



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
NASHVILLE, TENNESSEE 37243-0350

INSTRUCTIONAL BULLETIN NO. 02-2

Regarding Standard Drawings To Be Printed With The Plans
When Using Type 38 Guardrail Terminals

Effective for the April 26, 2002 letting, when using type 38 guardrail terminals the following revised standard drawings are to be printed with the plans. They shall be identified on the lower left hand corner of the index sheet – **"To be printed with the plans"**.

Copies of these drawings are attached to this instructional bulletin.

DWG. NO.	Current REVISION DATE	STANDARD TITLE
S-GR-35 SM-GR-35	10-10-01	SKT GUARDRAIL TERMINAL ANCHOR (TYPE 38) POST LAYOUT AND ERECTION DETAILS
S-GR-37 SM-GR-37	10-01-01	SKT (2 TUBE) POST AND ASSEMBLY DETAILS

A handwritten signature in black ink, appearing to read "Jeff C. Jones", is written over a horizontal line.

Jeff C. Jones, C.E. Director
Design Division

REV. 10-10-01. CHANGED SPECIAL INSTALLATION NOTE AND MODIFIED GUARDRAIL TERMINAL IMPACT HEAD.
 REV. 2-21-01. CHANGED PAY ITEM NO. TO 5011 TAPER OVER SYSTEM. SEE SPECIAL INSTALLATION NOTE.

REV. 10-10-01. CHANGED SPECIAL INSTALLATION NOTE AND MODIFIED GUARDRAIL TERMINAL IMPACT HEAD.
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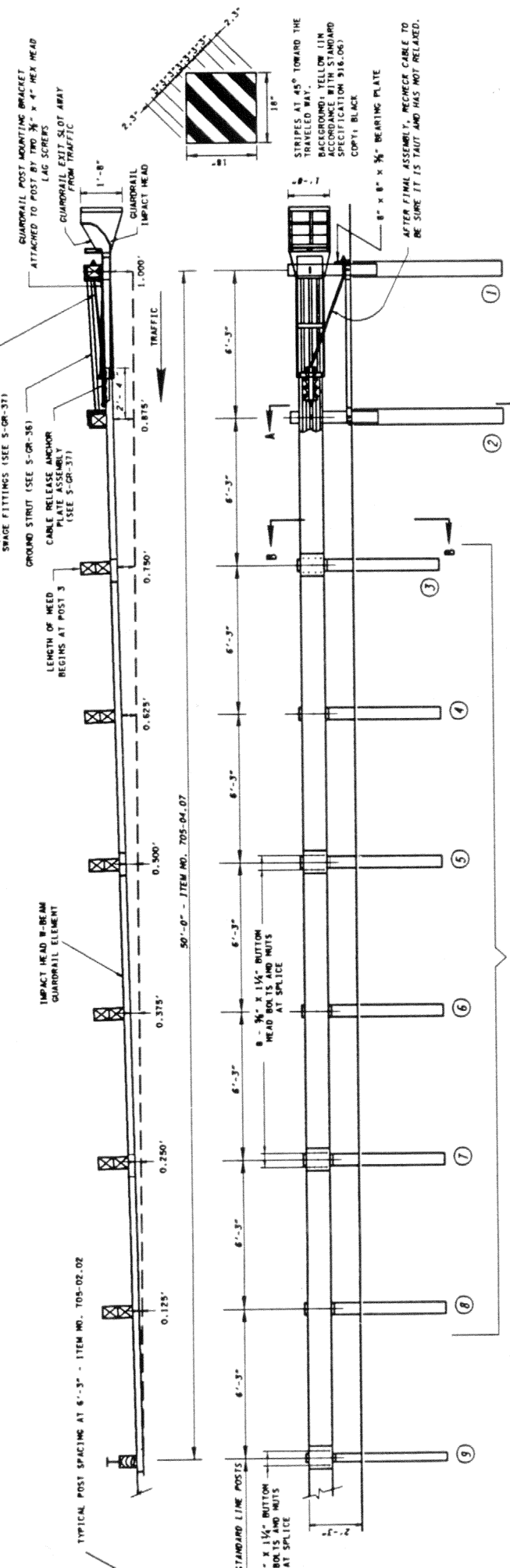
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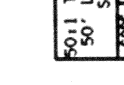
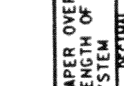
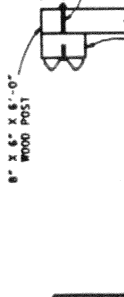
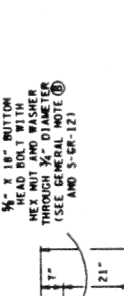
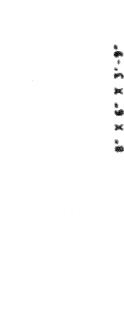
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SPECIAL INSTALLATION NOTE
 FOR THE TYPE 38 GUARDRAIL TERMINAL TO FUNCTION AS IT WAS CRASH TESTED UNDER NCHRP-350 TEST LEVEL 3 THE EARTH PAD UNDER IT MUST BE CONSTRUCTED PER STANDARD DRAWING NO. S-GR-38.



