



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ROADWAY DESIGN DIVISION
SUITE 1200 JAMES K. POLK BUILDING
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NASHVILLE, TENNESSEE 37243-3848
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CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

INSTRUCTIONAL BULLETIN NO. 20-01

Regarding Revised and New Standard Drawings.

Effective May 15, 2020 letting (March 4, 2020 Turn-in), the following standard drawings have been revised and are new. Section 10 of the Roadway Design Guidelines has also been revised to incorporate these new standard drawings.

DRAWING NUMBER	REVISION DATE	DESCRIPTION
<u>New Standard Drawings:</u>		
10-106.09		CONCRETE MEDIAN BARRIERS
S-SSMB-6A	06-28-19	36" CONCRETE SINGLE SLOPE BARRIER WALL FOR ATTACHING GUARDRAIL
S-SSMB-6B	06-28-19	DUAL GUARDRAIL ATTACHMENT TO SINGLE SLOPE 36" BARRIER WALL
S-SSMB-6C	06-28-19	SINGLE GUARDRAIL ATTACHMENT TO SINGLE SLOPE 36" BARRIER WALL
S-SSMB-6D ¹	06-28-19	51" CONCRETE SINGLE SLOPE BARRIER WALL FOR ATTACHING GUARRAIL
S-SSMB-6E ¹	06-28-19	DUAL GUARDRAIL ATTACHMENT TO SINGLE SLOPE 51" BARRIER WALL
S-SSMB-6F ¹	06-28-19	SINGLE GUARDRAIL ATTACHMENT TO SINGLE SLOPE 51" BARRIER WALL
S-SSMB-6M	06-28-19	GUARDRAIL ATTACHMENT TO EXISTING SINGLE SLOPE CONCRETE BARRIER WALL

DRAWING NUMBER	REVISION DATE	DESCRIPTION
<u>Revised Standard Drawings:</u>		
10-106.09		CONCRETE MEDIAN BARRIERS
S-SSMB-6	06-28-19	32" CONCRETE SINGLE SLOPE BARRIER WALL WITH SINGLE GUARDRAIL ATTACHMENT

These standard drawings are new and have been added to the Roadway Design Guidelines, Chapter 10, Index of Standard Drawings and are available online.

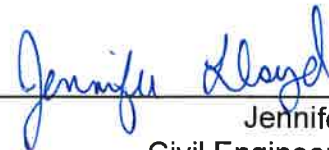
Note 1: F.H.W.A. approval was given on 11/14/19.

Standard Drawings:

<https://www.tn.gov/content/tn/tdot/roadway-design/standard-drawings-library/standard-roadway-drawings.html>

Chapter 10 - Index of Standard Drawings is available online at this location:

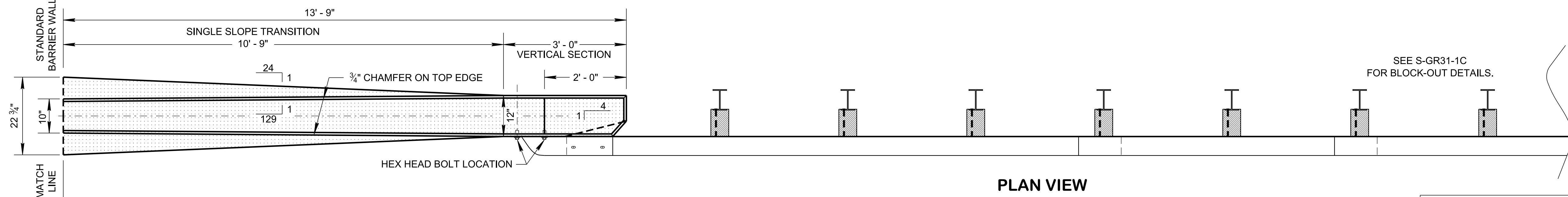
https://www.tn.gov/content/dam/tn/tdot/roadway-design/documents/design_guidelines/DG-C10.pdf



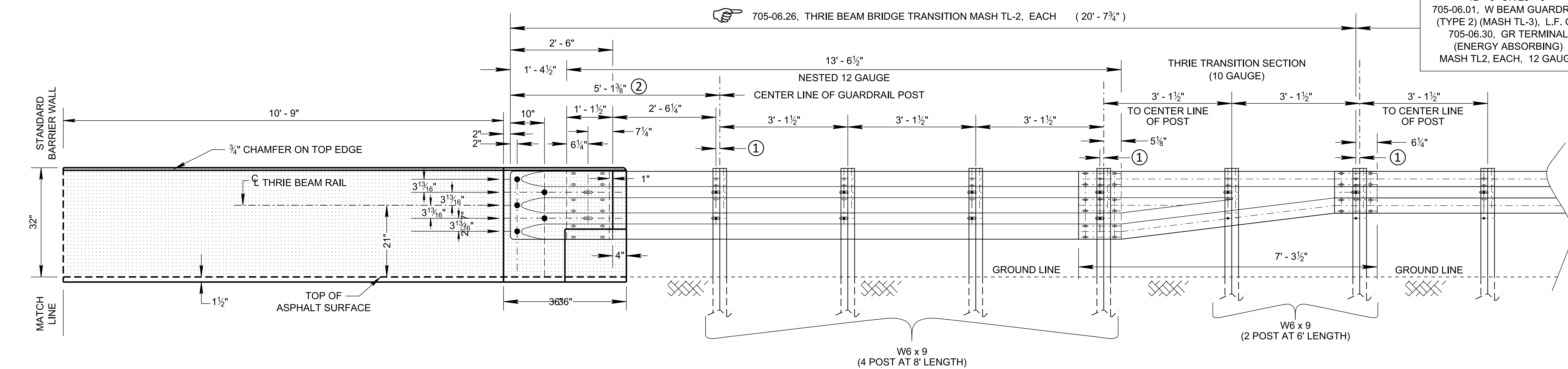
Jennifer Lloyd, PE
Civil Engineering Director
Roadway Design Division

KJL:ARH:RBB:LLP
November 22, 2019

REV. 10-24-13: DELETED NOTE 6.
 REV. 05-27-16: ADDED ALTERNATE CROSS-SECTION DETAILS. REVISED DIMENSIONS. CORRECTED GENERAL NOTES.
 REV. 06-28-19: REMOVED 51" BARRIER WALL. REPLACE ALL NOTES AND DETAILS. CHANGED DRAWING NAME AND REDREW SHEET.

