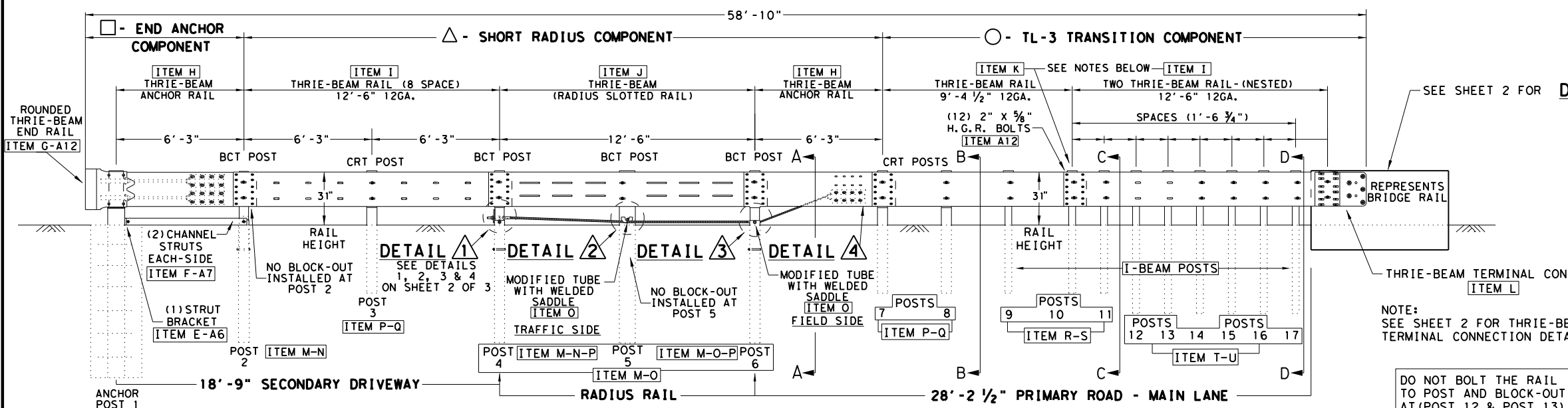
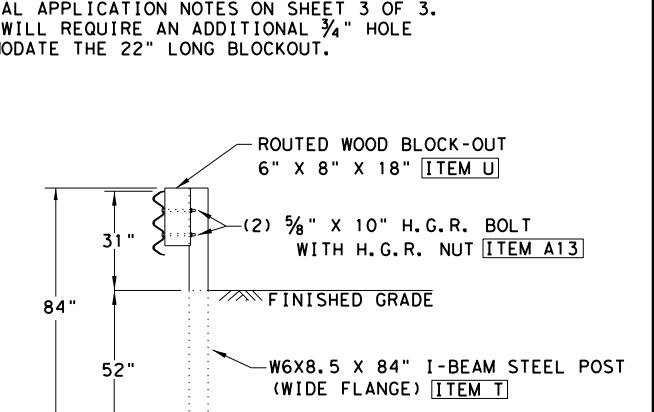
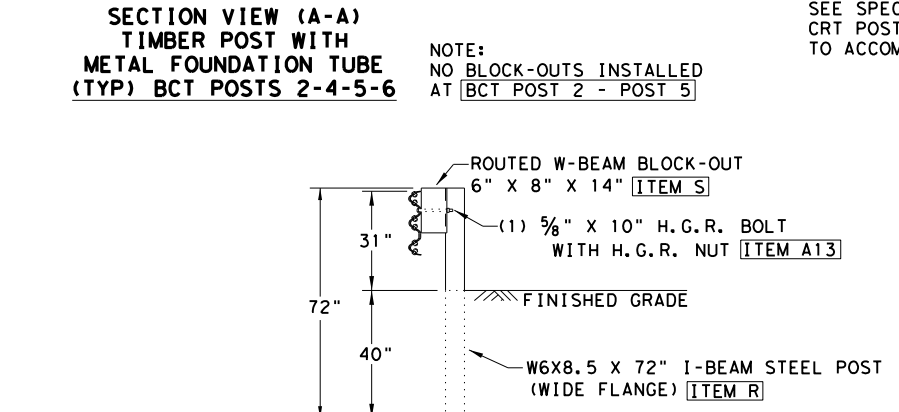
