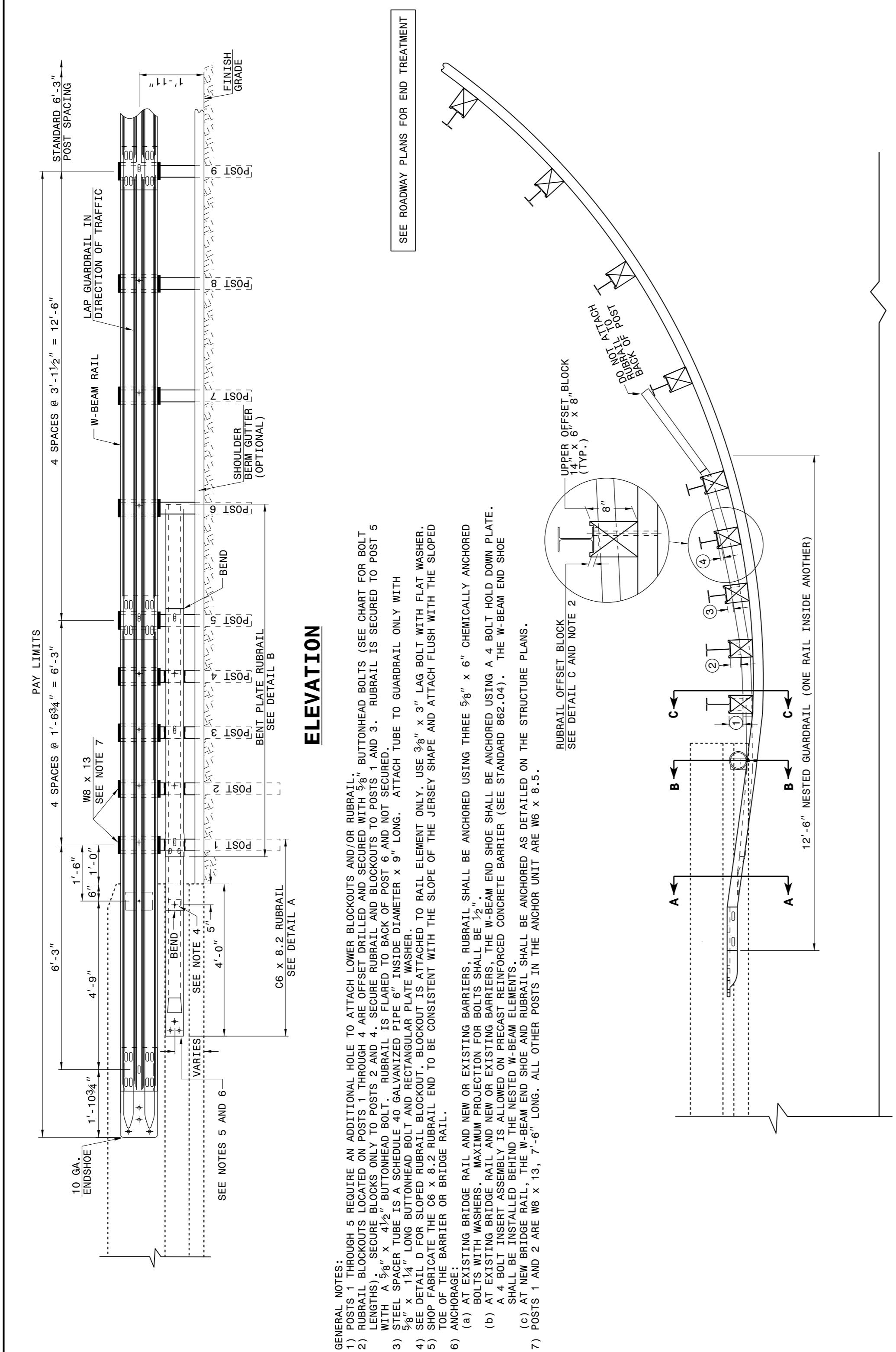


STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
TYPE B-77 SHOP CURVED

SHEET 1 OF 2
B-77SC



ELEVATION

- GENERAL NOTES:
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL. RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 3/8" BUTTOMHEAD BOLTS (SEE CHART FOR BOLT SIZES). POSTS 1 THROUGH 4 REQUIRE 5/8" BUTTOMHEAD BOLTS TO BE INSTALLED THROUGH RUBRAIL. RUBRAIL IS FLARED BACK OF POSTS AND NOT SECURED WITH 5/8" x 1 1/4" LONG BUTTOMHEAD BOLTS. RUBRAIL IS FLARED BACK OF POSTS AND NOT SECURED WITH 5/8" x 1 1/4" LONG BUTTOMHEAD BOLTS.
 - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9' LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" x 1 1/4" LONG BUTTOMHEAD BOLT AND RECTANGULAR PLATE WASHER.
 - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER. FINISH GRADE TO BE MAINTAINED AT THE TOP OF THE BARRIER OR BRIDGE RAIL.
 - ANCHORAGE:
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, RUBRAIL SHALL BE ANCHORED USING THREE 5/8" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS SHALL BE 1/2".
 - AT NEW BRIDGE RAIL, THE W-BEAM END SHOE AND RUBRAIL SHALL BE ANCHORED USING A 4 BOLT WELD DOWN PLATE. A 4 BOLT INSERT ASSEMBLY IS REQUIRED TO BE PRECAST REINFORCED CONCRETE BARRIER (SEE STANDARD 682.04). THE W-BEAM END SHOE SHALL BE INSTALLED BEHIND THE NESTED W-BEAM ELEMENTS.
 - AT NEW BRIDGE RAIL, THE W-BEAM END SHOE AND RUBRAIL SHALL BE ANCHORED AS DETAILED ON THE STRUCTURE PLANS.
 - POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.
 - POSTS 3 AND 4 ARE W6 x 8.2 RUBRAIL. SEE DETAIL A.
 - POSTS 5 AND 6 VARIES. SEE DETAIL B.
 - POSTS 7 AND 8 ARE W6 x 13. SEE NOTE 7.