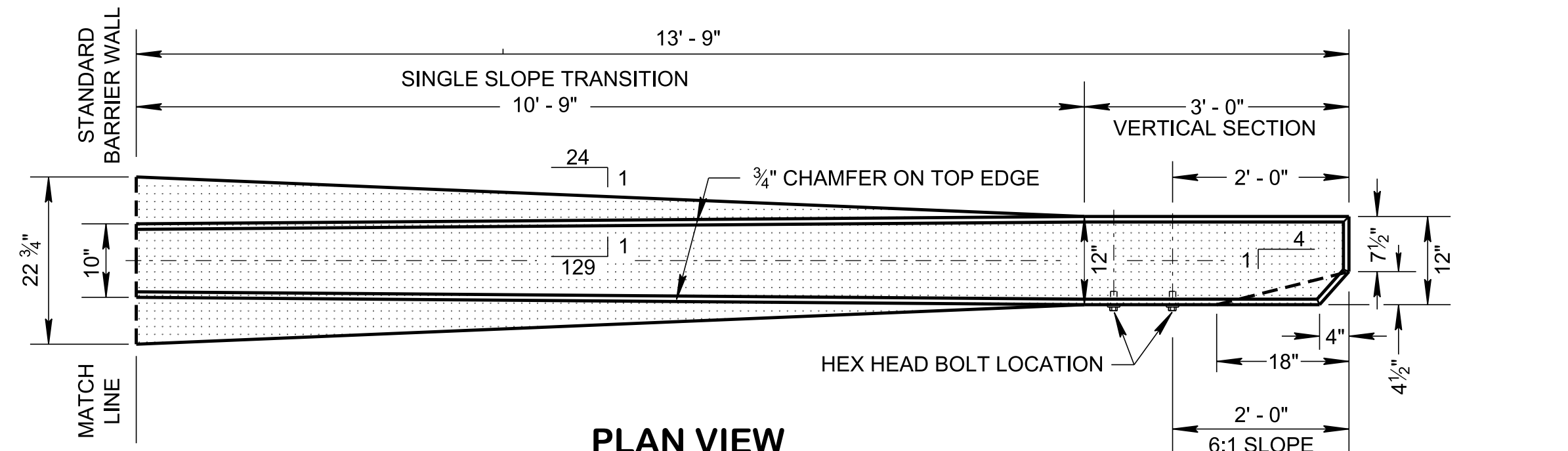


PLAN VIEW

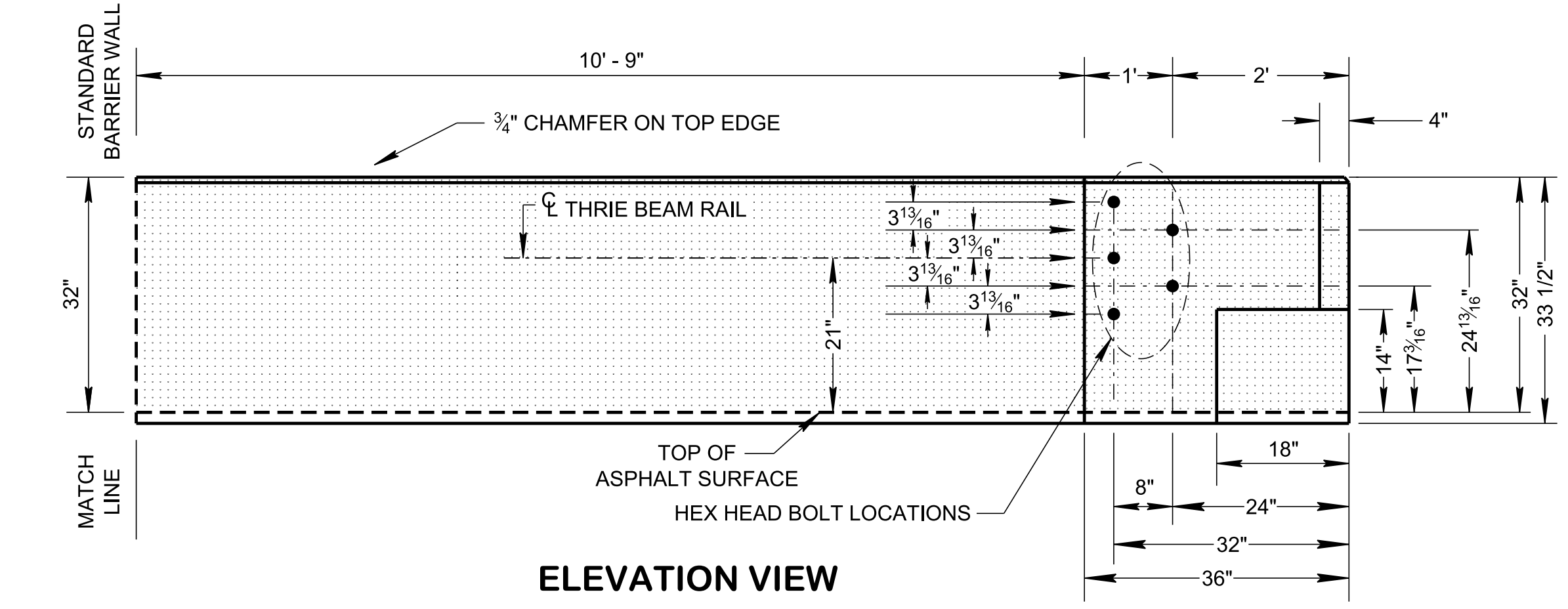


ELEVATION VIEW

**SINGLE THRIE-BEAM GUARDRAIL CONNECTION
 (FOR CONCRETE BARRIER WALL)**



PLAN VIEW



ELEVATION VIEW

**CONCRETE BARRIER WALL
 (FOR SINGLE THRIE-BEAM GUARDRAIL CONNECTION)**

LEGEND

- ① 1 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)
- ② FOR SINGLE THRIE BEAM CONNECTION ONLY, THE APPROACHING OPPOSITE SIDE OF THE ROADWAY THE DISTANCE IS 3' - 4 3/8" DUE TO POST BEING REVERSED AND BOLT HOLE OFFSET OF 2 1/4".

GENERAL NOTES

- (A) THIS DRAWING IS TO BE USED ONLY WITH DESIGN SPEED OF ≤ 45 M.P.H. THIS DRAWING SHOWS THE TRANSITION SECTIONS FOR 32" CONCRETE BARRIER WALL AND THE ATTACHMENT DETAIL FOR THE THRIE BEAM GUARDRAIL SECTION. THE BARRIER WILL REQUIRE STEEL BAR REINFORCING OR WELDED WIRE FABRIC AS SHOWN IN STD. DWG. NO. S-SSMB-1. FOR OTHER DETAILS SEE S-GR31-1 SERIES.
- (B) SAFETY PERFORMANCE OF THIS DEVICE HAS BEEN EVALUATED PER TRB 2672(39) 41-51 DEVELOPMENT OF A STANDARDIZED BUTTRESS FOR APPROACH GUARDRAIL TRANSITIONS AND TTI REPORT 9-1002-8, FOR MASH TL-2.
- (C) ALL COMPONENTS AS SHOWN ON THIS DRAWING OR ANY COMPONENTS NEEDED TO INSTALL THIS GUARDRAIL SHALL BE INCLUDED UNDER PAY ITEM 705-06.26, THRIE BEAM BRIDGE TRANSITION MASH TL-2, EACH.
- (D) BUTTON HEAD "POST" BOLTS (ASTM A307) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND WASHER AND NOT MORE THAN 1" BEYOND IT. THE BUTTON HEAD "SPLICE" BOLTS (ASTM 307), 5/8" DIA. X 2" (SHALL BE USED AT THRIE-BEAM RAIL SPLICES) WITH 5/8" DOUBLE RECESSED NUTS.
- (E) GALVANIZED WASHERS USED WITH THE 5/8" DIA. POST BOLTS SHALL BE TYPE A 1-3/4" O. D. WASHERS. THE (12) PLATE WASHERS (FWR03) ARE REQUIRED AT THE TERMINAL CONNECTOR SPLICE.
- (F) TO CONNECT THE THRIE BEAM GUARDRAIL AND THE TERMINAL CONNECTION TO THE CONCRETE BARRIER WALL WILL REQUIRE 5 HEX HEAD BOLTS FOR SINGLE GUARDRAIL HOOKUP AT 7/8" Ø X 2", WITH WASHERS AND NUTS.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED

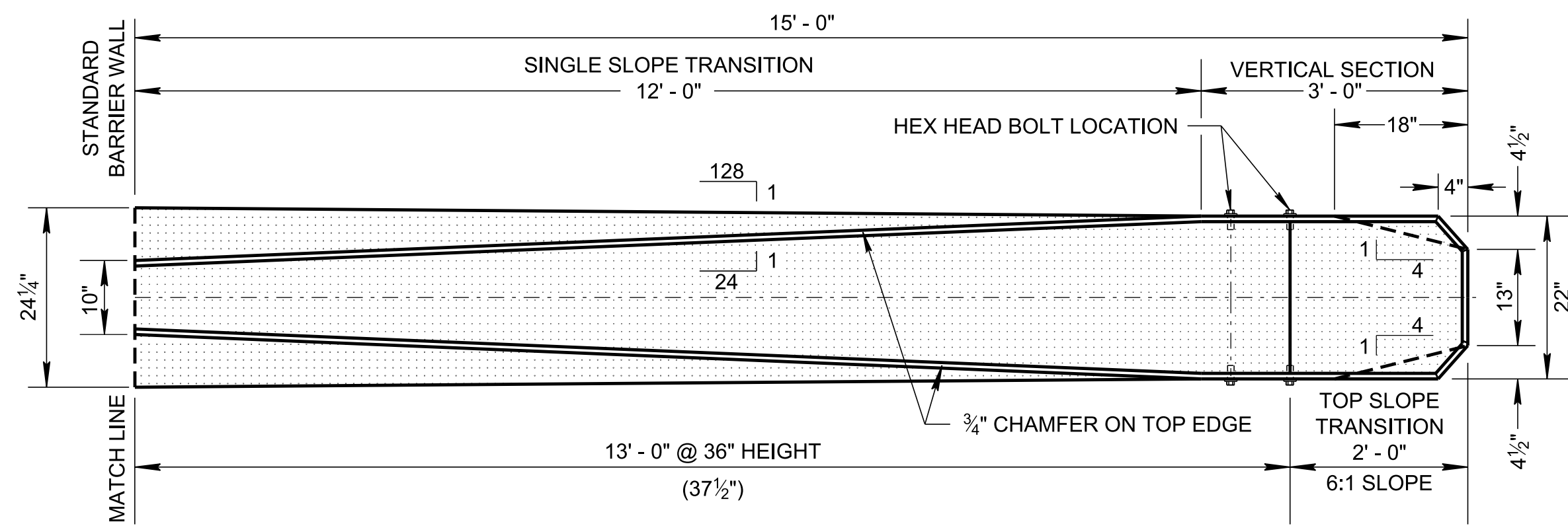
STATE OF TENNESSEE
 STANDARD DRAWING
 DEPARTMENT OF TRANSPORTATION

**32" CONCRETE
 BARRIER WALL WITH
 SINGLE GUARDRAIL
 ATTACHMENT**

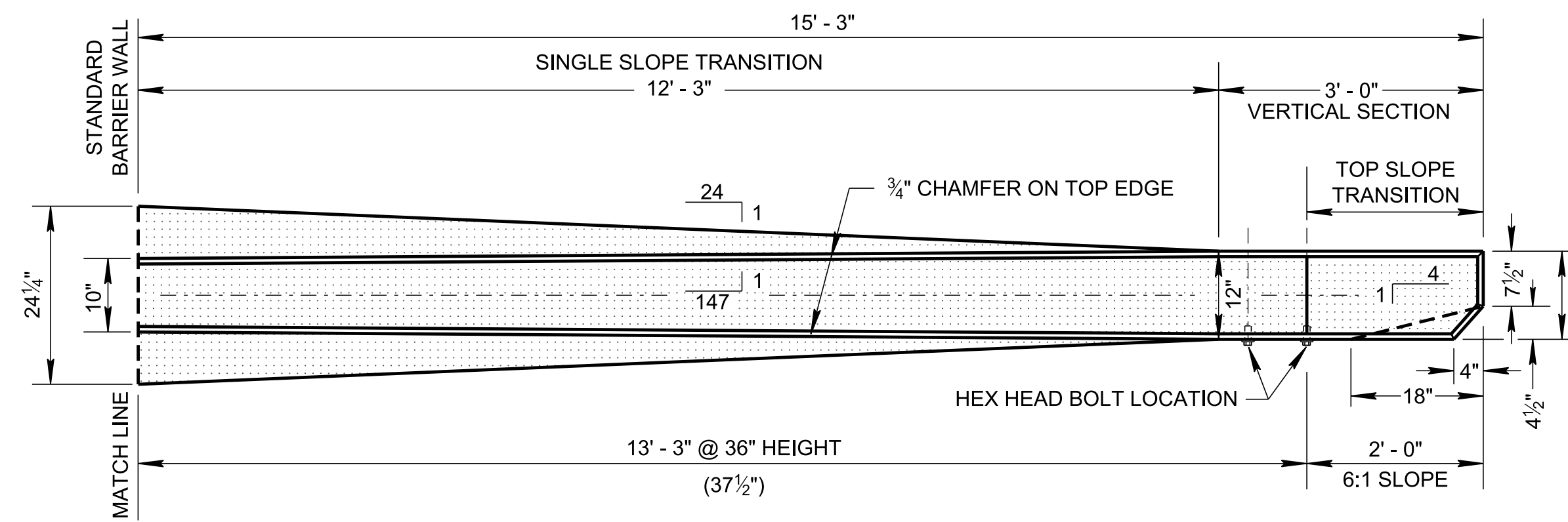
08-30-2010 S-SSMB-6

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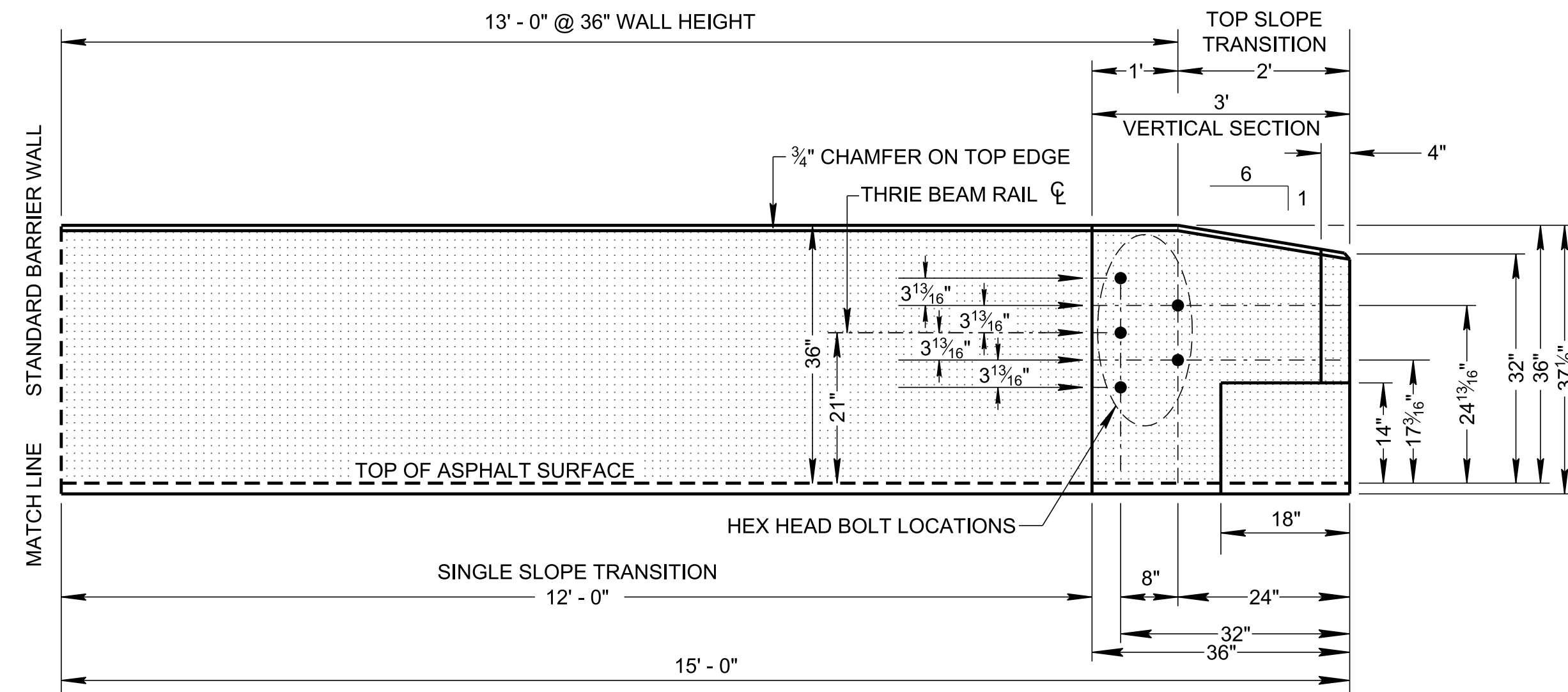
NOT TO SCALE