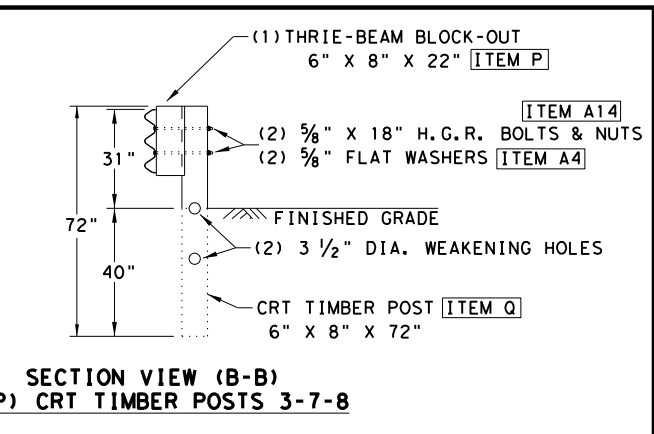
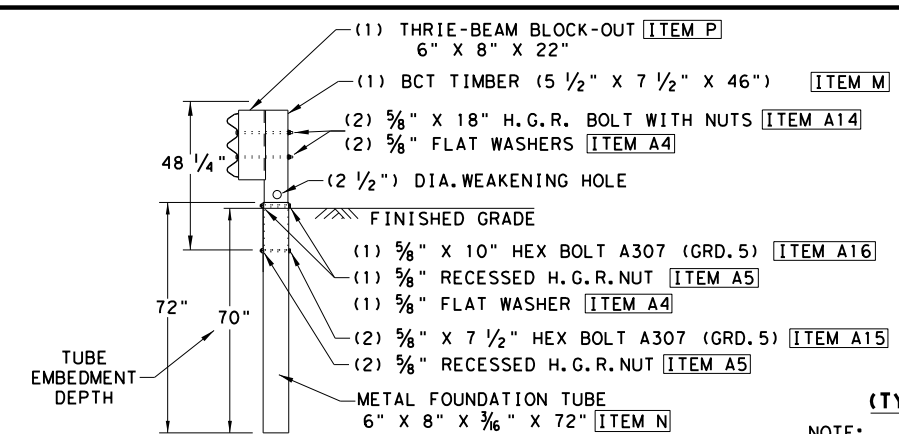
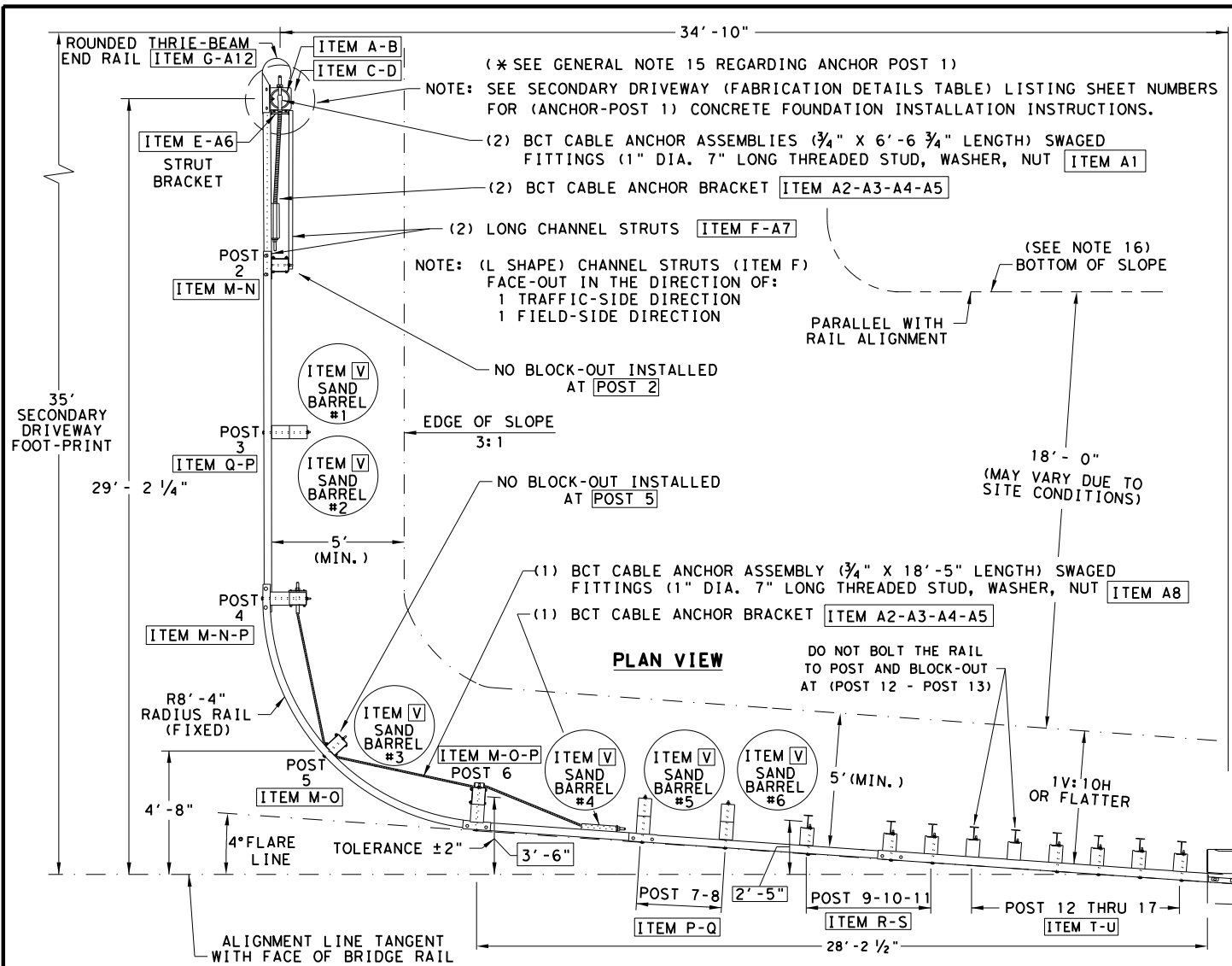


