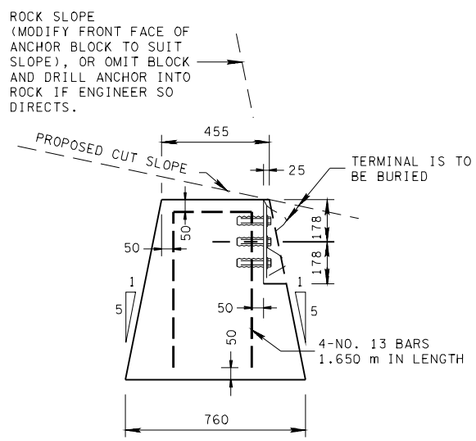
REV. 11-1-95: CHANGED TO METRIC.

REV. 7-29-96: MADE MINOR DIMENSIONING CHANGES.

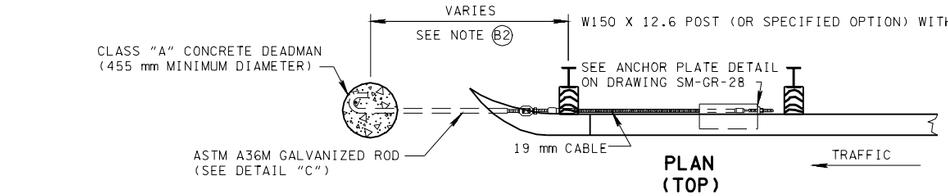
REV. 7-29-98: MODIFIED DETAIL "C".

REV. 12-18-98: MODIFIED ALL DETAILS FOR GUARDRAIL TERMINAL ANCHOR (TYPE 13).

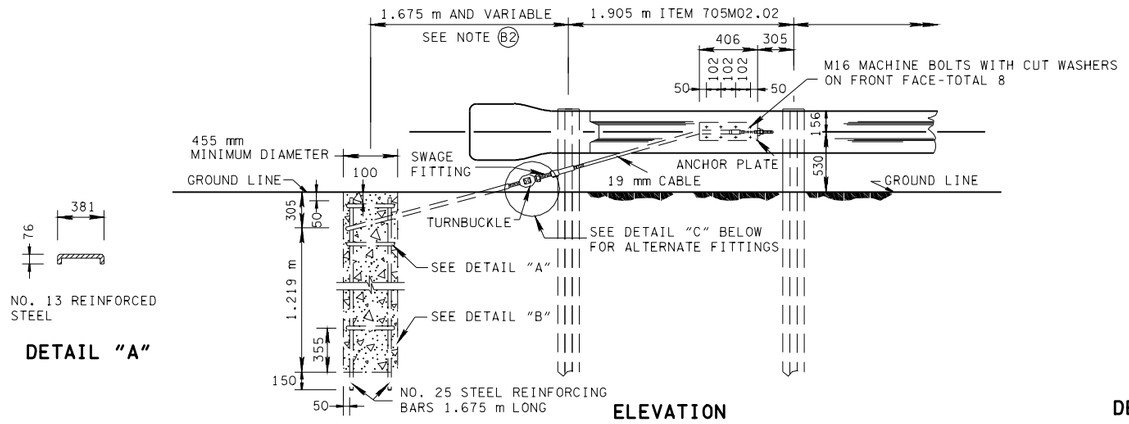
REV. 5-27-01: CHANGED DESCRIPTION FOR ITEM NUMBERS 705M04.02 AND 705M04.03. CHANGED SHEET NAME.