MINOR REVISION - DIMA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

SKT-350
 GUARDRAIL TERMINAL
 ANCHOR (TYPE 38)
 POST LAYOUT AND
 ERECTION DETAILS

7-28-98 S-GR-35

FOR THE TYPE 38 GUARDRAIL TERMINAL TO FUNCTION AS IT WAS CRASH TESTED UNDER NCHRP-350 TEST LEVEL 3 THE EARTH PAD UNDER IT MUST BE CONSTRUCTED PER STANDARD DRAWING NO. S-GR-38.

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CODE NO.	DESCRIPTION	QUANTITY
1	1'-8" IMPACT HEAD	1
2	8'-0" X 6'-0" WOOD POST	1
3	2" X 5/16" PIPE SLEEVE	1
4	1/4" DIA. X 1 1/4" HEX HEAD BOLTS	1
5	NUTS AND WASHERS	1
6	8'-0" X 6'-0" STEEL TUBE SLEEVE	1
7	1'-8" IMPACT HEAD	1
8	8'-0" X 6'-0" WOOD POST	1
9	2" X 5/16" PIPE SLEEVE	1
10	1/4" DIA. X 1 1/4" HEX HEAD BOLTS	1
11	NUTS AND WASHERS	1
12	8'-0" X 6'-0" STEEL TUBE SLEEVE	1

GENERAL NOTES

(A) THE POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF THE GUARDRAIL.
 (B) THE 3/8" FLAT WASHER IS USED UNDER THE NUT. BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
 (C) SKT-350 (2-TUBE) TERMINAL IS TO BE INSTALLED UNDER THE PRICE BID FOR ITEM NO. 705-04.07 TANGENT ENERGY ABSORBING TERMINAL (NCHRP 350-TL3) PER EACH.
 (D) A FOUR (4) TUBE OR EIGHT (8) TUBE OPTION MAY BE USED. SHOP DRAWINGS WILL BE REQUIRED.

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 (D) A FOUR (4) TUBE OR EIGHT (8) TUBE OPTION MAY BE USED. SHOP DRAWINGS WILL BE REQUIRED.

REV. 2-1-99: MADE GENERAL REVISION.
 □ REV. 10-10-01: MODIFIED GUARDRAIL IMPACT HEAD DETAILS AND DETAIL FOR GUARDRAIL POST MOUNTING BRACKET.

GENERAL NOTES

(A) THE NO. 1 AND NO. 2 BREAKAWAY POSTS WILL HAVE 8" IN DIA. HOLES IN BOTH BREAKAWAY POSTS AND WILL HAVE A 2 1/4" DIA. HOLE CENTERED 2'-3" BELOW THE TOP OF THE POST ON THE 8" SIDE SHOWN. ALL POSTS GUARDRAIL CABLES SHALL BE 3/8" DIA. STEEL TUBES WITH A TOP-OF-RAIL HEIGHT OF 2'-3".