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DATE: FILE:



SECTION VIEW (A-A) TIMBER POST WITH METAL FOUNDATION TUBE (TYP) BCT POSTS 2-4-5-6

SECTION VIEW (B-B) (TYP) CRT TIMBER POSTS 3-7-8

SECTION VIEW C-C (TYP) AT POSTS 9-10-11

* SECTION VIEW D-D (TYP) AT POSTS 12-13-14-15-16-17

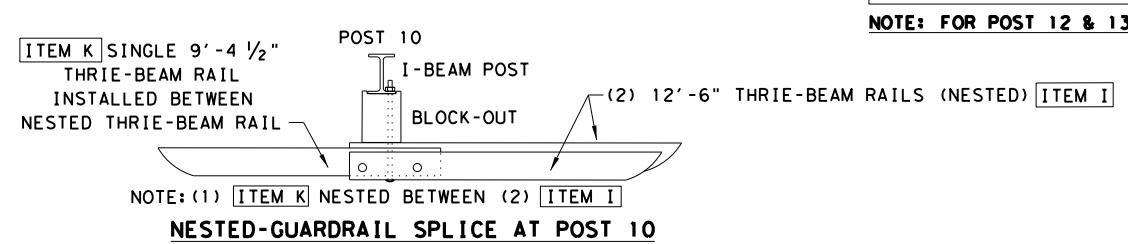
ANCHOR POST 1 FABRICATION DETAILS

SHEET DESCRIPTION	SHEET NUMBER
ANCHOR POST	SHEET 1 OF 8
ANCHOR SLEEVE	SHEET 2 OF 8
RADIUS RAIL	SHEET 3 OF 8
THRIE-BEAM RAILS	SHEET 4 OF 8
BCT TIMBER POST	SHEET 5 OF 8
STRUT RADIUS ANCHOR	SHEET 6 OF 8
FOUNDATION TUBE	SHEET 7 OF 8
ANCHOR CABLE	SHEET 8 OF 8

FULL-LENGTH ELEVATION VIEW

NOTE: ALL CABLE BRACKET ASSEMBLIES ARE LOCATED ON THE FIELD-SIDE. SHOWN HERE FOR CLARITY.

NOTE: FOR BCT POSTS 2-4-5-6 INSTALL (1) OR (2) ITEM A15-A4-A5 BOLT ASSEMBLIES TO PREVENT TIMBER POST SLIDING DOWN FOUNDATION TUBE.



