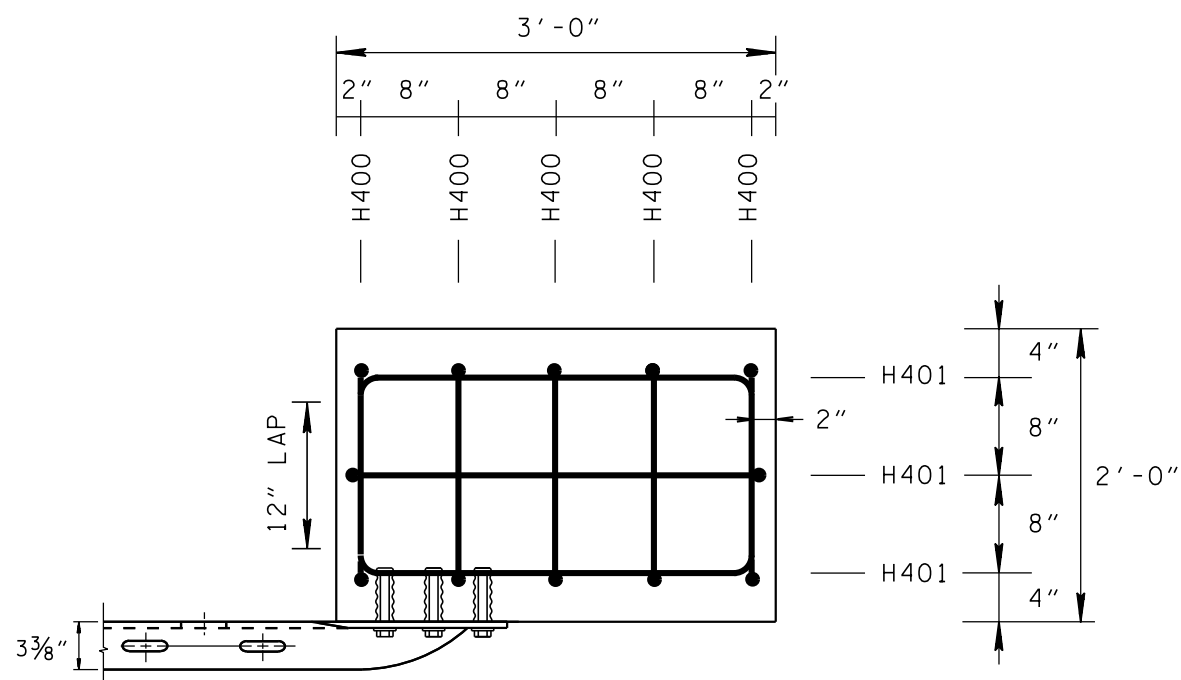
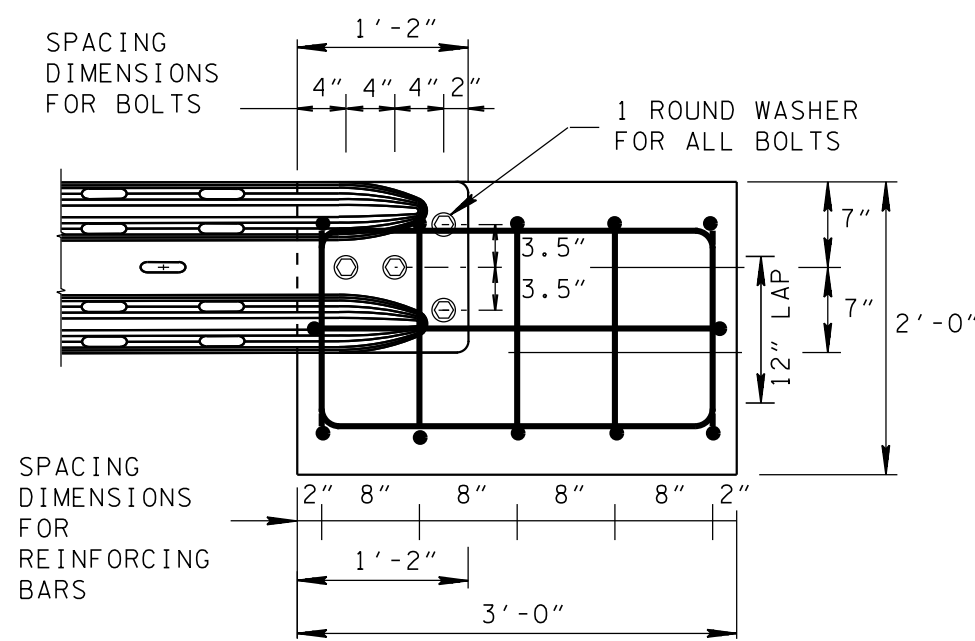


