PROJECT REFERENCE NO.	SHEET NO.
B-4766	2C-1

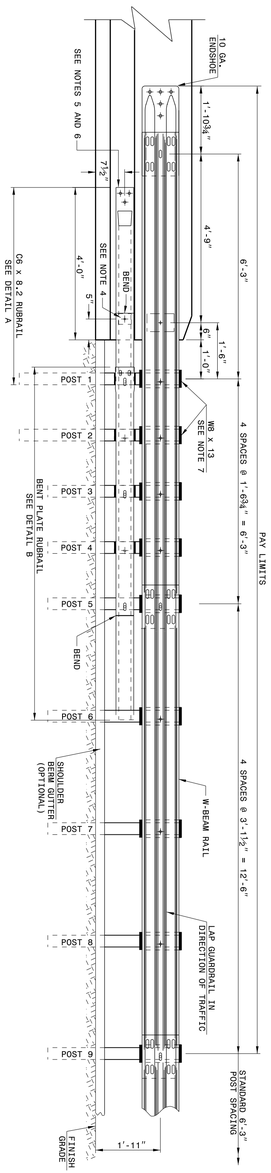
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SHEET 4 OF 7
862D03

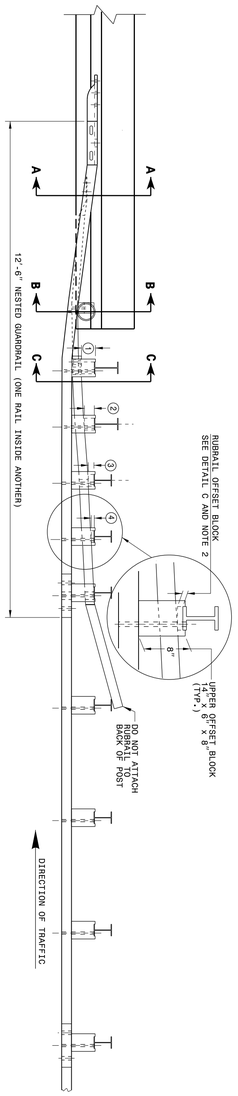
ENGLISH DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

GENERAL NOTES:
1) RUBRAIL THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
2) RUBRAIL BLOCKOUTS LOCATED ON POSTS THROUGH 4 ARE OFFSET VERTICALLY AND GROUPED WITH 5's. BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
3) STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" x 6" CHEMICALLY ANCHORED BUTTONHEAD BOLT AND ROUND PLATE WASHER. ATTACH TUBE TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER.
4) SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER. SHAPE AND ATTACH FLUSH WITH THE SLOPED
5) SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND AT TOE OF THE BARRIER OR BRIDGE RAIL.
6) ANCHORAGE:
(a) FOR EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE 5/8" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1/2".
(b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04). INSTALL THE W-BEAM END SHOE BEHIND THE NESTED W-BEAM ELEMENTS. A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01).
(c) FOR BRIDGE RAIL, ANCHOR W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.
7) POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.

ELEVATION



PLAN



GUARDRAIL ANCHOR UNIT TYPE B-77

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
4/13/2016
DocuSigned by: Joel Howerton, PE
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
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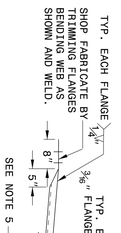
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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

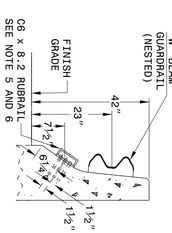
SHEET 5 OF 7
862D03

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SECTION A-A



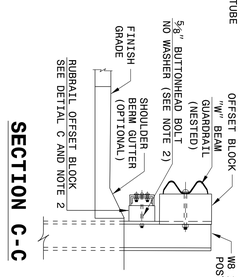
SECTION B-B



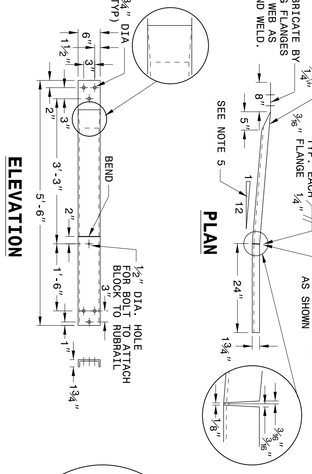
RUBRAIL BLOCKS 7" HIGH x 4" WIDE			
POST	THICKNESS	BOLT	LENGTH
①	4½"		9"
③	3¼"		5"*
②	2"		6"*
④	1"		3"*

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

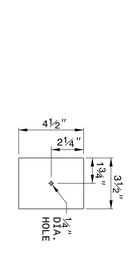
SECTION C-C



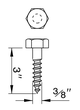
DETAIL C
RUBRAIL BLOCKOUT



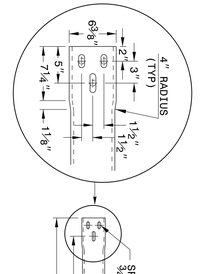
FRONT
SIDE
DETAIL D
SLOPED RUBRAIL BLOCKOUT



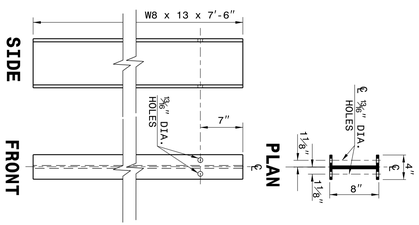
DETAIL E
LAG BOLT



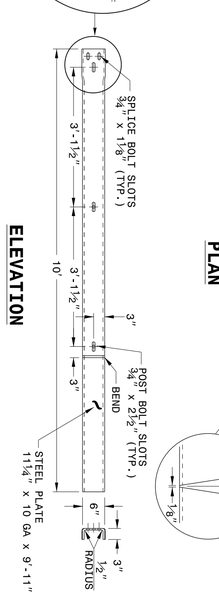
ELEVATION
DETAIL A
C6 x 8.2 RUBRAIL



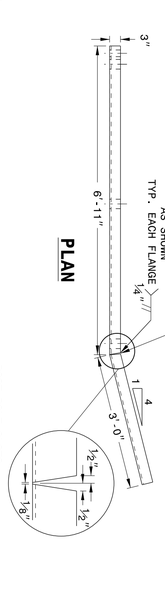
FRONT
SIDE
DETAIL F STEEL POST
"W8 X 13 X 7'-6"



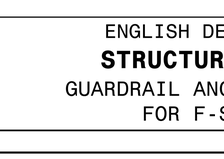
ELEVATION
DETAIL B
BENT PLATE RUBRAIL



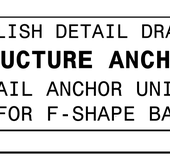
PLAN



DETAIL B
BEND PLATE RUBRAIL



DETAIL C
RUBRAIL BLOCKOUT



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