(MASH TL-3 COMPLIANT)
TESTED TO MASH TL-3 WITH A 3:1 SLOPE

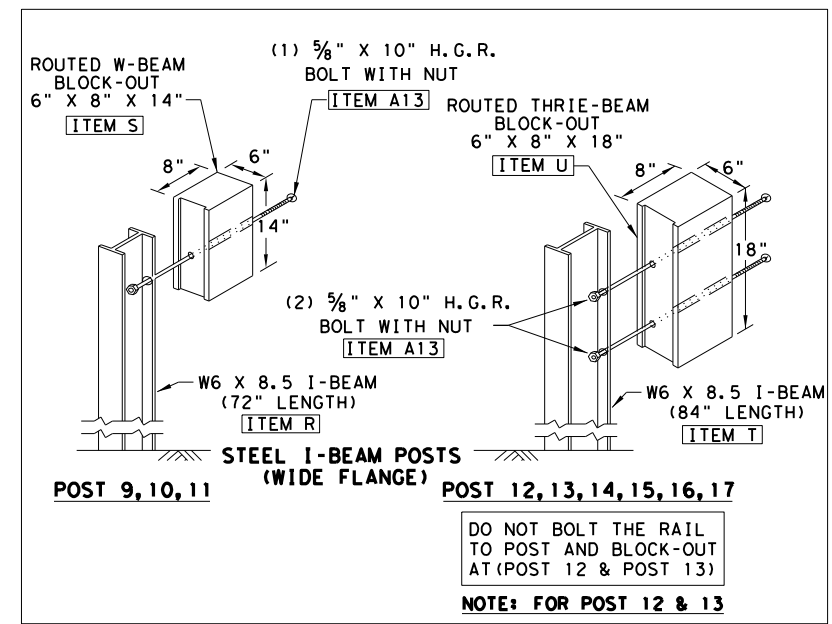