PLAN VIEW



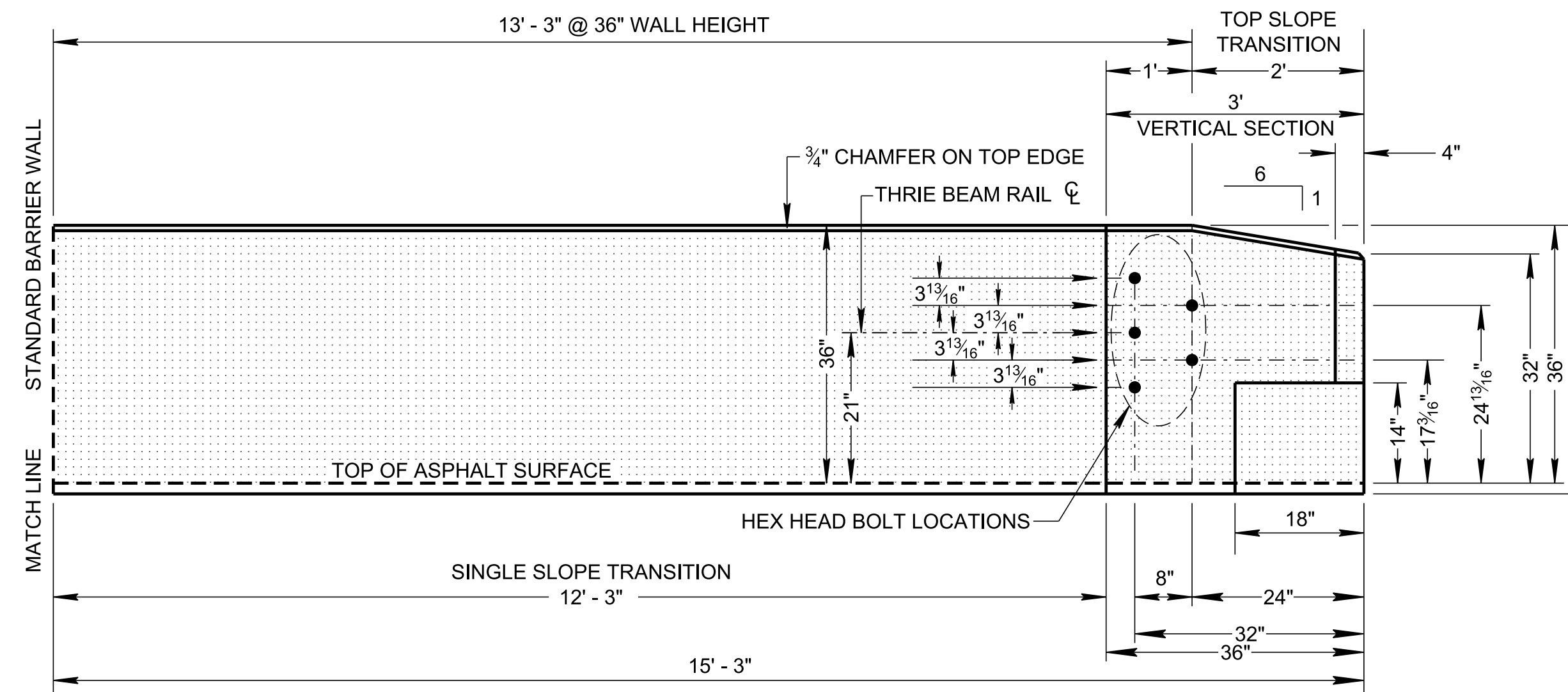
PLAN VIEW



ELEVATION VIEW

**CONCRETE MEDIAN BARRIER
(FOR DUAL THRIE-BEAM GUARDRAIL CONNECTION)**

FOR GUARDRAIL CONNECTION SEE STD. DWG. S-SSMB-6B



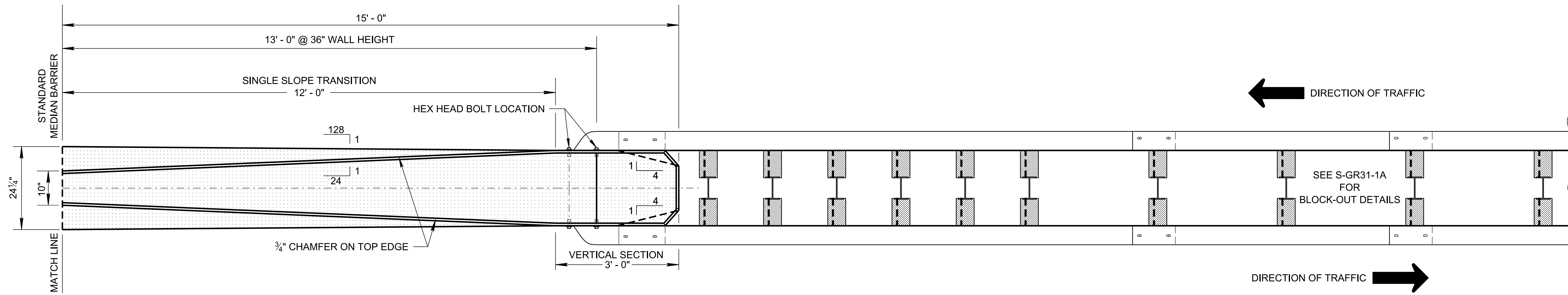
ELEVATION VIEW

**CONCRETE BARRIER WALL
(FOR SINGLE THRIE-BEAM GUARDRAIL CONNECTION)**

FOR GUARDRAIL CONNECTION SEE STD. DWG. S-SSMB-6C

GENERAL NOTES

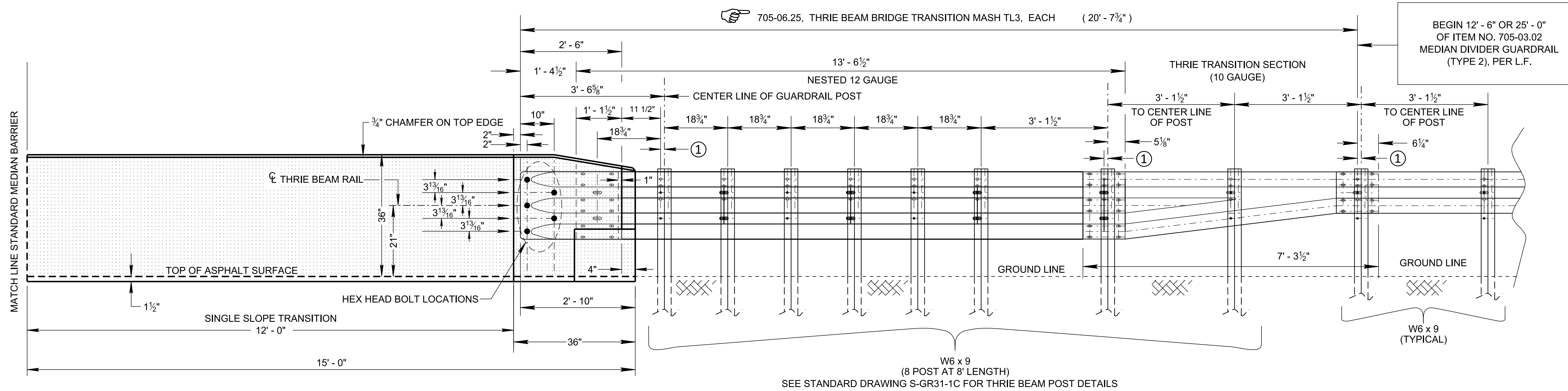
- (A) THIS DRAWING SHOWS THE TRANSITION SECTIONS FOR 36" CONCRETE BARRIER WALL TO BE ABLE TO ATTACH TO THRIE BEAM GUARDRAIL SECTION. THE BARRIER WILL REQUIRE STEEL BAR REINFORCING OR WELDED WIRE FABRIC AS SHOWN IN STD. DWG. NO. S-SSMB-1A. SEE STANDARD DRAWING NO. S-SSMB-6B, S-SSMB-6C AND S-GR31-1 SERIES FOR GUARDRAIL DETAILS.
- (B) SAFETY PERFORMANCE OF THIS DEVICE HAS BEEN EVALUATED PER TRB 2672(39) 41-51 DEVELOPMENT OF A STANDARDIZED BUTTRESS FOR APPROACH GUARDRAIL TRANSITIONS AND TTI REPORT 9-1002-12-3, FOR MASH TL-3.
- (C) ALL COMPONENTS AS SHOWN ON THIS DRAWING OR ANY COMPONENTS NEEDED TO INSTALL THIS GUARDRAIL SHALL BE INCLUDED UNDER PAY ITEM 705-06.25, THRIE BEAM BRIDGE TRANSITION MASH TL3, PER EACH.
- (D) BUTTON HEAD "POST" BOLTS (ASTM A307) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND WASHER AND NOT MORE THAN 1" BEYOND IT. THE BUTTON HEAD "SPlice" BOLTS (ASTM 307), 5/8" DIA. X 2" (SHALL BE USED AT THRIE-BEAM RAIL SPLICES) WITH 5/8" DOUBLE RECESSED NUTS.
- (E) GALVANIZED WASHERS USED WITH THE 5/8" DIA. POST BOLTS SHALL BE TYPE A 1-3/4" O. D. WASHERS. THE (12) PLATE WASHERS (FWR03) ARE REQUIRED AT THE TERMINAL CONNECTOR SPLICE.
- (F) TO CONNECT THE THRIE BEAM GUARDRAIL AND THE TERMINAL CONNECTION TO THE CONCRETE BARRIER WALL WILL REQUIRE 5 HEX HEAD BOLTS FOR SINGLE GUARDRAIL HOOKUP AND 10 HEX HEAD BOLTS FOR DUAL GUARDRAIL HOOKUP AT 7/8" Ø X 2", WITH WASHERS AND NUTS.



PLAN VIEW

LEGEND

- ① 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)



ELEVATION VIEW

CONCRETE MEDIAN BARRIER
WITH DUAL THRIE BEAM GUARDRAIL CONNECTION
TO BE USED WITH STANDARD DRAWING S-SSMB-6A

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

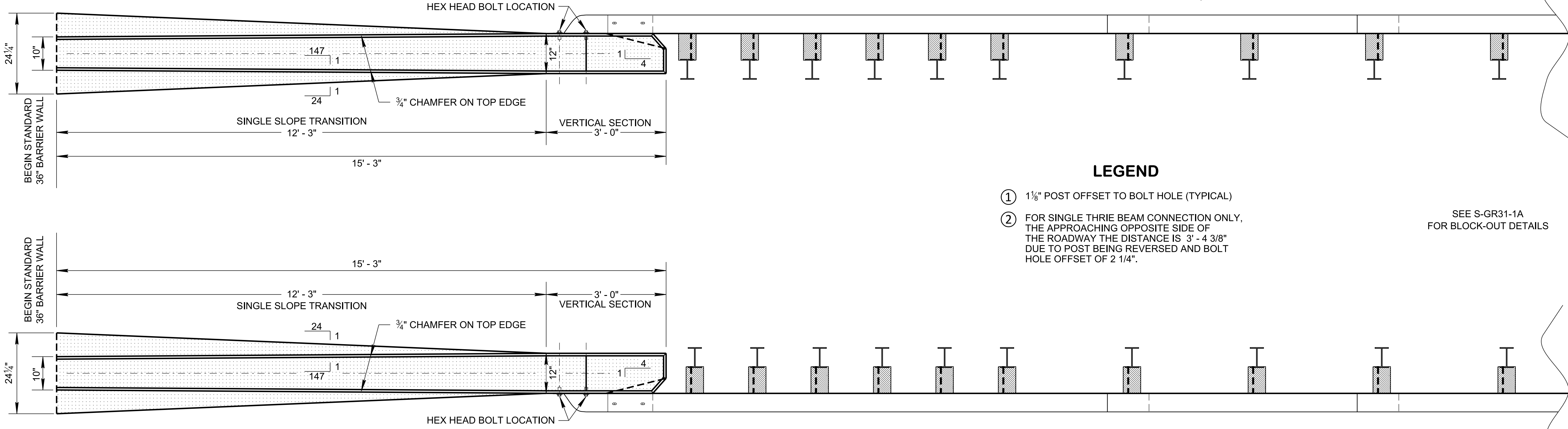
DUAL GUARDRAIL ATTACHMENT TO SINGLE SLOPE 36" BARRIER WALL

06-28-2019 S-SSMB-6B

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PLAN VIEW FOR LEFT SIDE APPROACH

← DIRECTION OF TRAFFIC



LEGEND

- ① 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)
- ② FOR SINGLE THRIE BEAM CONNECTION ONLY, THE APPROACHING OPPOSITE SIDE OF THE ROADWAY THE DISTANCE IS 3' - 4 3/8" DUE TO POST BEING REVERSED AND BOLT HOLE OFFSET OF 2 1/4".

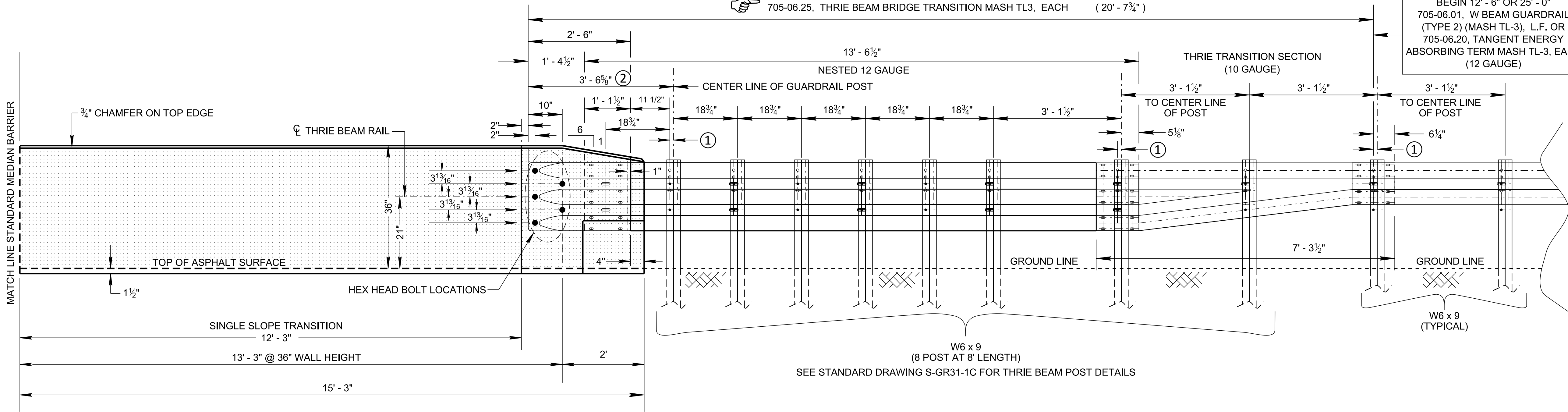
SEE S-GR31-1A FOR BLOCK-OUT DETAILS

PLAN VIEW FOR RIGHT SIDE APPROACH

← DIRECTION OF TRAFFIC

705-06.25, THRIE BEAM BRIDGE TRANSITION MASH TL3, EACH (20' - 7 3/4")

BEGIN 12' - 6" OR 25' - 0" 705-06.01, W BEAM GUARDRAIL (TYPE 2) (MASH TL-3), L.F. OR 705-06.20, TANGENT ENERGY ABSORBING TERM MASH TL-3, EACH (12 GAUGE)



ELEVATION VIEW

CONCRETE BARRIER WALL WITH SINGLE THRIE-BEAM GUARDRAIL CONNECTION

TO BE USED WITH STANDARD DRAWING S-SSMB-6A

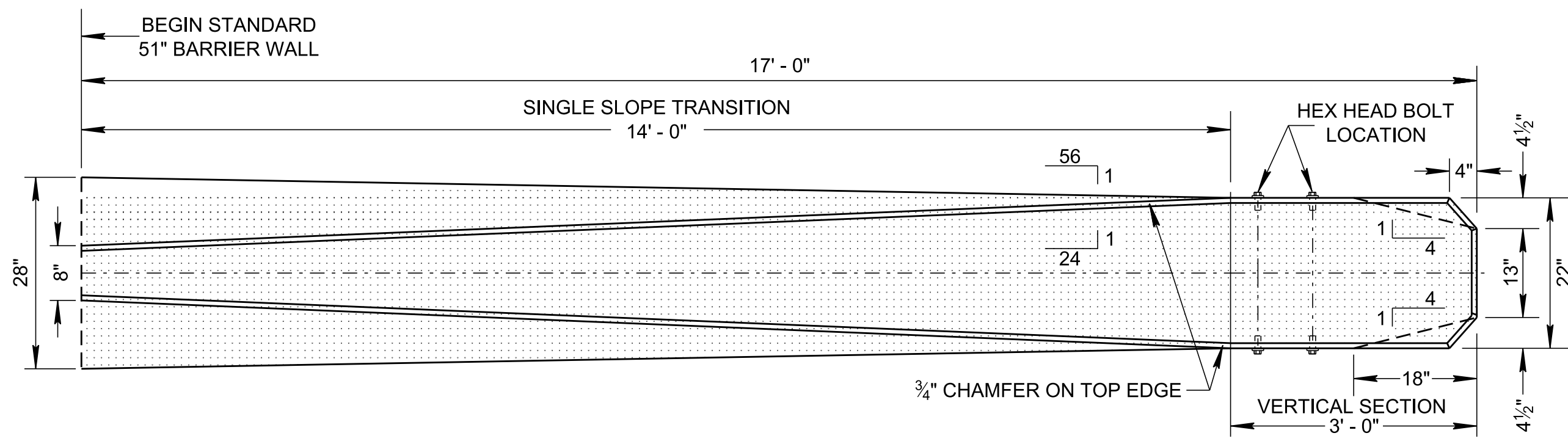
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