ELEVATION (END)

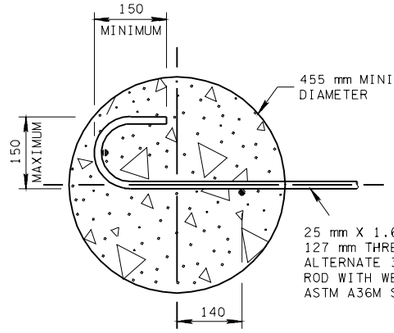


PLAN (TOP)



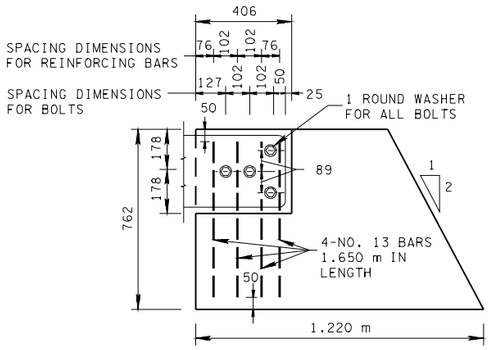
ELEVATION (FRONT)

DETAIL "A"



DETAIL "B" SECTION THRU DEADMAN

GUARDRAIL TERMINAL (TYPE 13)
ITEM NO. 705M04.03 PER EACH



ELEVATION (FRONT)

GUARDRAIL TERMINAL (TYPE 12)
ITEM NO. 705M04.02 PER EACH

GUARDRAIL TERMINAL ANCHOR (TYPE 13) GENERAL NOTES

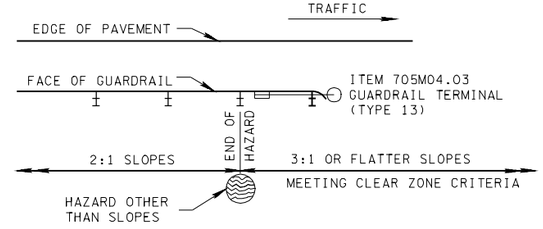
(B1) UNIT PRICE FOR ITEM NO. 705M04.03, GUARDRAIL TERMINAL (TYPE 13) PER EACH SHALL INCLUDE COSTS OF FURNISHING AND INSTALLING CABLE ANCHOR AND ALL COMPONENTS AS DETAILED, CONCRETE "DEADMAN" AND TERMINAL RAIL END ELEMENT, COMPLETE, IN PLACE. SEE STANDARD DRAWING NO. SM-GR-28 FOR DETAILS AND SPECIFICATIONS ON CABLE AND ANCHOR PLATE.

(B2) CABLE TO BE PARALLEL TO GUARDRAIL FOR STRAIGHT RUNS OF RAIL. CABLE MAY HAVE ANGLE POINT AT ANCHOR PLATE IF GUARDRAIL IS CURVED.

(B3) ESTIMATED QUANTITIES OF CONCRETE AND STEEL FOR GUARDRAIL TERMINAL (TYPE 13) ARE:

CLASS "A" CONCRETE= 0.25 m^3
NO. 25 STEEL REINFORCING BAR= 35 kg

(B4) THIS TERMINAL SHALL NOT BE USED ON THE APPROACH END OF A SECTION OF GUARDRAIL.



SKETCH SHOWING APPLICATION OF TRAILING END TREATMENT ON DIVIDED HIGHWAYS

GUARDRAIL TERMINAL ANCHOR (TYPE 12) GENERAL NOTES

(A1) REQUIREMENTS FOR ANCHOR INSERT BOLTS SHALL BE M22 HEX HEAD INSTALLED IN M22 MASONRY ANCHOR. THE CONTRACTOR SHALL FURNISH ANCHOR PULL-OUT DATA FROM AN INDEPENDENT TESTING LABORATORY USING CLASS "A" CONCRETE IN ACCORDANCE WITH STATE OF TENNESSEE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION". THE ULTIMATE LOAD FOR M22 ANCHOR SHALL BE 85000 N. BOLTS SHALL CONFORM TO ASTM A307.

(A2) THE MASONRY ANCHORS SHALL BE SUB-SET IN THE CONCRETE AT A DEPTH OF BETWEEN 2.5 mm TO 6 mm AND TORQUED WITH THE END TERMINAL IN THE PLACE TO AN EQUIVALENT DIRECT PULL-OUT LOAD OF 53000 N. SLIPPAGE SHALL NOT EXCEED 6 mm.