 - POSTS 9 AND 10 ARE W6 x 13. SEE NOTE 7.
 - POSTS 11 AND 12 ARE W6 x 13. SEE NOTE 7.
 - POSTS 13 AND 14 ARE W6 x 13. SEE NOTE 7.
 - POSTS 15 AND 16 ARE W6 x 13. SEE NOTE 7.
 - POSTS 17 AND 18 ARE W6 x 13. SEE NOTE 7.
 - POSTS 19 AND 20 ARE W6 x 13. SEE NOTE 7.
 - POSTS 21 AND 22 ARE W6 x 13. SEE NOTE 7.
 - POSTS 23 AND 24 ARE W6 x 13. SEE NOTE 7.
 - POSTS 25 AND 26 ARE W6 x 13. SEE NOTE 7.
 - POSTS 27 AND 28 ARE W6 x 13. SEE NOTE 7.
 - POSTS 29 AND 30 ARE W6 x 13. SEE NOTE 7.
 - POSTS 31 AND 32 ARE W6 x 13. SEE NOTE 7.
 - POSTS 33 AND 34 ARE W6 x 13. SEE NOTE 7.
 - POSTS 35 AND 36 ARE W6 x 13. SEE NOTE 7.
 - POSTS 37 AND 38 ARE W6 x 13. SEE NOTE 7.
 - POSTS 39 AND 40 ARE W6 x 13. SEE NOTE 7.
 - POSTS 41 AND 42 ARE W6 x 13. SEE NOTE 7.
 - POSTS 43 AND 44 ARE W6 x 13. SEE NOTE 7.
 - POSTS 45 AND 46 ARE W6 x 13. SEE NOTE 7.
 - POSTS 47 AND 48 ARE W6 x 13. SEE NOTE 7.
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 - POSTS 69 AND 70 ARE W6 x 13. SEE NOTE 7.
 - POSTS 71 AND 72 ARE W6 x 13. SEE NOTE 7.
 - POSTS 73 AND 74 ARE W6 x 13. SEE NOTE 7.
 - POSTS 75 AND 76 ARE W6 x 13. SEE NOTE 7.
 - POSTS 77 AND 78 ARE W6 x 13. SEE NOTE 7.
 - POSTS 79 AND 80 ARE W6 x 13. SEE NOTE 7.
 - POSTS 81 AND 82 ARE W6 x 13. SEE NOTE 7.
 - POSTS 83 AND 84 ARE W6 x 13. SEE NOTE 7.
 - POSTS 85 AND 86 ARE W6 x 13. SEE NOTE 7.
 - POSTS 87 AND 88 ARE W6 x 13. SEE NOTE 7.
 - POSTS 89 AND 90 ARE W6 x 13. SEE NOTE 7.
 - POSTS 91 AND 92 ARE W6 x 13. SEE NOTE 7.
 - POSTS 93 AND 94 ARE W6 x 13. SEE NOTE 7.
 - POSTS 95 AND 96 ARE W6 x 13. SEE NOTE 7.
 - POSTS 97 AND 98 ARE W6 x 13. SEE NOTE 7.
 - POSTS 99 AND 100 ARE W6 x 13. SEE NOTE 7.