SINGLE GUARDRAIL ATTACHMENT TO SINGLE SLOPE 36" BARRIER WALL

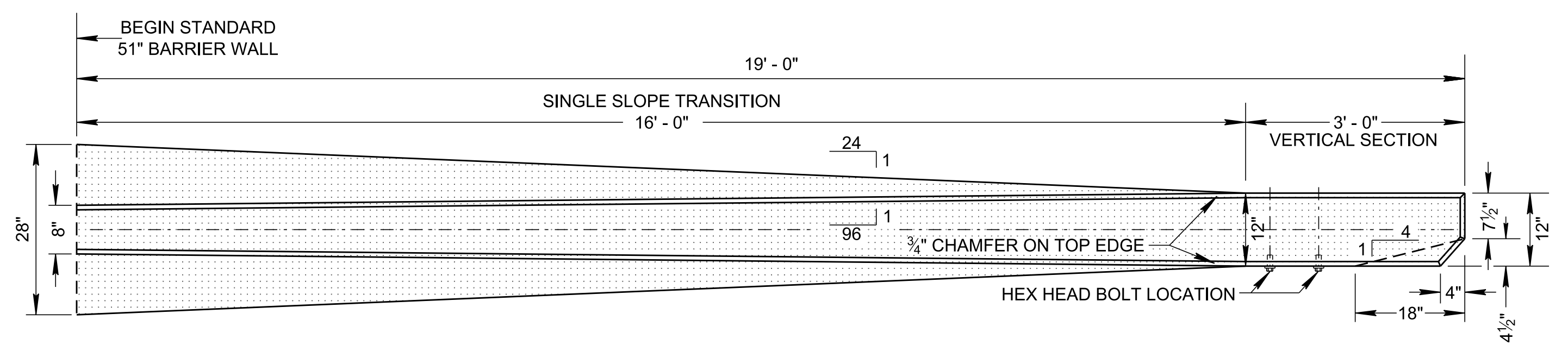
S-SSMB-6C

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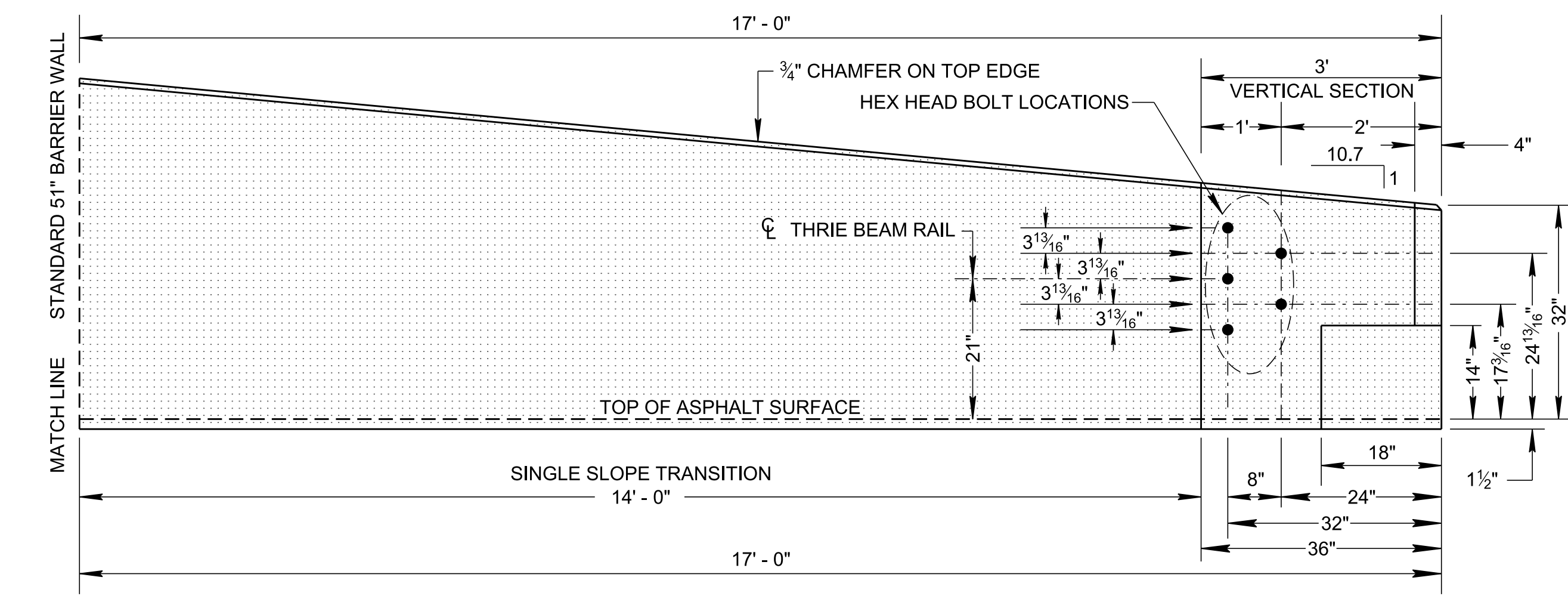
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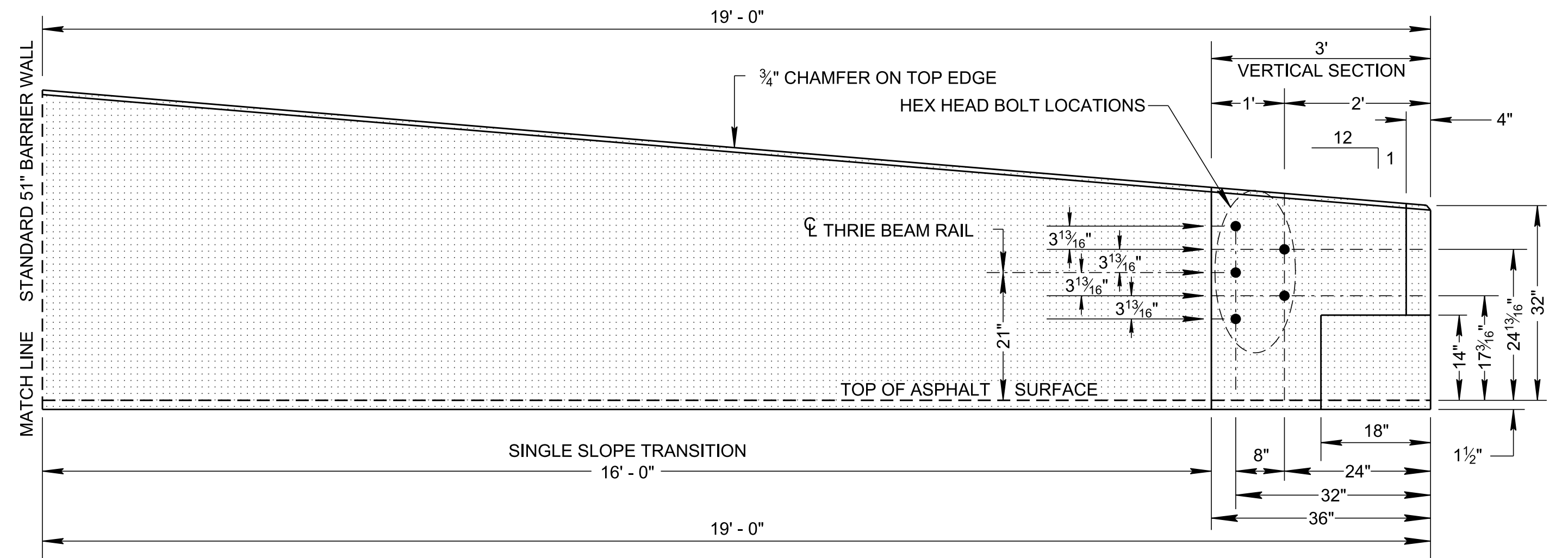
PLAN VIEW



PLAN VIEW



ELEVATION VIEW



ELEVATION VIEW

CONCRETE BARRIER WALL FOR SINGLE THRIE BEAM GUARDRAIL CONNECTION

FOR GUARDRAIL CONECTION SEE STD. DWG. S-SSMB-6F

GENERAL NOTES

- (A) THIS DRAWING SHOWS THE TRANSITION SECTIONS FOR 51" CONCRETE BARRIER WALL TO BE ABLE TO ATTACH TO THRIE BEAM GUARDRAIL SECTION. THIS BARRIER WILL REQUIRE STEEL BAR REINFORCING OR WELDED WIRE FABRIC AS SHOWN IN STD. DWG. NO. S-SSMB-2. SEE STANDARD DRAWING NO. S-SSMB-6E, S-SSMB-6F AND S-GR31-1 SERIES FOR GUARDRAIL DETAILS.
- (B) SAFETY PERFORMANCE OF THIS DEVICE HAS BEEN EVALUATED PER TRB 2672(39) 41-51 DEVELOPMENT OF A STANDARDIZED BUTTRESS FOR APPROACH GUARDRAIL TRANSITIONS AND TTI REPORT 9-1002-12-3, FOR MASH TL-3.
- (C) ALL COMPONENTS AS SHOWN ON THIS DRAWING OR ANY COMPONENTS NEEDED TO INSTALL THIS GUARDRAIL SHALL BE INCLUDED UNDER PAY ITEM 705-06.25, THRIE BEAM BRIDGE TRANSITION MASH TL3, PER EACH.
- (D) BUTTON HEAD "POST" BOLTS (ASTM A307) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND WASHER AND NOT MORE THAN 1" BEYOND IT. THE BUTTON HEAD "SPLICE" BOLTS (ASTM 307), 5/8" DIA. X 2" (SHALL BE USED AT THRIE-BEAM RAIL SPLICES) WITH 5/8" DOUBLE RECESSED NUTS.
- (E) GALVANIZED WASHERS USED WITH THE 5/8" DIA. POST BOLTS SHALL BE TYPE A 1-3/4" O. D. WASHERS. THE (12) PLATE WASHERS (FWR03) REQUIRED AT THE TERMINAL CONNECTOR SPLICE.
- (F) TO CONNECT THE THRIE BEAM GUARDRAIL AND THE TERMINAL CONNECTION TO THE CONCRETE BARRIER WALL WILL REQUIRE 5 HEX HEAD BOLTS FOR SINGLE GUARDRAIL HOOKUP AND 10 HEX HEAD BOLTS FOR DUAL GUARDRAIL HOOKUP AT 7/8" Ø X 2", WITH WASHERS AND NUTS.

