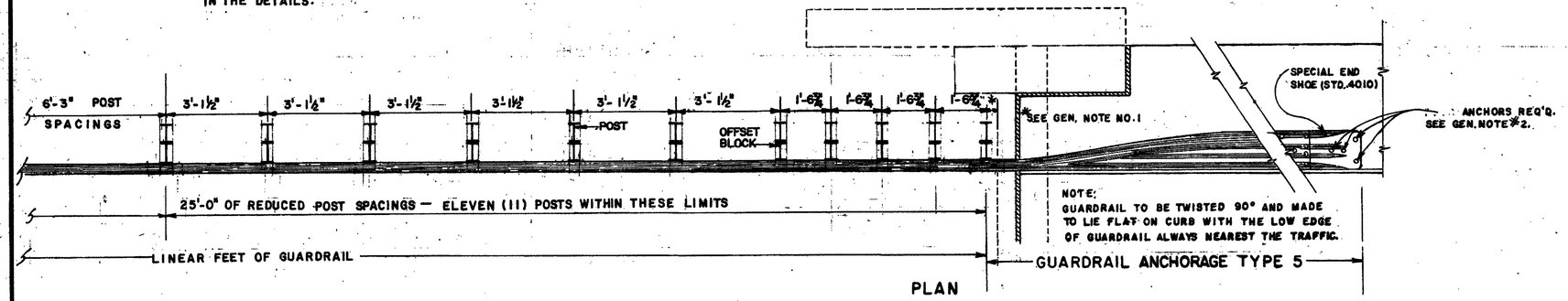
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	NHS-M001-00(732)	150	159

GUARDRAIL ANCHORAGE TYPE 5

NOTE: STEEL POSTS AND STEEL OFFSET BLOCKS ARE DEPICTED IN THE DETAILS.



NOTE:
GUARDRAIL TO BE TWISTED 90° AND MADE TO LIE FLAT ON CURB WITH THE LOW EDGE OF GUARDRAIL ALWAYS NEAREST THE TRAFFIC.

PLAN

DETAIL "A"

ATTACHMENT OF SPECIAL END SHOE ON A SAFETY CURB

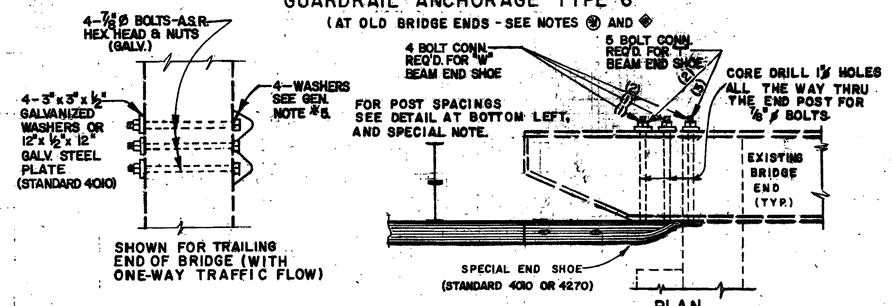
NOTE:
GUARDRAIL ANCHORAGE TYPE 5 IS FOR USE WHERE SPECIAL END SHOE IS ATTACHED ON TOP OF BRIDGE CURB. THIS WILL GENERALLY BE WHERE FACE OF GUARDRAIL IS ALIGNED WITH THE FACE OF THE CONCRETE CURB OR AT EXISTING BRIDGE ENDS ON SAFETY IMPROVEMENT PROJECTS. SEE APPLICABLE STANDARDS OR PLAN DETAILS.

NOTE:
PAYMENT FOR ANCHORAGE TYPE 5 OR TYPE 6, AS SPECIFIED, INCLUDES FIVE (5) BOLT CONNECTIONS (EITHER HOLES DRILLED THROUGH CONCRETE OR ANCHOR BOLT INSTALLATIONS) WHERE "T" BEAM GUARDRAIL ATTACHMENT IS SPECIFIED OR FOUR (4) SUCH BOLT CONNECTIONS WHERE "W" BEAM GUARDRAIL ATTACHMENT IS SPECIFIED.

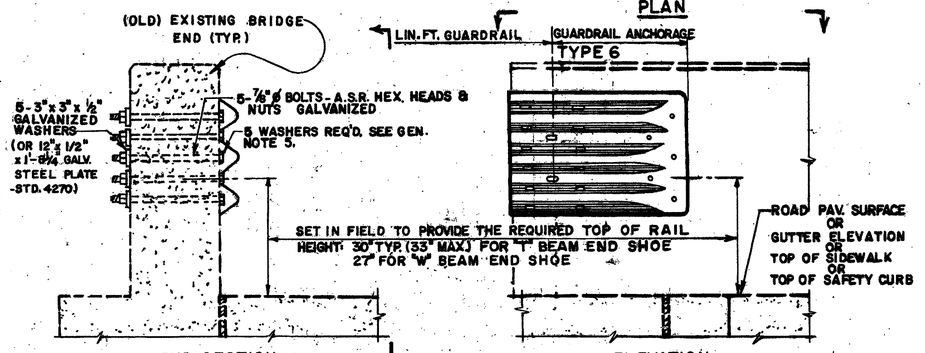
SPECIAL NOTE:
REDUCED POST SPACING WILL BE REQUIRED AS SHOWN EXCEPT AT THE TRAILING END OF ONE-WAY TRAFFIC FLOW IN WHICH CASE NORMAL POST SPACING (6'-3" C. TO C. MAX.) MAY BE RETAINED.
PAYMENT FOR GUARDRAIL INCLUDES ALL ADDITIONAL POST AND OFFSET BLOCKS REQUIRED.
PAYMENT FOR "T" BEAM GUARDRAIL ALSO INCLUDES THE EXTRA RAIL ELEMENT WHERE DOUBLE THICKNESS IS SPECIFIED.