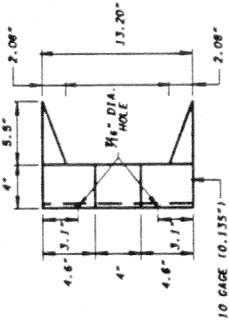
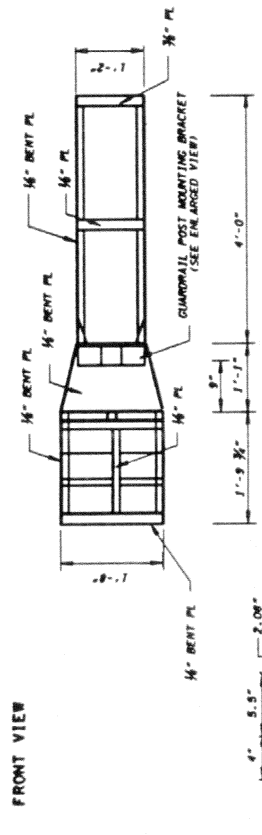
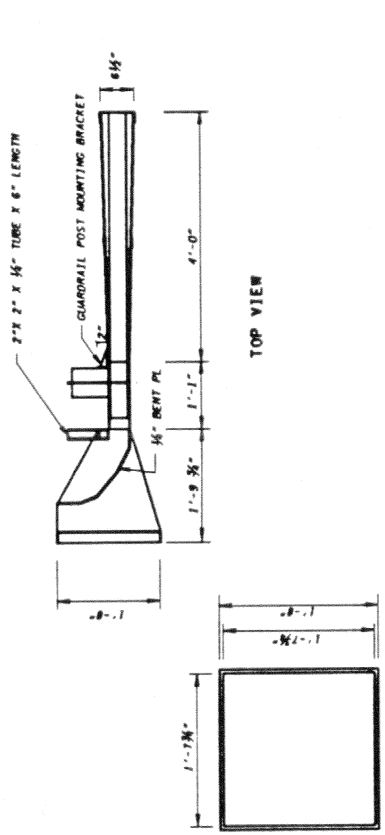
(B) ALL HOLES IN WOOD POSTS ARE TO BE DRILLED BEFORE PRESERVATIVE TREATMENT.

(C) ALL CUTTING, DRILLING, AND SHEDDING OF STEEL COMPONENTS SHALL BE DONE BEFORE GALVANIZING.

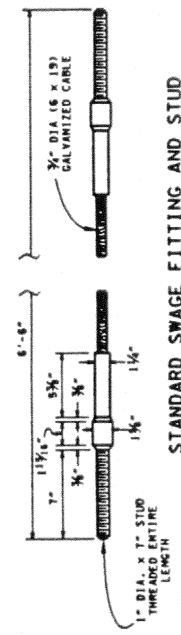
(D) THE FINISHED CABLE ASSEMBLY SHALL BE TIGHTENED TO 11-15 IN TENSION WITH NO SAG.

(E) SEE STANDARD DRAWING NOS. 5-CR-35 AND 5-CR-36 FOR ADDITIONAL DETAILS AND GENERAL NOTES.

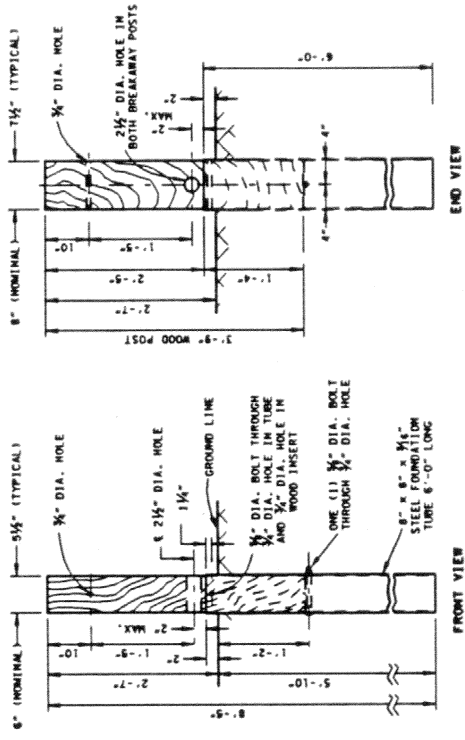
(F) THE STEEL TUBES ARE TO BE DRIVEN INTO GROUND BEFORE THE WOODEN POSTS ARE INSERTED.