CONCRETE MEDIAN BARRIER FOR DUAL THRIE BEAM GUARDRAIL CONNECTION

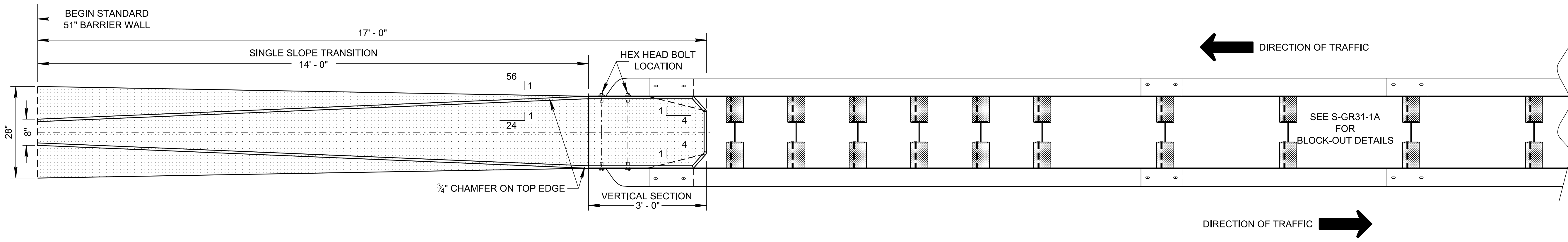
FOR GUARDRAIL CONECTION SEE STD. DWG. S-SSMB-6E

NOT TO SCALE

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

51" CONCRETE SINGLE SLOPE BARRIER WALL FOR ATTACHING GUARDRAIL

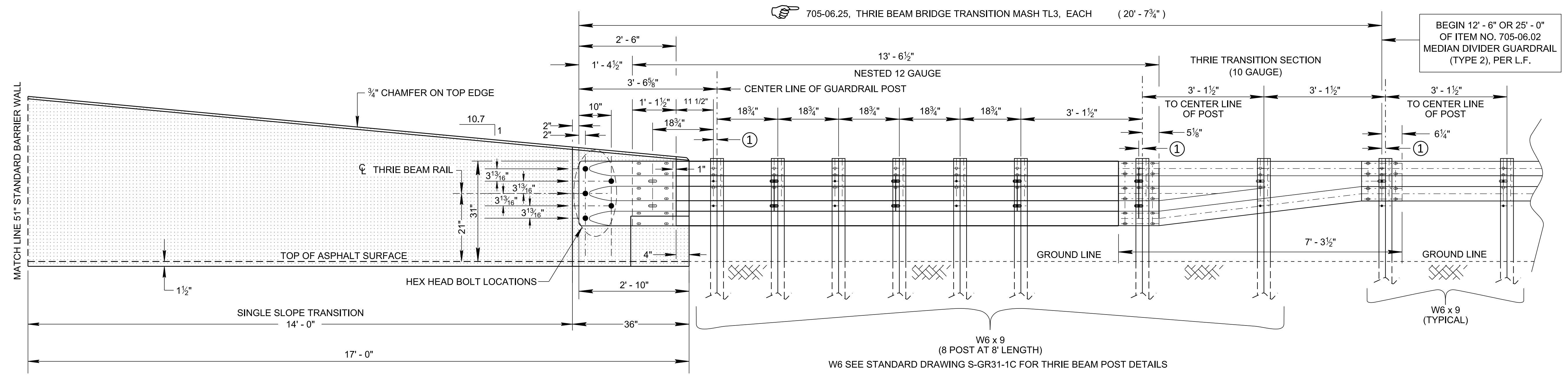
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PLAN VIEW

LEGEND

- ① 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)



ELEVATION VIEW

CONCRETE MEDIAN BARRIER WITH DUAL GUARDRAIL CONNECTION

TO BE USED WITH STANDARD DRAWING S-SSMB-6D

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

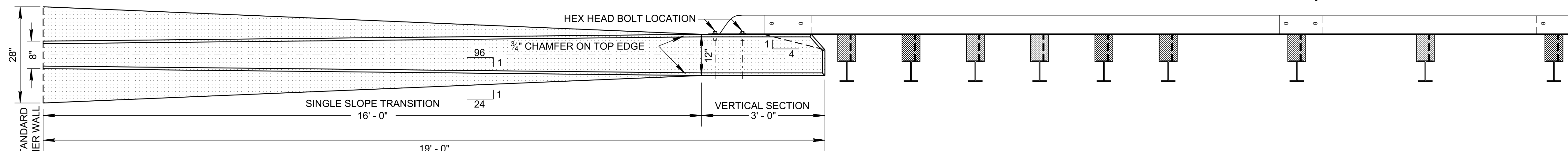
DUAL GUARDRAIL ATTACHMENT TO SINGLE SLOPE 51" BARRIER WALL

06-28-2019 S-SSMB-6E

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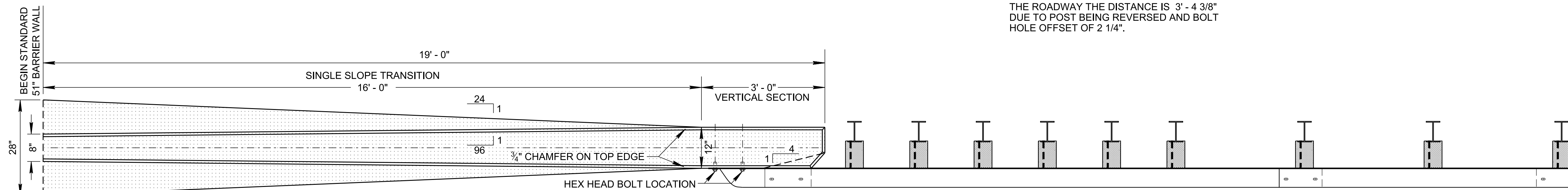
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PLAN VIEW FOR LEFT SIDE APPROACH

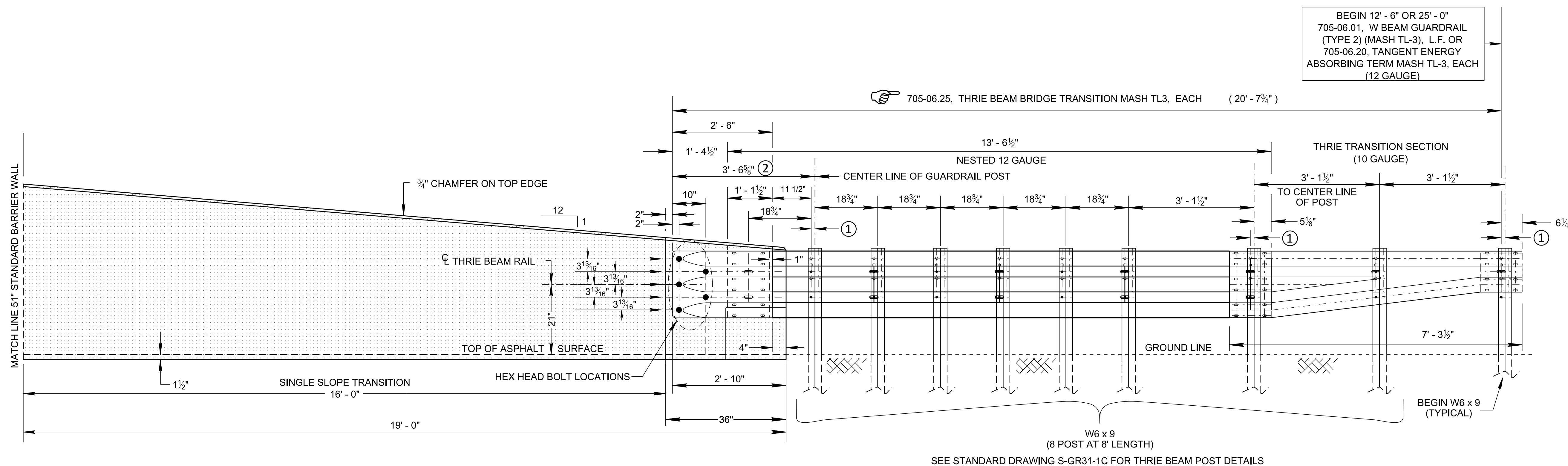


LEGEND

- ① 1 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)
 - ② FOR SINGLE THRIE BEAM CONNECTION ONLY, THE APPROACHING OPPOSITE SIDE OF THE ROADWAY THE DISTANCE IS 3' - 4 3/8" DUE TO POST BEING REVERSED AND BOLT HOLE OFFSET OF 2 1/4".
- SEE S-GR31-1A FOR BLOCK-OUT DETAILS