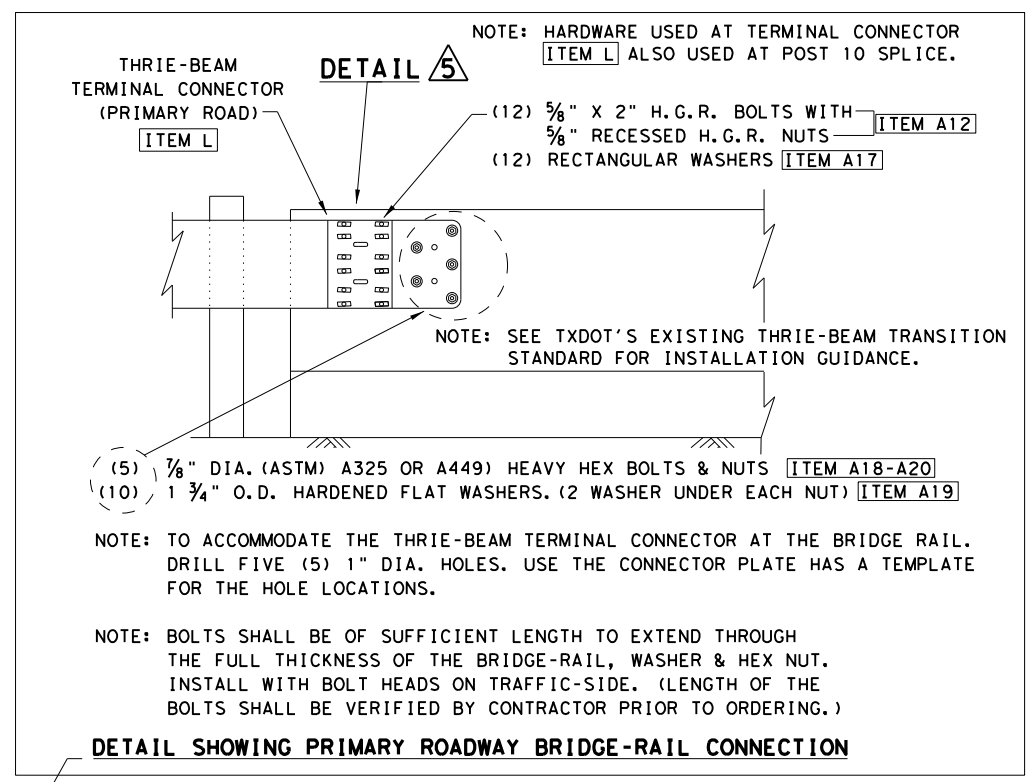
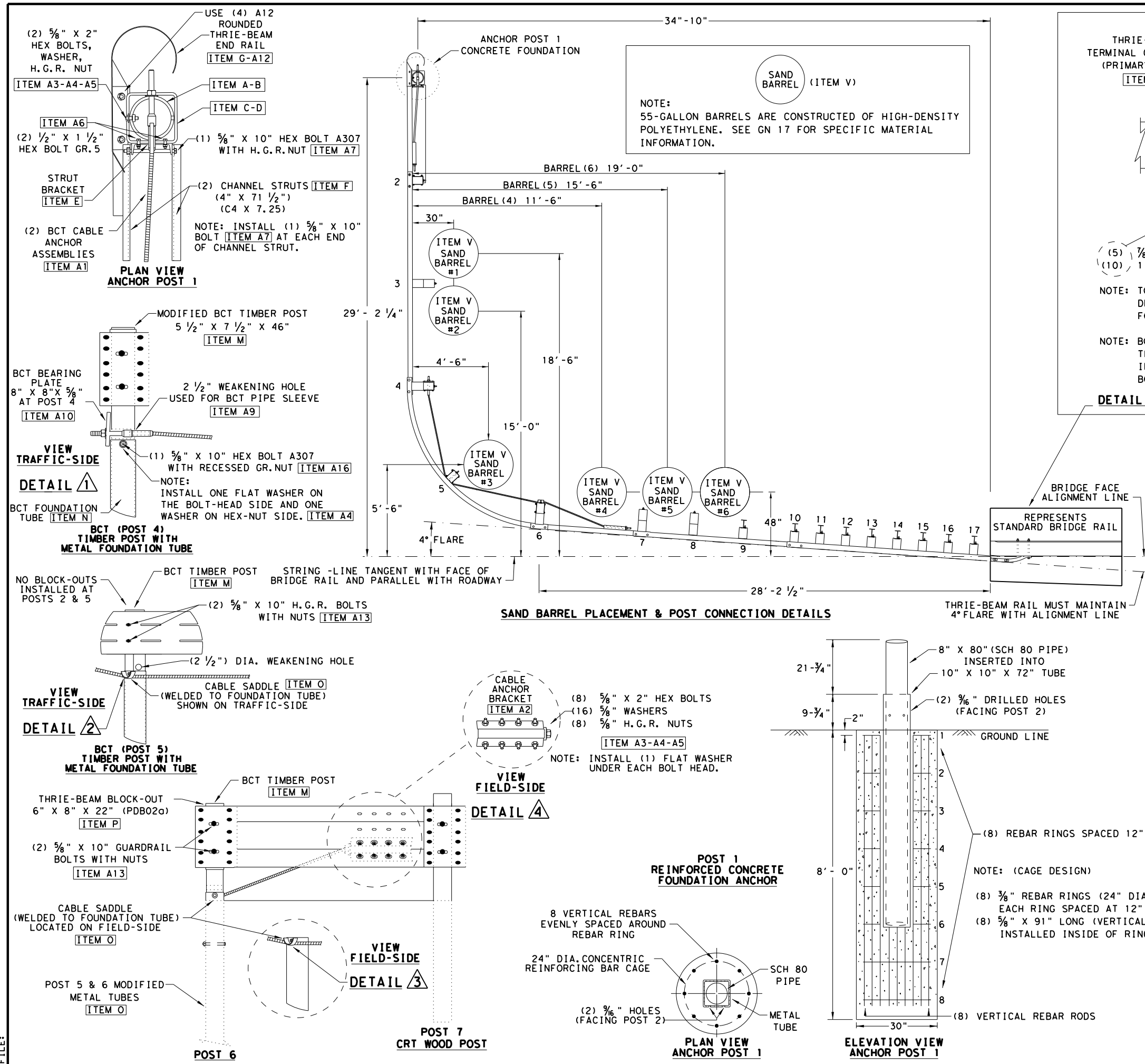
SHEET 1 OF 3