PLAN
GUARDRAIL ANCHOR UNIT TYPE B-77

SHEET 1 OF 2
B-77SC

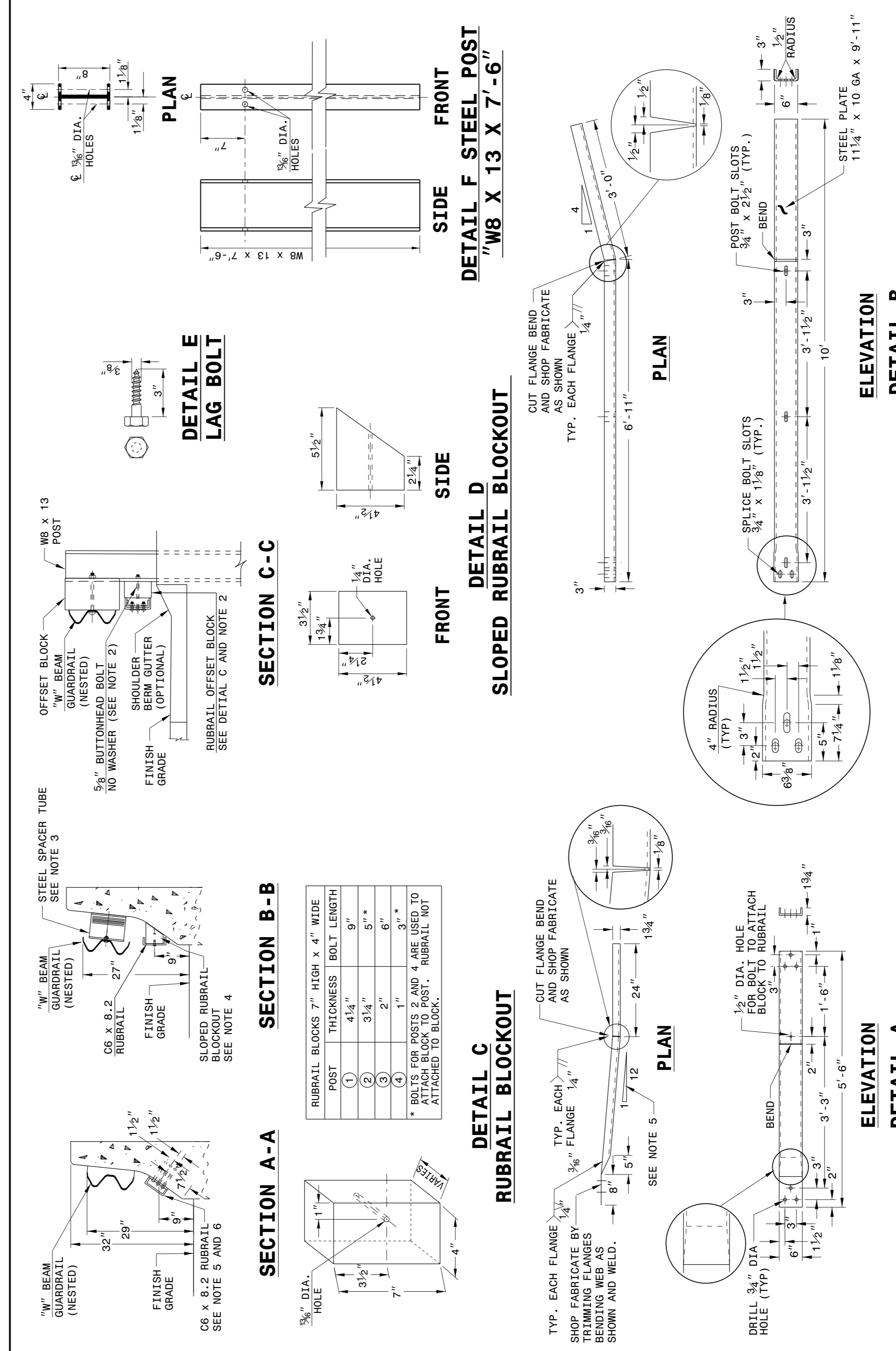
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SHEET 2 OF 2
B-77SC