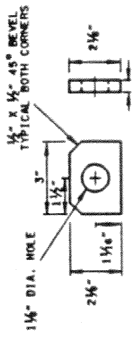
GUARDRAIL POST MOUNTING BRACKET



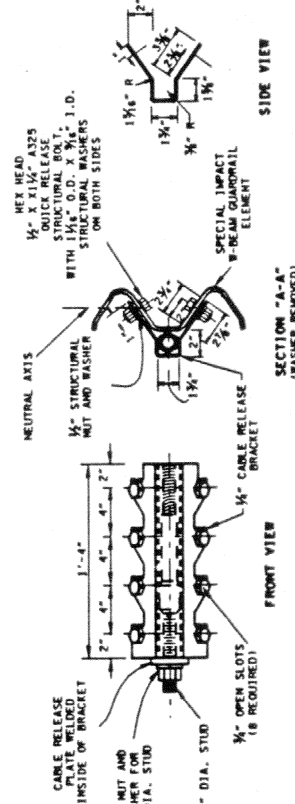
STANDARD SWAGE FITTING AND STUD
 NOTE: CABLE TO BE SWAGE-CONNECTED



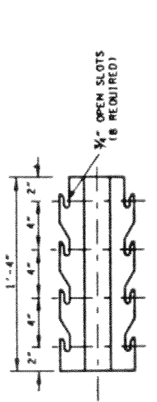
NO. 1 & 2 BREAKAWAY POSTS WITH 6'-0" TUBE SLEEVE



CABLE RELEASE PLATE



CABLE RELEASE ANCHOR PLATE ASSEMBLY DETAILS
 SEE DRAWING NO. 5-CR-35 FOR RELATION OF SECTION "A-A" TO FRONT ELEVATION VIEW OF GUARDRAIL ANCHORS