Texas Department of Transportation
Design Division Standard

TL-3 SHORT RADIUS GUARDRAIL MASH COMPLIANT SRG (TL-3) - 21

FILE: srg1321	TxDOT	CK:KM	DN:VP	CK:CGL
© TxDOT: FEBRUARY 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	

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(MASH TL-3 COMPLIANT)
TESTED TO MASH TL-3 WITH A 3:1 SLOPE

SHEET 2 OF 3

		Design Division Standard	
TL-3 SHORT RADIUS GUARDRAIL MASH COMPLIANT SRG (TL-3) - 21			
FILE: srg1321	TxDOT	CK:KM	DN:VP
© TxDOT: FEBRUARY 2021	CONT	SECT	JOB
REVISIONS			HIGHWAY
	DIST	COUNTY	SHEET NO.

DATE: FILE:

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DATE:
FILE:

ITEM	ALL LARGE & SMALL COMPONENT DESCRIPTIONS
A	POST 1 TOP (SCH.80 PIPE) (8" X 80" LENGTH)
B	POST 1 TOP (WELDED SUPPORT COLLAR 10" X 10" X 1/2" ASTM A36)
C	POST 1 TUBE (HSS 10" X 10" X 1/2" X 72" LENGTH) A500 GR.B
D	POST 1 (WELDED PLATE 9 1/4" X 9 1/4" X 1/8") A36
E	POST 1 STRUT BRACKET (C8 X 11.50 A36)
F	(POST 1 & 2) CHANNEL STRUTS (4" X 71 1/2") (C4 X 7.25)A36
G	THRIE-BEAM RAIL (END ANCHOR - ROUNDED TYPE) 12GA. (RTE02a)
H	THRIE-BEAM RAIL (ANCHOR) (6'-3" LENGTH) 12GA. (RWM14a)
I	THRIE-BEAM RAIL (8 SPACE) (12'-6" LENGTH) 12GA. (RTM08)
J	THRIE-BEAM RAIL (RADIUS 8'-4 1/2") (SLOTTED) 12GA.
K	THRIE-BEAM RAIL (3 SPACE) (9'-4 1/2" LENGTH) 12GA.
L	THRIE BEAM RAIL (TERMINAL CONNECTOR) (BRIDGE-RAIL) (RTE01b)
M	POST 2,4,5,6 BCT TIMBER (5 1/2" X 7 1/2" X 46") (PDF04)
N	POST 2,4, BCT TUBE (6" X 8" X 3/16" X 72" LENGTH) (PTE05)
O	POST 5,6 MODIFIED BCT TUBES (FOR WELDED CABLE SADDLES)
P	POST 3,4,6,7,8 THRIE-BEAM BLOCK-OUT (6" X 8" X 22") (PDB02a)
Q	POST 3,7,8 CRT TIMBER POSTS (6" X 8" X 72" LENGTH) (PDE09)
R	POST 9,10,11 I-BEAM POSTS (W6X8.5 X 72" LENGTH) (PWE01)
S	POST 9,10,11 ROUTED W-BEAM BLOCK-OUT (6" X 8" X 14") (PDB01b)
T	POST 12 THRU 17 I-BEAM POSTS (W6X8.5 X 84" LENGTH) (PWE07)
U	POST 12 THRU 17 ROUTED BLOCK-OUT (6" X 8" X 18") (PDB??)
V	SAND BARRELS 700-715 LBS
A1	BCT CABLE ANCHOR ASSEMBLIES (3/4" X 6'-6 3/4" LENGTH) (FCA01)
A2	BCT CABLE ANCHOR BRACKET (FPA01)
A3	5/8" X 2" HEX BOLT A307 GRD.5 (FOR CABLE BRACKETS)
A4	5/8" FLAT WASHER A307 GRD.5 (1 WASHER UNDER BOLT HEAD & 1 NUT)
A5	5/8" RECESSED H.G.R NUT (NUTS FOR HEX BOLTS)
A6	STRUT BRACKET HARDWARE (1/2" X 1 1/2") HEX BOLT A307 GRD.5
A7	CHANNEL STRUT HARDWARE (5/8" X 10") HEX BOLT A307 GRD.5
A8	BCT CABLE ANCHOR ASSEMBLY (FCA02) (3/4" X 18'-5" LENGTH)
A9	BCT POST SLEEVE (FMM02a) (POST 4 ONLY)
A10	BCT CABLE BEARING PLATE (5/8" X 8" X 8" (FPB01) (POST 4 ONLY)
A11	5/8" X 1 1/4" H.G.R. BOLTS (FBB01) (SPLICES AT POST 2,4,6,7)
A12	5/8" X 2" H.G.R. BOLTS (FBB02) (ROUND TERM-POST 10-END SPLICE)
A13	5/8" X 10" H.G.R. BOLTS (FBB03) (I-BEAM POSTS RAIL & BLOCKOUT)
A14	5/8" X 18" H.G.R. BOLTS (FBB04) (POSTS 3,4,6,7,8)
A15	5/8" X 7 1/2" HEX BOLTS A307 GRD.5 (BCT POSTS 2,4,5,6)
A16	5/8" X 10" HEX BOLTS A307 GRD.5 (BCT POSTS 2,4,5,6)
A17	RECTANGULAR WASHERS (FWR03) (FOR TERMINAL CONNECTOR RTE01b)
A18	7/8" X (LENGTH VARIES) HEX BOLTS A325 OR A449 GR.5
A19	1 3/4" O.D. HARDENED FLAT WASHER A325
A20	7/8" HEX NUT GR.5 A325