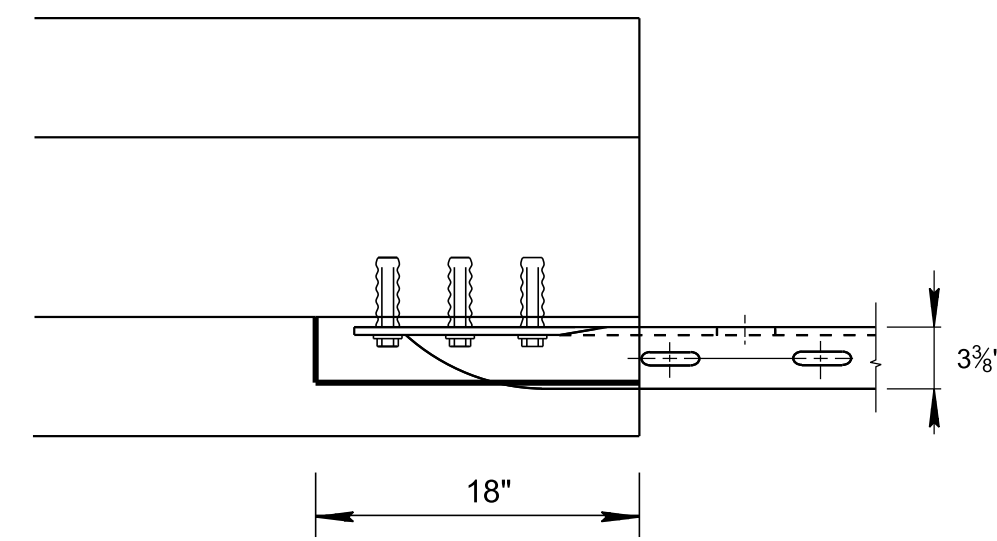
PLAN VIEW FOR RIGHT SIDE APPROACH



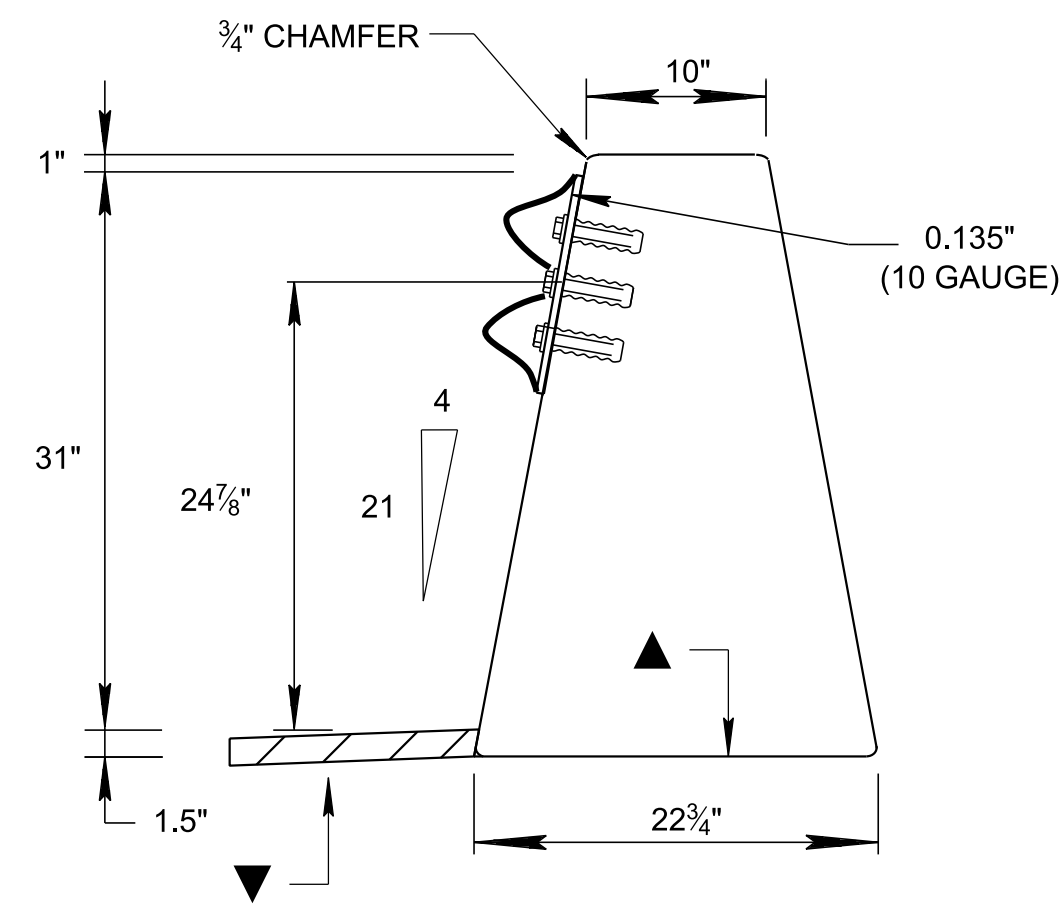
ELEVATION VIEW

CONCRETE BARRIER WALL WITH SINGLE THRIE BEAM GUARDRAIL CONNECTION

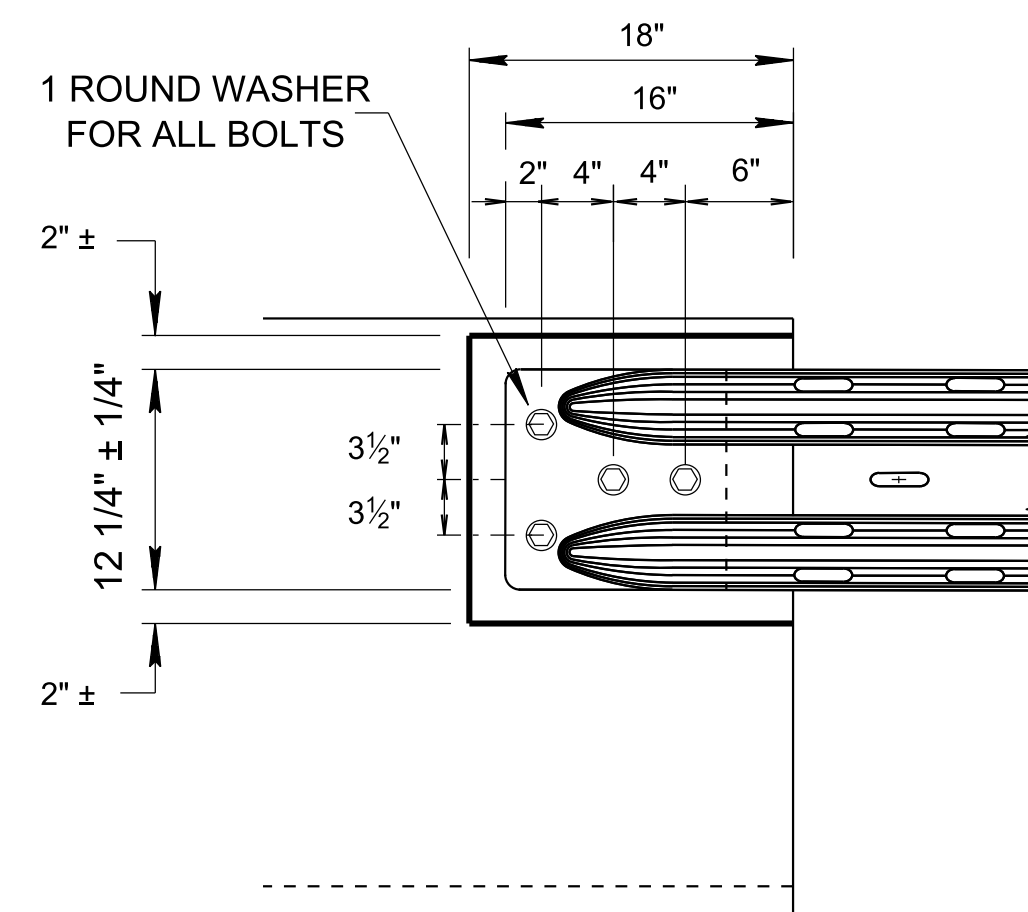
TO BE USED WITH STANDARD DRAWING S-SSMB-6D



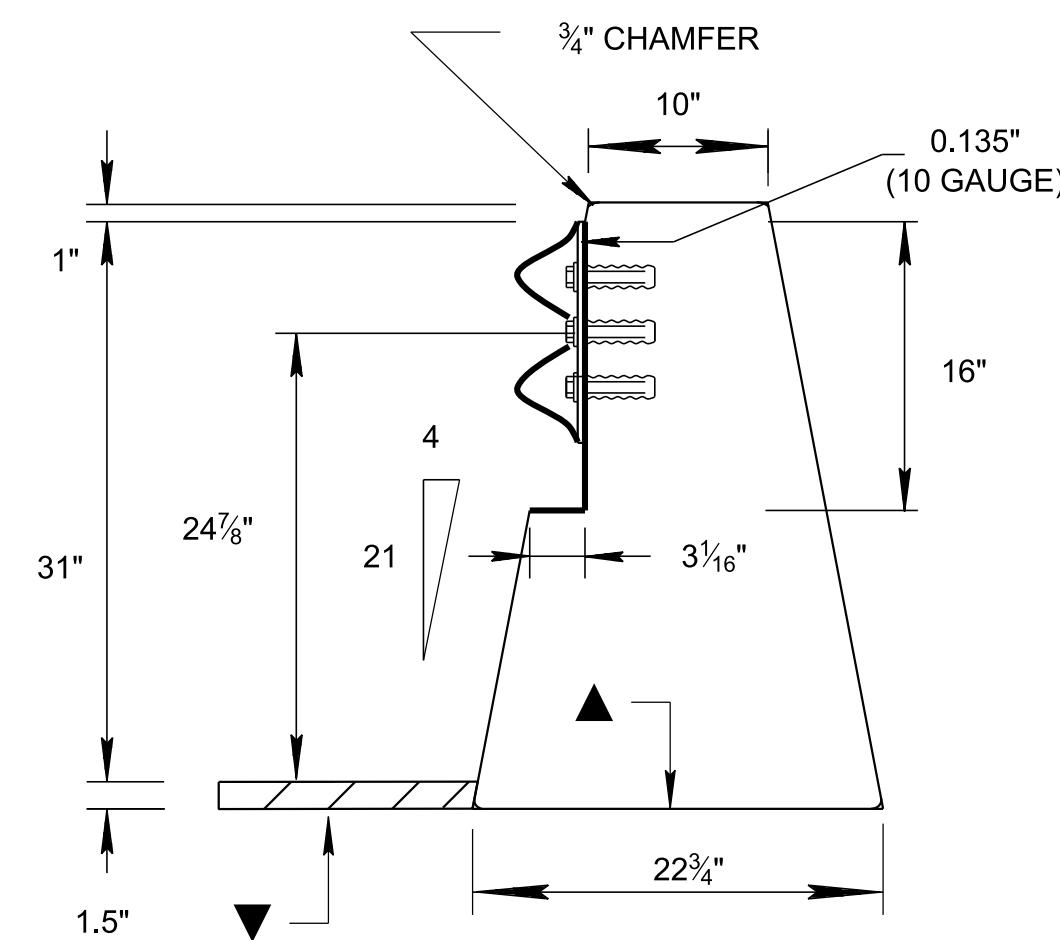
PLAN VIEW



CROSS-SECTION VIEW (ALTERNATE)