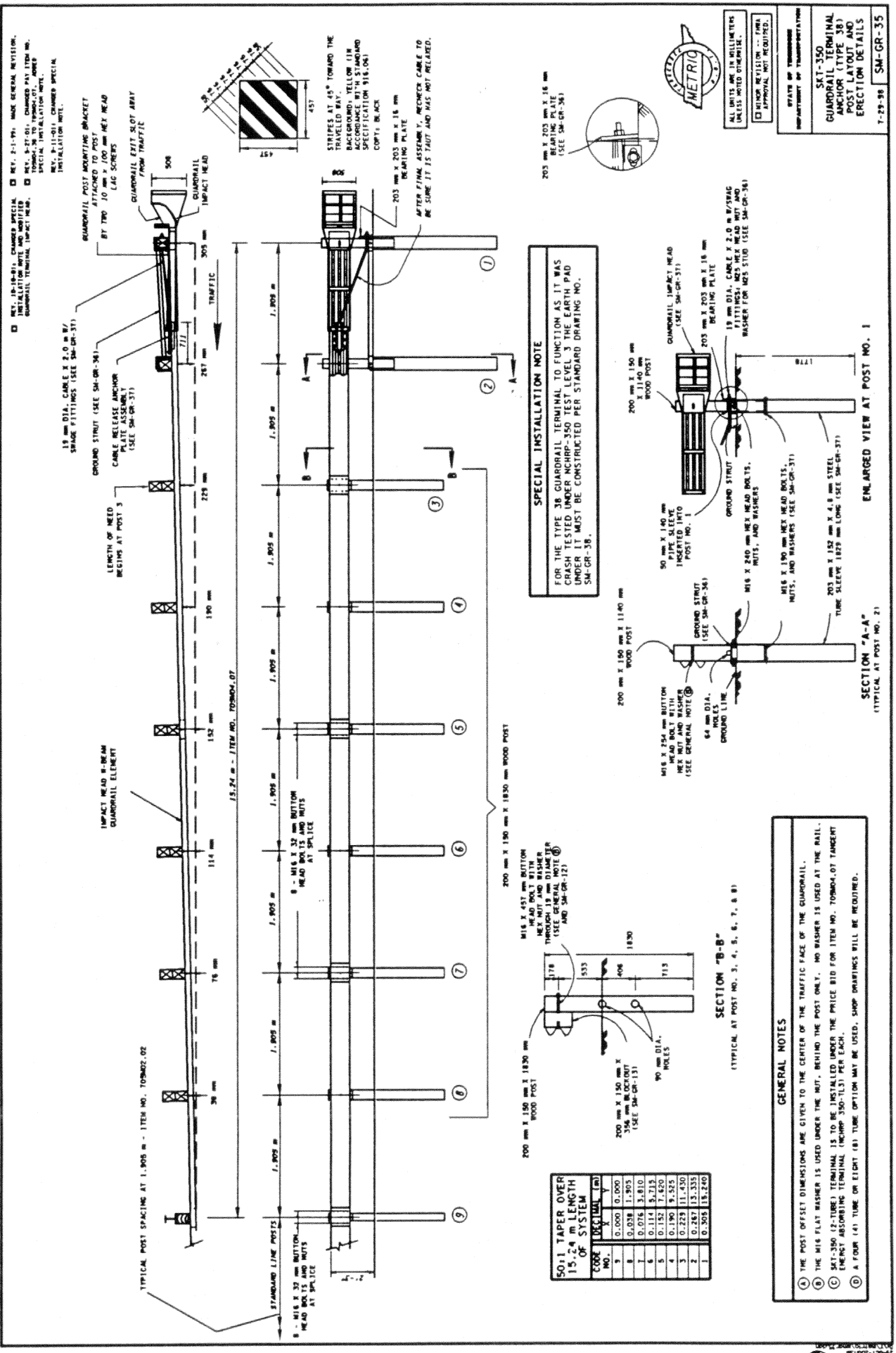


CABLE RELEASE BRACKET

STATE OF TEXAS
 DEPARTMENT OF TRANSPORTATION

SKT-350
 (2 TUBE)
 POST AND
 ASSEMBLY DETAILS

7-29-98 S-CR-37



- REF. 10-10-B1 - CHANGED SPEC. INSTALLATION NOTE AND MODIFIED GUARDRAIL TERMINAL IMPACT HEAD.
- REF. 8-1-79 - CHANGED MATERIALS TO TORBODA-07 TUBE.
- REF. 8-1-79 - CHANGED MATERIALS TO TORBODA-07 TUBE.
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- REF. 8-1-79 - CHANGED MATERIALS TO TORBODA-07 TUBE.

19 mm DIA. CABLE X 2.0 m W/ SPAGE FITTINGS (SEE SM-GR-37)

GROUND STRUT (SEE SM-GR-36)

CABLE RELEASE ANCHOR PLATE ASSEMBLY (SEE SM-GR-37)

LENGTH OF NEED BEGINS AT POST 3

IMPACT HEAD B-BEAM GUARDRAIL ELEMENT

GUARDRAIL POST MOUNTING BRACKET ATTACHED TO POST BY TWO 20 mm HEX HEAD LAG SCREWS

GUARDRAIL EXIT SLOT ARRAY FROM TRAFFIC

GUARDRAIL IMPACT HEAD

TRAFFIC

500 mm

300 mm

287 mm

225 mm

190 mm

152 mm

114 mm

76 mm

30 mm

15.24 m - ITEM NO. TORBODA-07

1.905 m

1.905 m

1.905 m

1.905 m

1.905 m

1.905 m

1.905 m

1.905 m

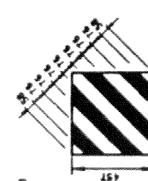
1.905 m

1.905 m

1.905 m

1.905 m

1.905 m



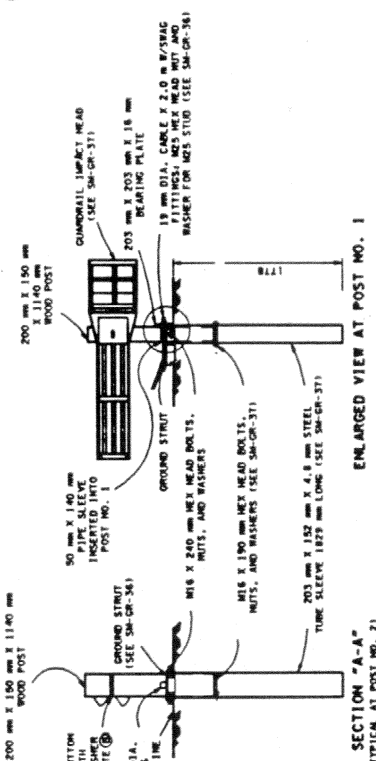
STRIPES AT 45° TOWARD THE TRAVEL WAY. BACKGROUND - YELLOW (IN ACCORDANCE WITH STANDARD SPECIFICATION 916.06) OPTI-BLACK