(A4) THE CONTRACTOR CAN USE THE SAME LENGTH ANCHOR BOLTS IN SOLID ROCK AS LONG AS THEY ARE DRILLED CLEANLY WITHOUT FRATURING THE ROCK. THIS CONNECTION MUST BE EQUAL IN STRENGTH TO WHAT WAS CRASH TESTED.

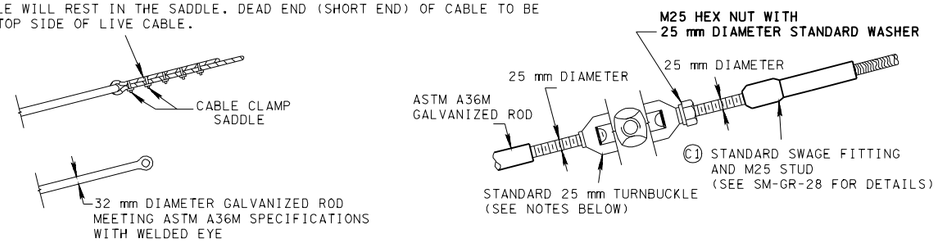
(A5) IF THE CONTRUCTOR DRILLS THESE ANCHOR BOLTS IN SOLID ROCK, THE SAME FLARE RATE MUST BE USED THAT WOULD BE USED WITH THE CRASH TESTED CONCRETE ANCHOR BLOCK.

(A6) UNIT PRICE FOR ITEM NO. 705M04.02, GUARDRAIL TERMINAL (TYPE 12) PER EACH SHALL INCLUDE COSTS OF FURNISHING AND INSTALLING ONE (1) REINFORCED CLASS "A" CONCRETE GUARDRAIL STATIONARY TERMINAL ANCHOR BLOCK, ONE(1) TERMINAL ELEMENT FOR ANCHOR BLOCK (MICHIGAN END SHOE), AND ALL BOLTS, MASONARY ANCHORS, WASHERS AND LABOR NECESSARY TO COMPLETE THE ITEM.

(A7) ESTIMATED QUANTITIES OF CONCRETE AND STEEL FOR GUARDRAIL STATIONARY TERMINAL (TYPE 12) ARE:

CLASS "A" CONCRETE= 0.458 m^3
NO. 13 STEEL REINFORCING BARS= 6.804 Kg

SECURE CABLE LOOP WITH 5 U-BOLT CABLE CLAMPS. CONTRACTOR IS TO APPLY THE U-BOLT OVER THE DEAD END OF THE CABLE. THE LIVE END OF THE CABLE WILL REST IN THE SADDLE. DEAD END (SHORT END) OF CABLE TO BE ON TOP SIDE OF LIVE CABLE.



DETAIL "C" ALTERNATE FITTINGS

ALTERNATE FITTING GENERAL NOTES

(C1) STANDARD SWAGE FITTING WITH M25 STUD TO BE USED ONLY WITH STANDARD 25 mm TURNBUCKLE. SWAGE FITTING ON ANCHOR PLATE IS SAME AS DETAIL ON STANDARD DRAWING SM-GR-28.

(C2) DROP FORGED GALVANIZED STEEL TURNBUCKLE SHALL PROVIDE A MINIMUM BREAKING STRENGTH OF 180000 N.

(C3) THE FINISHED CABLE ASSEMBLY WILL NOT BE ACCEPTABLE UNLESS IT IS IN TENSION WITH NO SAG.

(C4) THESE FITTINGS SHALL BE INSTALLED ABOVE GROUND.

TENNESSEE METRIC D.O.T.

ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL TERMINAL ANCHORS, TYPE 12 AND TYPE 13

11-1-95 | SM-GR-19