROUT, MEDIUM HEAD BOLTS, SLEEVE NUTS, NUTS, CAP SCREWS, WASHERS AND OTHER HARDWARE TO BE INCLUDED WITH THE TUBE STEEL TUBE RAILING.

THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 577, RAILING (TUBE STEEL TUBE).

THE DEPARTMENT WILL PAY FOR BRIDGE TERMINAL ASSEMBLY HARDWARE SEPARATELY.