203 mm X 203 mm X 16 mm BEARING PLATE

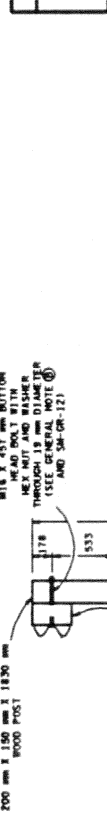
AFTER FINAL ASSEMBLY, CHECKER CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

SPECIAL INSTALLATION NOTE

FOR THE TYPE 3B GUARDRAIL TERMINAL TO FUNCTION AS IT WAS CRASH TESTED UNDER NCHRP-350 TEST LEVEL 3 THE EARTH PAD UNDER IT MUST BE CONSTRUCTED PER STANDARD DRAWING NO. SM-GR-38.



SECTION "A-A" (TYPICAL AT POST NO. 2)



SECTION "B-B" (TYPICAL AT POST NO. 3, 4, 5, 6, 7, 8, 9)

NO.	COOR	DECIMAL	MM
1	0.000	0.000	0
2	0.038	1.505	38
3	0.076	3.010	76
4	0.114	4.515	114
5	0.152	6.020	152
6	0.190	7.525	190
7	0.228	9.030	228
8	0.267	10.535	267
9	0.305	12.040	305

50:1 TAPER OVER 15.24 m LENGTH OF SYSTEM



ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

□ UNLESS NOTED OTHERWISE, APPROVAL NOT REQUIRED.

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

SKT-350
GUARDRAIL TERMINAL ANCHOR (TYPE 3B)
POST LAYOUT AND ERECTION DETAILS

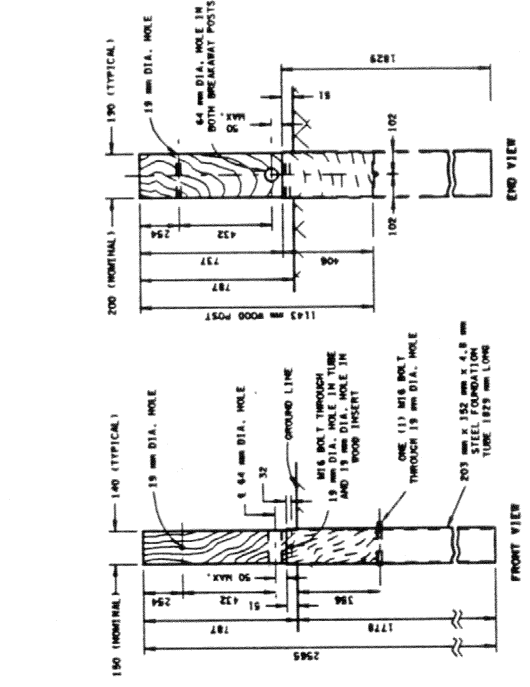
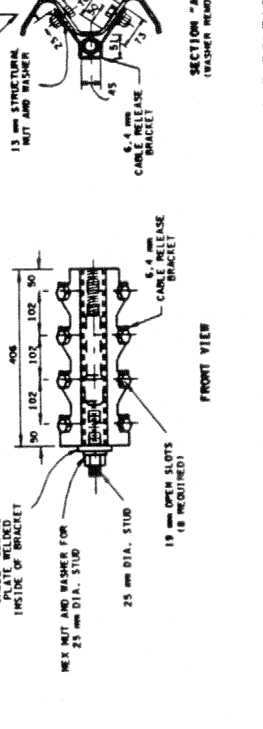
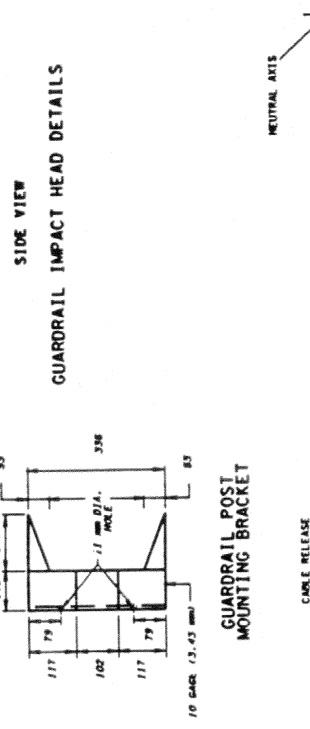
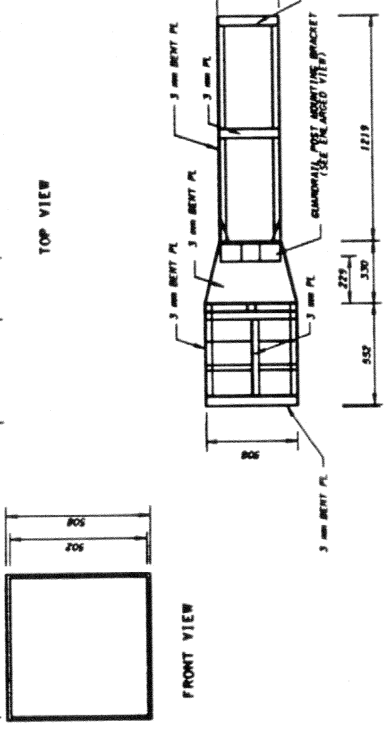
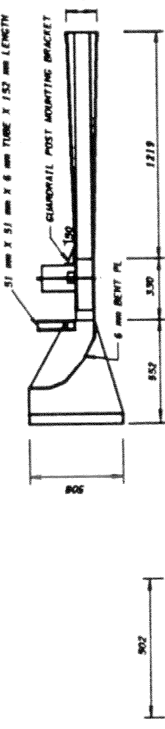
T-29-98 SM-GR-35