END ANCHOR (POST 1 & POST 2)	
ITEM	QTY
A	1
B	1
C	1
D	1
E	1
F	2
G	1
H	1
A1	2
A2	2
A3	18
A4	36
A5	22
A6	2
A7	2
A12	4

TL-3 SHORT RADIUS (POST 2 TO POST 7)	
ITEM	QTY
H	1
I	1
J	1
M	4
N	2
O	2
P	4
Q	2
A2	1
A3	8
A4	40
A5	20
A8	1
A9	1
A10	1
A11	48
A14	8
A15	8
A16	4

TL-3 TRANSITION (POST 7 TO POST 17)	
ITEM	QTY
I	2
K	1
L	1
P	1
Q	1
R	3
S	3
T	6
U	6
A12	24
A13	18
A14	2
A17	12
A18	5
A19	10
A20	5

TL-3 SHORT RADIUS GUARDRAIL COMPLETE SYSTEM	
ITEM	TOTAL QTY
A	1
B	1
C	1
D	1
E	1
F	2
G	1
H	2
I	3
J	1
K	1
L	1
M	4
N	2
O	2
P	5
Q	3
R	3
S	3
T	6
U	6
V	6
A1	2
A2	3
A3	26
A4	76
A5	42
A6	2
A7	2
A8	1
A9	1
A10	1
A11	48
A12	28
A13	18
A14	10
A15	8
A16	4
A17	12
A18	5
A19	10
A20	5

- GENERAL NOTES**
- FOR ADDITIONAL INSTALLATION INFORMATION AND GUIDANCE CONTACT: TEXAS DEPARTMENT OF TRANSPORTATION, (TXDOT'S DESIGN DIVISION). (512) 416-2678. THE EXACT POSITION OF MBGF SHALL BE SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THE SIGHT DISTANCE OF THE INSTALLATION WILL NEED TO BE VERIFIED WITH RESPECT TO THE SPECIFIC SITE PLACEMENT.
 - STEEL POSTS ARE NOT PERMITTED AT CRT OR BCT POST POSITIONS.
 - RAIL ELEMENT SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 12 1/2" OR 25 FOOT NOMINAL LENGTHS.
 - BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
 - FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
 - THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A SLOPE RATE OF NOT MORE THAN 1V:10H.
 - IT IS NOT RECOMMENDED THAT GUARD FENCE BE PLACED IN THE VICINITY OF CURBS.
 - GUARDRAIL POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
 - SPECIAL FABRICATION WILL BE REQUIRED FOR THRIE BEAM RAIL RADIUS (ITEM J).
 - ALL MATERIAL AND WORK INVOLVED IS SUBSIDIARY TO SHORT RADIUS BID ITEM, INCLUDING, BUT NOT LIMITED TO FOUNDATIONS, GRADING, THRIE BEAM RAIL, SAND BARRELS, AND OTHER PARTS.
 - ALL CABLE ASSEMBLIES SHOULD BE TAUT AFTER INSTALLATION. WHEN CABLES ARE MANIPULATED BY HAND THE CABLES SHOULD NOT MOVE MORE THAN 1" IN ANY DIRECTION PERPENDICULAR TO THE CABLE.
 - THE BCT BEARING PLATE INSTALLED AT POST 4 SHOULD BE ORIENTED SUCH THAT THE 3" DIMENSION FROM PLATE EDGE TO CENTER OF BOLT HOLE IS ON THE BOTTOM AND 5" DIMENSION FROM PLATE EDGE TO CENTER OF BOLT HOLE IS ON THE TOP.
 - FOUNDATION AT POST 1 SHALL BE CLASS C CONCRETE.
 - POST (1) IS NOT A CRASHWORTHY TERMINAL. THE DESIGN AND PLACEMENT OF POST (1) MUST BE OUTSIDE OF THE CLEAR ZONE OF THE SECONDARY ROADWAY USING THE RESPECTIVE CLEAR ZONE CRITERIA. PLEASE CONTACT THE DESIGN DIVISION (512) 416-2678 FOR ASSISTANCE IN DETERMINING THE APPROPRIATE USE AND/OR PLACEMENT OF THE SYSTEM IN CONSTRAINED LOCATIONS. THE PAYMENT OF THE COMPLETE SYSTEM WILL BE WITH BID ITEMS: 540 XXXX TL-3 31" SHORT RADIUS (COMPLETE).
 - TESTED TO MASH WITH A 3:1 SLOPE OR SHALLOWER IS PREFERABLE IN THE LIMITS OF THE TOP AND BOTTOM OF THE SLOPE AS SHOWN IN THE PLAN VIEW. IF FIELD CONDITIONS REQUIRE A STEEPER SLOPE, THIS MAY BE ALLOWABLE UP TO A 2:1 SLOPE. CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE.
 - THE BARRELS ARE ENERGY ABSORPTION ENERGITE III, MODEL 640 FILLED WITH 715 LB (+/-15) SAND; OR AN APPROVED EQUIVALENT. THE APPROXIMATE HEIGHT OF THE BARREL IS 41" (+/-).
 - ALTERNATE METHODS TO TERMINATE THE SRG ALONG THE PRIMARY ROADWAY ARE AVAILABLE WHEN SITE CONDITIONS DICTATE. CONTACT DESIGN DIVISION FOR DETAILS: 512 416-2678
- NOTE: SEE SHEET 1 OF 3.