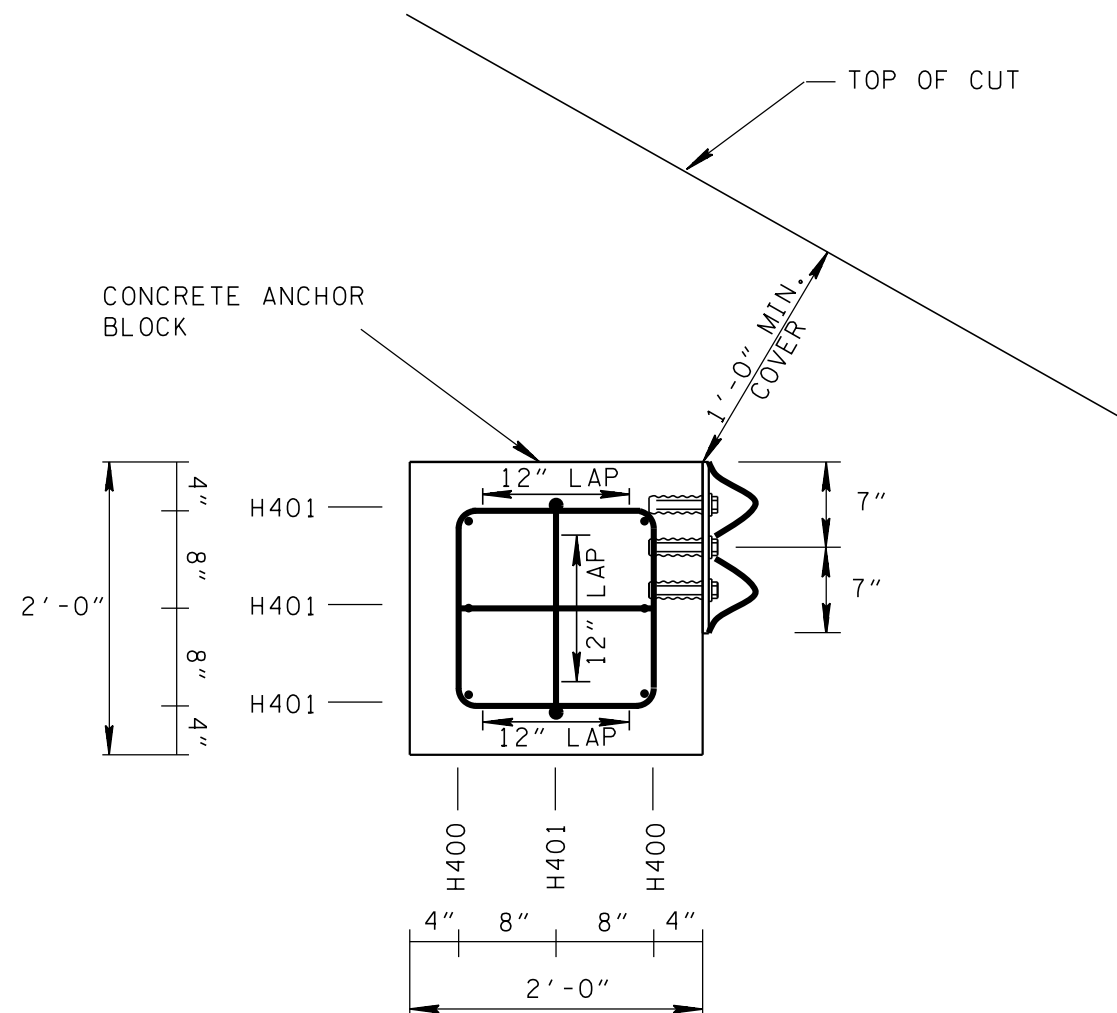
REV. 10-10-16: CHANGED TITLE, REFORMATTED GENERAL NOTES TO BE CONSISTENT WITH OTHER STANDARD DRAWINGS. SEPARATED ELEVATION (SIDE) DETAIL INTO (2) DETAILS.