- GENERAL NOTES**
- ① THE POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF THE GUARDRAIL.
 - ② THE M16 FLAT WASHER IS USED UNDER THE NUT. NO WASHER IS USED AT THE RAIL.
 - ③ SKT-350 (2-TUBE) TERMINAL IS TO BE INSTALLED UNDER THE PRICE BID FOR ITEM NO. TORBODA-07 TANGENT ENERGY ABSORBING TERMINAL (NCHRP 350-TL3) PER EACH.
 - ④ A FOUR (4) TUBE OR EIGHT (8) TUBE OPTION MAY BE USED. SHOP DRAWINGS WILL BE REQUIRED.

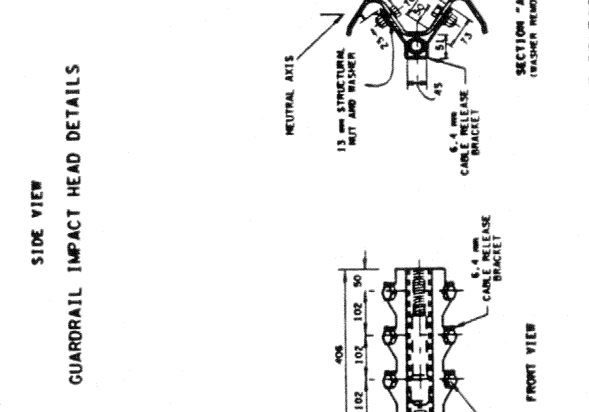
REV. 2-1-99: MADE GENERAL REVISION.
 REV. 10-10-01: MODIFIED GUARDRAIL POST AND GUARDRAIL POST MOUNTING BRACKET.
 REV. 5-2-03: MODIFIED GUARDRAIL POST MOUNTING BRACKET.