GUARDRAIL ANCHORAGE TYPE 6

(AT OLD BRIDGE ENDS - SEE NOTES ⊗ AND ◆)



PLAN



END SECTION

SHOWN FOR APPROACH END OF BRIDGE (OR BRIDGE WITH TWO-WAY TRAFFIC FLOW)

ELEVATION

DETAIL "C"

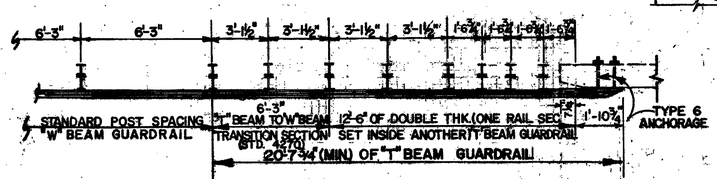
ATTACHMENT OF SPECIAL END SHOE TO EXISTING CONCRETE END POST

(ANCHORS FOR BOLTS AS DESCRIBED IN NOTE 2 WILL NOT BE PERMITTED WITH ATTACHMENTS SHOWN IN DETAIL "C".)

NOTE ◆
USE OF "W" BEAM END SHOE INSTALLATIONS FOR TYPE 6 ANCHORAGES ARE LIMITED TO CONNECTIONS AT EXISTING STRUCTURES ON THE TRAILING END OF ONE-WAY TRAFFIC, AS SHOWN. OTHERWISE, TYPE 6 ANCHORAGES REQUIRE "T" BEAM END SHOE INSTALLATION WITH FIVE (5) BOLT CONNECTIONS.

NOTE ⊗
GUARDRAIL ANCHORAGE TYPE 6 IS FOR USE AT EXISTING BRIDGE ENDS, COLUMNS, PIERS, WALLS, ETC., WHERE THE INSTALLATION OF GUARDRAIL INVOLVES EITHER DRILLING HOLES IN THE CONCRETE OR INSTALLING CONCRETE ANCHOR BOLTS FOR THE PURPOSE OF ATTACHING THE SPECIAL END SHOE.

DO NOT SPECIFY GUARDRAIL ANCHORAGE TYPE 6 AT NEW BRIDGE END POST (STD. 3054 TYPICAL), OR WHERE HOLES HAVE BEEN PROVIDED IN CONCRETE FOR THE SPECIAL END SHOE CONNECTION. IN THIS CASE, PAYMENT FOR LIN. FT. OF GUARDRAIL WILL INCLUDE THE END SHOE CONNECTION AND THESE DETAILS WILL NOT APPLY.



DETAILS OF SPACINGS FOR ADDITIONAL POSTS AT TYPE 6 ANCHORAGE
(SEE ALSO SPECIAL NOTE ABOVE)

GENERAL NOTES:

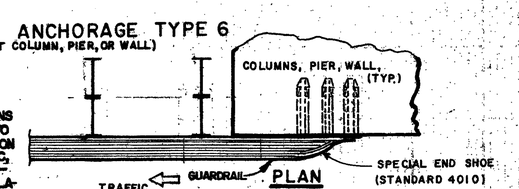
1. THE FIRST POST IS TO BE PLACED AS CLOSE TO THE BRIDGE AS POSSIBLE BEING CAREFUL TO AVOID DRIVING THE POST ON TOP OF THE PAVING REST.
2. (a) THE SPECIAL END SHOE AT DETAILS "A" & "D" WILL BE ANCHORED WITH 5 (OR 4) APPROVED TYPE ⅞" ø GALVANIZED ANCHOR BOLTS SUCH AS PHILLIPS WS-7880G WEDGE ANCHORS, U.S.E. 3455-2 TAPER BOLTS, PARABOLT PB-78 - CONCRETE ANCHORS, OR AN EQUAL APPROVED BY THE D.O.T. LABORATORY. ATTACHMENT PER DETAIL "D" PERMITTED ONLY WHERE LACK OF ACCESS PREVENTS ATTACHMENT PER DETAIL "C". ATTACHMENT PER CONC. INSERT ANCHOR ASSEMBLY (F-33-73, A.R.T.B.A. TECH BULLETIN No. 268-) MAY BE SUBSTITUTED IN DETAIL "D."
   (b) SELF-DRILLING ANCHORS WILL NOT BE PERMITTED EXCEPT IN NON-REINFORCED CONCRETE. OVER-SIZED DIAMETER DRILLED HOLES WILL NOT BE ALLOWED FOR ANCHOR INSTALLATIONS. ALL CONCRETE ANCHOR BOLTS WILL BE INSTALLED EXACTLY AS RECOMMENDED BY THE MANUFACTURER. IMPROPER INSTALLATIONS WILL BE CORRECTED AT CONTRACTOR'S EXPENSE. ANCHOR INSTALLATIONS SHALL BE SUBJECT TO RANDOM HYDRAULIC PULL OUT TESTING. *** ALL ANCHOR BOLTS WILL BE HOT-DIPPED GALVANIZED ACCORDING TO AASHTO M-111.
3. HOLES IN SAFETY CURBS ARE TO BE CAULKED TO AVOID WATER STANDING IN THEM.
4. STEEL POSTS AND STEEL OFFSET BLOCKS ARE DEPICTED IN THE DETAILS.
5. WASHERS FOR CONNECTING THE SPECIAL END SHOE TO CONCRETE FACE ARE TO BE ⅞" MEDIUM GALVANIZED WASHER.
6. ALL MATERIAL NOT SPECIFIED SHALL MEET GA. D.O.T. SPECIFICATIONS AND/OR SPECIAL PROVISIONS, AND WHERE POSSIBLE BE THE SAME AS IN THE ADJOINING GUARDRAIL. ALL HARDWARE TO BE GALVANIZED, SAME AS REQUIRED FOR GUARDRAIL. ALL BOLTS AND NUTS SHALL CONFORM TO ASTM. A-307.
7. THE PLACEMENT OF THE SPECIAL END SHOE ON TOP OF THE CURB IS LEFT TO THE DISCRETION OF THE CONTRACTOR WITH THE RESTRICTION THAT IT BE FLUSH WITH THE EDGE OF THE CURB AND NO MORE THAN 25' FROM THE LAST POST. THE TWISTED RAIL IN NO CASE WILL BE ALLOWED TO EXTEND PAST THE FACE OF THE CURB.
8. PAYMENT FOR GUARDRAIL ANCHORAGE TYPE 5 OR TYPE 6 INCLUDES THE INSTALLATION OF ANCHOR BOLTS OR DRILLING HOLES IN CONCRETE AS REQUIRED.
9. ANY CUTTING OR DRILLING IN GUARDRAIL SECTIONS SHALL BE REPAIRED WITH GALVANIZING IN ACCORDANCE WITH GEORGIA STANDARD SPECIFICATIONS.
10. SEE STDS. 4010 & 4011A FOR DETAILS OF GUARDRAIL ELEMENTS, POSTS, BLOCKS, ETC.

*** ⅝" ø ANCHOR INSTALLATIONS SHALL BE TESTED TO 3200 LBS. PULL.
⅞" ø ANCHOR INSTALLATIONS SHALL BE TESTED TO 80% x 5000 = 4000 LBS. PULL. (EACH BOLT)
EACH ANCHOR INSTALLATION WILL BE CHECKED INDIVIDUALLY FOR BROKEN OR IMPROPERLY INSTALLED BOLTS. ANY SUCH INSTALLATION WILL BE CORRECTED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

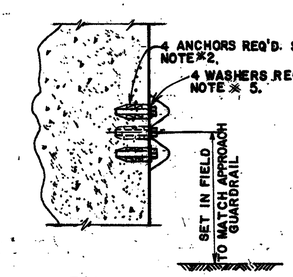
GUARDRAIL ANCHORAGE TYPE 6

(AT COLUMN, PIER, OR WALL)

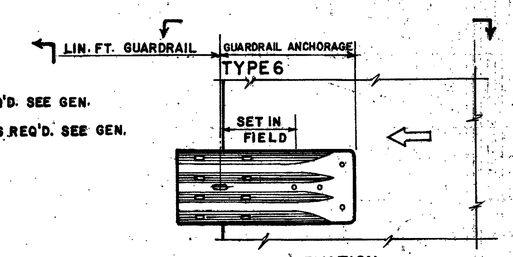
FOR POST SPACINGS SEE DETAIL AT BOTTOM LEFT AND SPECIAL NOTE.



PLAN



END ELEVATION
(SHOWN FOR TRAILING END OF ONE-WAY TRAFFIC FLOW)



ELEVATION

DETAIL "D"

(FOR RETAINING WALL OR ABUTMENT)

BY	REVISION	DATE
R.M.U.	ADD "T" BEAM CONN.	12-4-89
R.M.U.	GEN. NOTE NO. 2	7-27-81

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD

GUARDRAIL ANCHORAGE TYPES 5 & 6
AND
GUARDRAIL ATTACHMENT TO COLUMNS, PIERS OR WALLS

NO SCALE — NOVEMBER, 1980

DES. L-TO EEL
REV. R.M.U.
TRA. G.M.E.
CHK. R.K.C.

(SUBMITTED) Floyd E. Hardy — STATE ROAD & AIRPORT DESIGN ENG.
(APPROVED) Thomas D. Moreland — STATE HIGHWAY ENGINEER

NUMBER 4013

FORM EF3