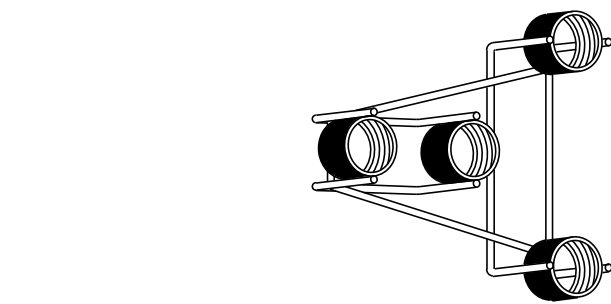
PLAN



ELEVATION
(FRONT)



ELEVATION
(SIDE)



ANCHOR BLOCK INSERT ASSEMBLY

CAST IN PLACE THREADED STEEL INSERT WITH
3/8" DIA. X 2" HEX HEAD GALVANIZED BOLTS (ASTM A307)
HOT DIP ZINC COATING ASTM A153

ALTERNATIVE ATTACHMENT
DETAIL FOR ROCK BLUFF

DRILL ANCHORS INTO
ROCK AS DIRECTED BY
ENGINEER

ATTACH GUARDRAIL
INTO ROCK BLUFF
USING MICHIGAN
SHOE

ALTERNATE ELEVATION
(SIDE)

NOTE TO DESIGNER

TO BE USED WITH S-GRT-1 ONLY

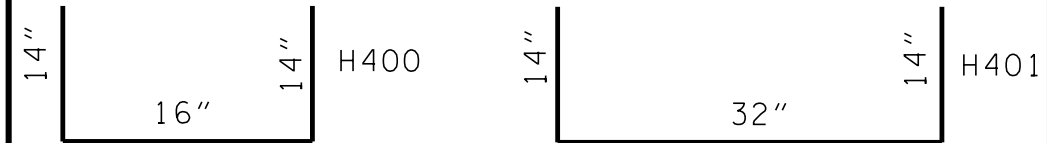
SPECIAL INSTALLATION NOTE

FOR THIS GUARDRAIL ANCHOR TO FUNCTION AS IT WAS CRASH TESTED UNDER NCHRP 350
TL-3 IT MUST BE CONSTRUCTED PER S-GRT-1.

GENERAL NOTES

- (A) REQUIREMENTS FOR ANCHOR INSERT BOLTS SHALL BE 3/8" HEX HEAD INSTALLED IN 3/8" MASONRY ANCHOR. THE INSERTS ARE TO BE THREADED AT A MINIMUM OF 1 3/4". 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 MAXIMUM LOAD FOR 3/8" ANCHOR SHALL BE 19,000 POUNDS. BOLTS SHALL CONFORM TO ASTM A307.
- (B) THE MASONRY ANCHORS SHALL BE SUB-SET IN THE CONCRETE AT A DEPTH OF BETWEEN 3/32" TO 1/4" AND TORQUED WITH THE END TERMINAL IN THE PLACE TO AN EQUIVALENT DIRECT PULL-OUT LOAD OF 12,000 POUNDS. SLIPPAGE SHALL NOT EXCEED 1/4".
- (C) THE CONTRACTOR WILL PERFORM ON-SITE TESTING OF EACH BOLT IN THE PRESENCE OF TDOT PERSONNEL TO ENSURE THESE REQUIREMENTS ARE MET. ANY INSTALLATION NOT MEETING THESE REQUIREMENTS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- (D) THE CONTRACTOR MAY ELECT TO USE 3/8" DIAMETER DRILLED IN ANCHORS WITH 50 KIPS PER SQUARE INCH OR GREATER YIELD STRENGTH WHEN ATTACHING THE TERMINAL END ELEMENTS INTO ROCK. SEE ABOVE GENERAL NOTE (B) FOR PULL-OUT REQUIREMENTS.
- (E) IF THE CONTRACTOR DRILLS THESE ANCHOR BOLTS IN ROCK, THE SAME FLARE RATE MUST BE USED THAT WOULD BE USED WITH THE CRASH TESTED CONCRETE ANCHOR BLOCK.
- (F) COST OF CONCRETE ANCHOR BLOCK TO BE INCLUDED IN THE COST OF ITEM NO. 705-04.02.
- (G) ESTIMATED QUANTITIES OF CONCRETE AND STEEL ARE:
CLASS "A" CONCRETE= 0.44 CUBIC YARD
NO. 4 STEEL REINFORCING BARS= 52 POUNDS
- (H) SEE S-GRA-1A FOR ALTERNATE BURIED-IN-BACKSLOPE ANCHOR.

REINFORCING STEEL LEGEND



MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPE 12
GUARDRAIL ANCHOR

7-11-13

S-GRA-1