SPECIAL APPLICATION NOTES.

- THIS IS A MASH COMPLIANT TL-3 SHORT RADIUS GUARDRAIL SYSTEM WITH A TOP RAIL HEIGHT OF 31". AVAILABLE FOR USE ON ANY SPEED ROADWAY. THE SYSTEM REQUIRES A MINIMUM PLACEMENT FOOTPRINT OF 34'-10" ALONG THE PRIMARY ROAD AND A 35'-0" ALONG SECONDARY DRIVEWAY.
- IT IS CRITICAL THAT THE PRIMARY GUARDRAIL MAINTAIN A (4 DEGREE FLARE) WITH THE SECONDARY DRIVEWAY.
- THE SYSTEM REQUIRES A MINIMUM 5' WIDE (WORK ZONE) DIRECTLY BEHIND THE GUARDRAIL SYSTEM WITH A SLOPE AT 1V:10H OR FLATTER FROM THERE A MAXIMUM 3:1 SLOPE IS RECOMMENDED. SEE SHEET 1 OF 3 FOR FLARE AND SLOPE DETAILS.
- NOTE FOR INSTALLER: THE THREE (3) CRT POSTS ITEM (Q), AT POST LOCATIONS, 3, 7, & 8.), REQUIRE THE FOLLOWING FIELD ADJUSTMENT. USING A 3/4" X 10" LONG SPADE BIT DRILL ONE (1) ADDITIONAL HOLE 7-7/8" DIRECTLY BELOW THE EXISTING TOP HOLE TO ACCOMMODATE THE HARDWARE FOR THE 22" LONG BLOCKOUT.

OPTION FOR ADDITIONAL 3/4" HOLE. THE 22" LONG BLOCKOUT (PDB01a) IS MANUFACTURED WITH TWO 3/4" DRILLED HOLES FOR THE POST HARDWARE, THEREFORE THE BLOCKOUT CAN BE USED AS A TEMPLATE GUIDE FOR THE BOTTOM 3/4" HOLE. AFTER INSTALLING THE CRT POST USE THE TOP HOLE TO MOUNT THE 22" LONG BLOCKOUT TO POST, USE THE BLOCKOUT'S PRE-DRILLED HOLE AS A GUIDE FOR THE BOTTOM 3/4" HOLE.

**(MASH TL-3 COMPLIANT)
TESTED TO MASH TL-3 WITH A 3:1 SLOPE**

SHEET 3 OF 3

		<i>Design Division Standard</i>	
<h2 style="margin: 0;">TL-3 SHORT RADIUS GUARDRAIL MASH COMPLIANT</h2> <h3 style="margin: 0;">SRG (TL-3) -21</h3>			
FILE: srg+1321	TXDOT	CK:KM	DN:VP
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REVISIONS		DIST	COUNTY
		SHEET NO.	