SECTION A-A

POST	THICKNESS	BOLT LENGTH
1	4 1/4"	9"
2	3 1/4"	5"
3	2"	6"
4	1"	3"

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

SECTION B-B

POST	THICKNESS	BOLT LENGTH
1	4 1/4"	9"
2	3 1/4"	5"
3	2"	6"
4	1"	3"

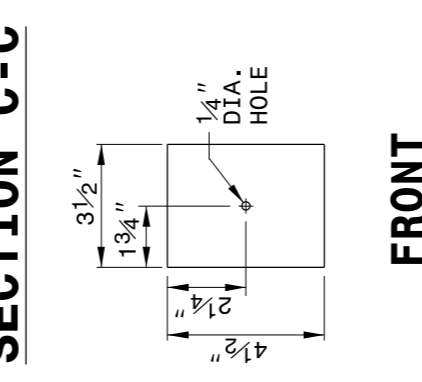
* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

SECTION C-C

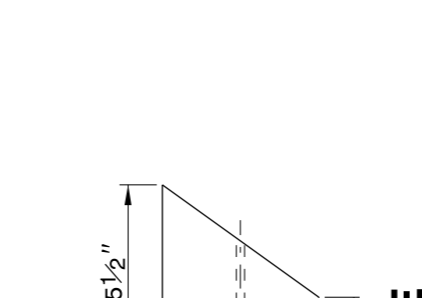
POST	THICKNESS	BOLT LENGTH
1	4 1/4"	9"
2	3 1/4"	5"
3	2"	6"
4	1"	3"

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

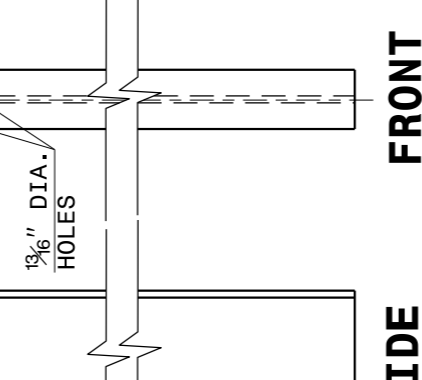
SECTION D



SECTION E



SECTION F



SHEET 2 OF 2
B-77SC

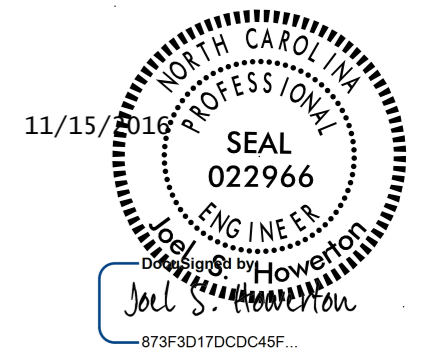
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GUARDRAIL ANCHOR UNIT
TYPE B-77 SHOP CURVED

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. WARD DATE: 06-04-04
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC. : miscguardrail/NCHRP350approved/B-77.dgn



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\$\$\$\$\$CHECKEDBY\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$