GENERAL NOTES

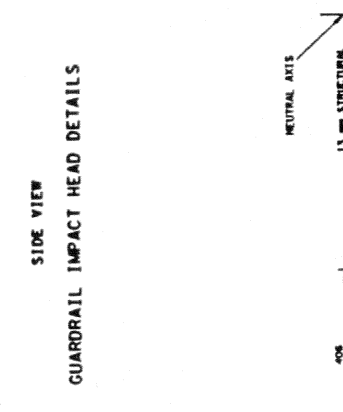
- THE NO. 1 AND NO. 2 BREAKAWAY POSTS WILL HAVE A 150 mm x 200 mm (NOMINAL) CROSS-SECTION WITH A 19 mm DIA. HOLE 64 mm DIAMETER HOLE CENTERED 88 mm BELOW THE TOP OF THE POST ON BOTH BREAKAWAY POSTS. THE GUARDRAIL WILL HAVE A TOP-OF-RAIL HEIGHT OF 686 mm.
- ALL HOLES IN WOOD POSTS ARE TO BE DRILLED BEFORE PRESERVATIVE TREATMENT.
- ALL CUTTING, DRILLING, AND WELDING OF STEEL COMPONENTS CALVANIZING.
- THE FINISHED CABLE ASSEMBLY SHALL BE IN TENSION WITH NO SAG.
- SEE STANDARD DRAWING NOS. SA-31-15 AND SA-31-16 FOR ADDITIONAL DETAILS AND GENERAL NOTES.
- THE STEEL TUBES ARE TO BE DRIVEN INTO GROUND BEFORE THE WOODEN POSTS ARE INSERTED.



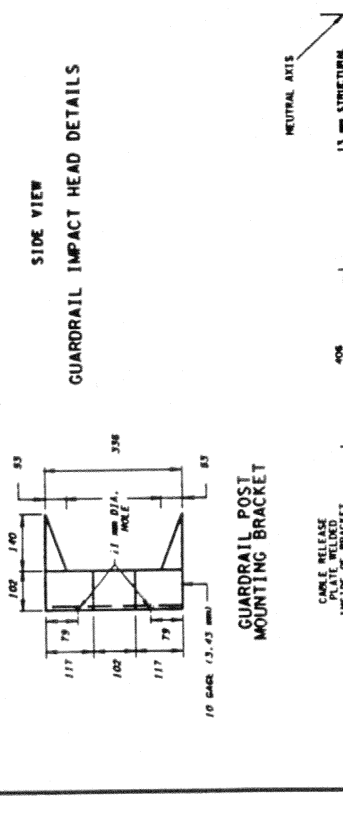
NO. 1 & 2 BREAKAWAY POSTS WITH 1829 mm TUBE SLEEVE



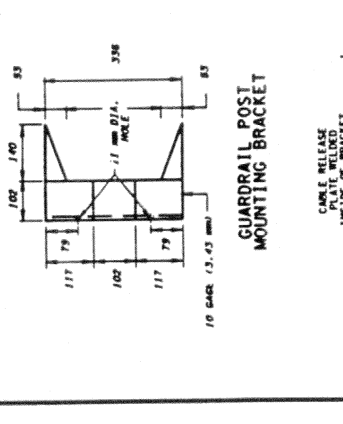
CABLE RELEASE PLATE



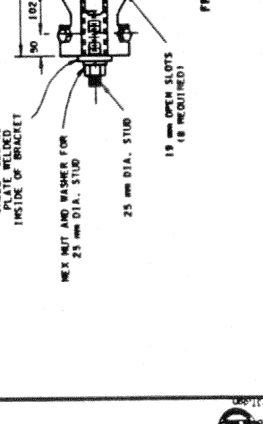
STANDARD SWAGE FITTING AND STUD



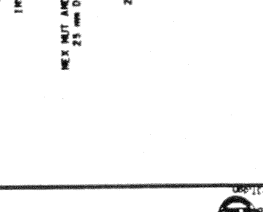
CABLE RELEASE BRACKET



CABLE RELEASE ANCHOR PLATE ASSEMBLY DETAILS



CABLE RELEASE BRACKET



CABLE RELEASE BRACKET

STATE OF TEXAS DEPARTMENT OF TRANSPORTATION
SAT-350 (2 TUBE) POST AND ASSEMBLY DETAILS
T-29-98 SM-GR-37

SEE DRAWING NO. SA-GR-35 FOR RELATION OF SECTION 'A-A' TO FRONT ELEVATION VIEW OF GUARDRAIL ANCHORS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
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