ELEVATION VIEW



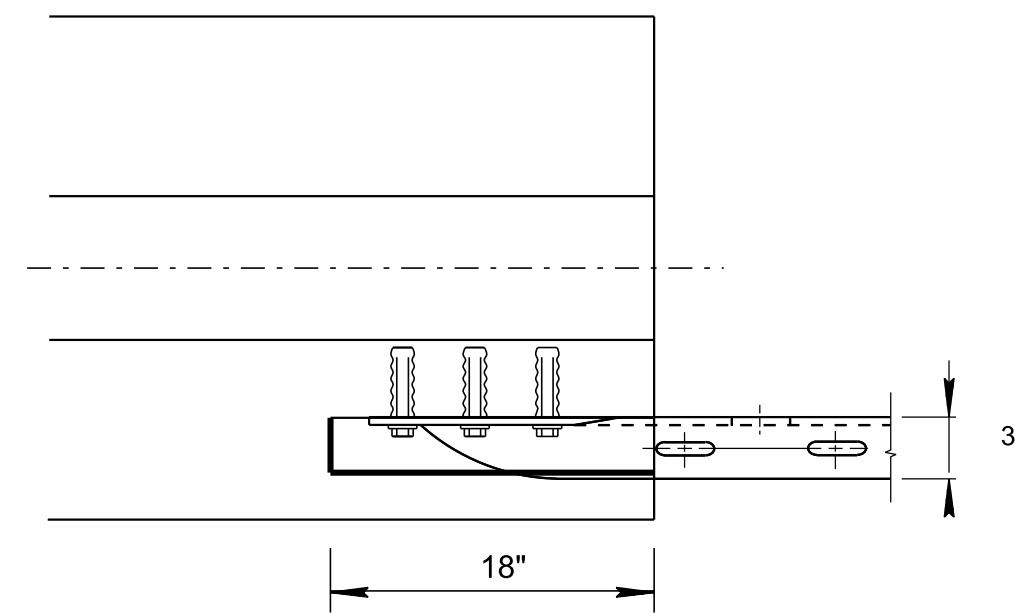
CROSS-SECTION VIEW

32" SINGLE SLOPE CONCRETE BARRIER WALL

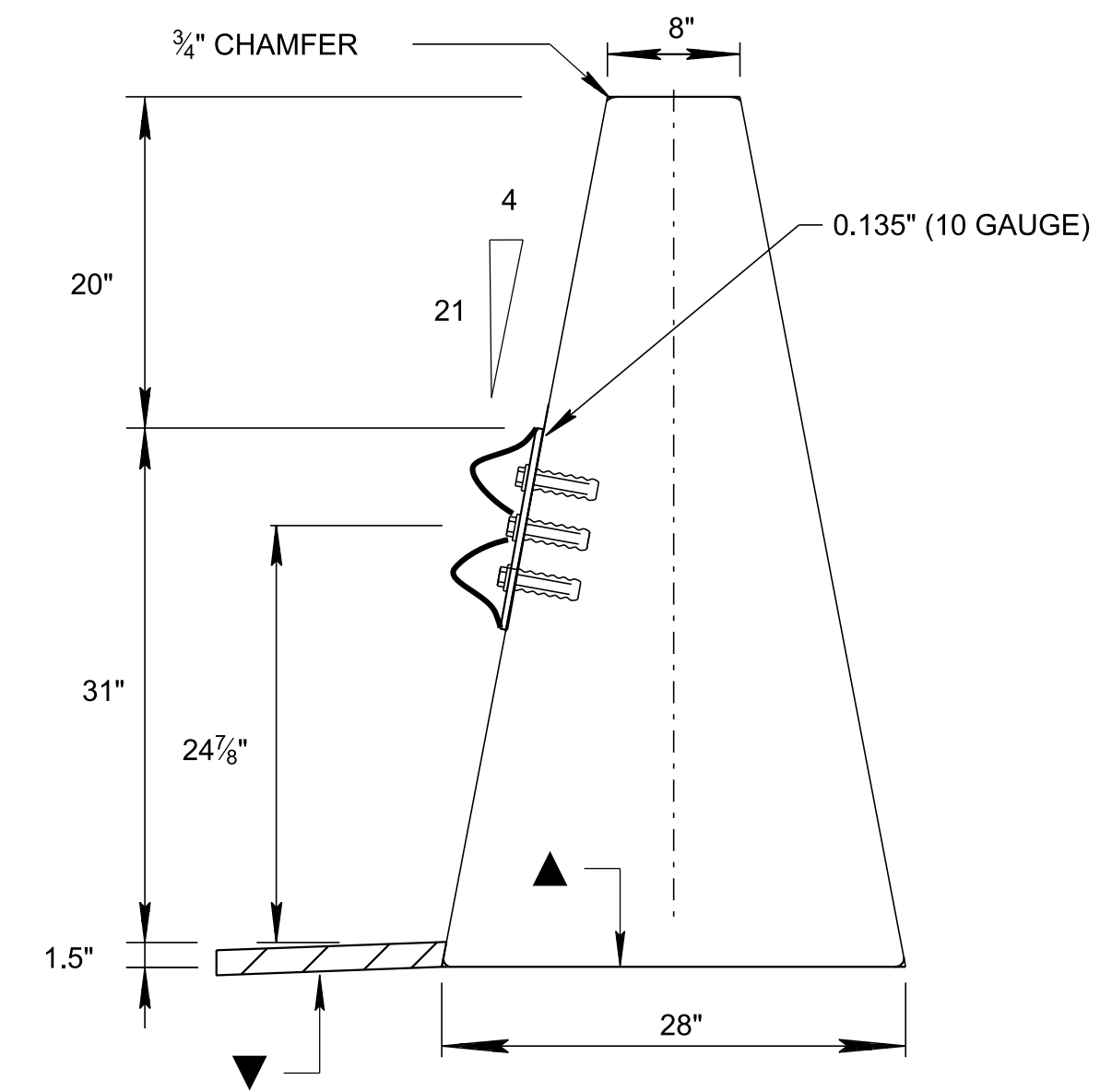
LEGEND

- ▲ EXISTING OR PROPOSED BASE OR MINERAL AGGREGATE BELOW WALL (TYP.)
- ▼ MIN. 1 1/2" ACP OR EQUIVALENT FOR LATERAL SUPPORT

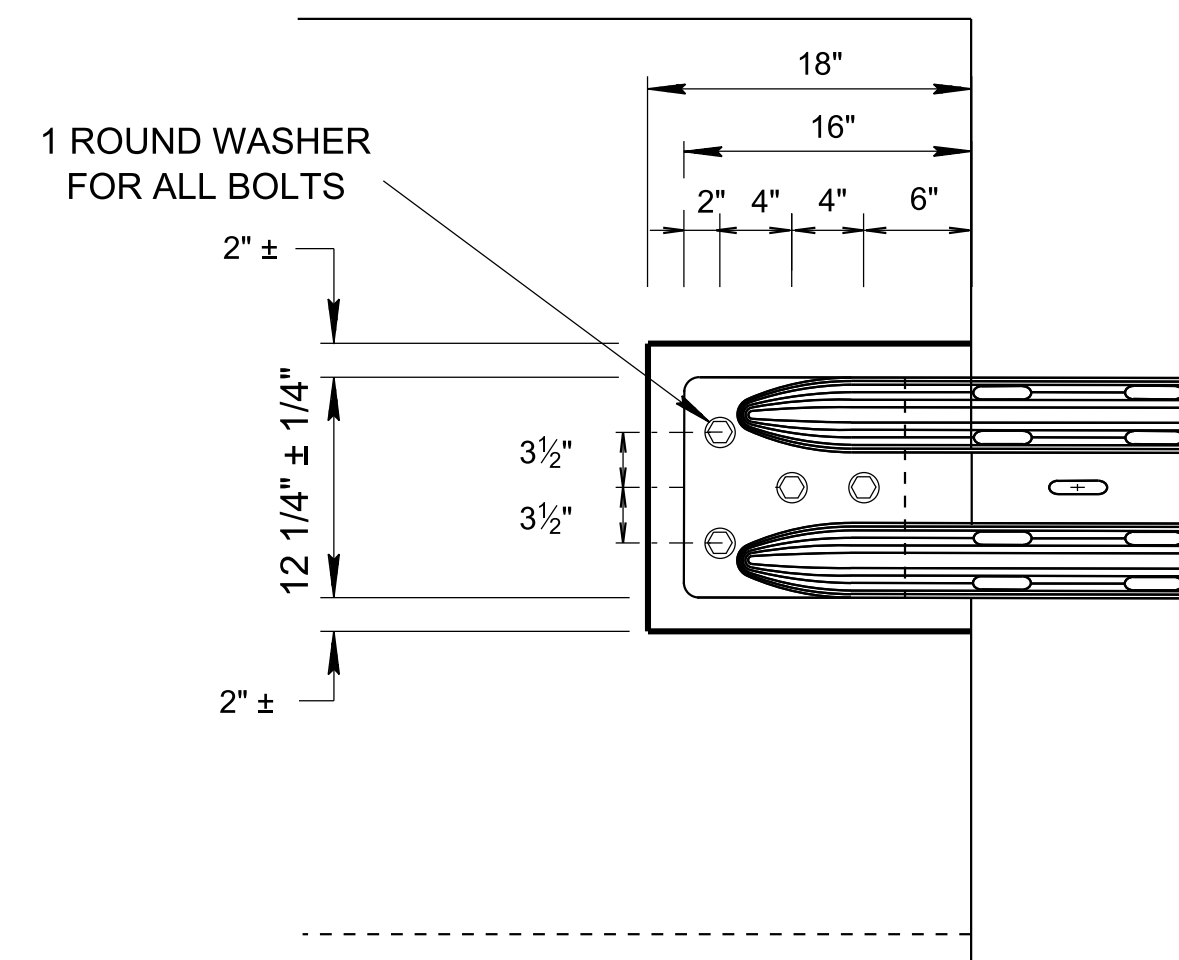
**THIS DRAWING IS TO BE USED FOR MAINTENANCE PROJECTS ONLY.
THIS DRAWING IS NOT INTENDED TO BE USED FOR NEW CONSTRUCTION
OR RECONSTRUCTION PROJECTS.**



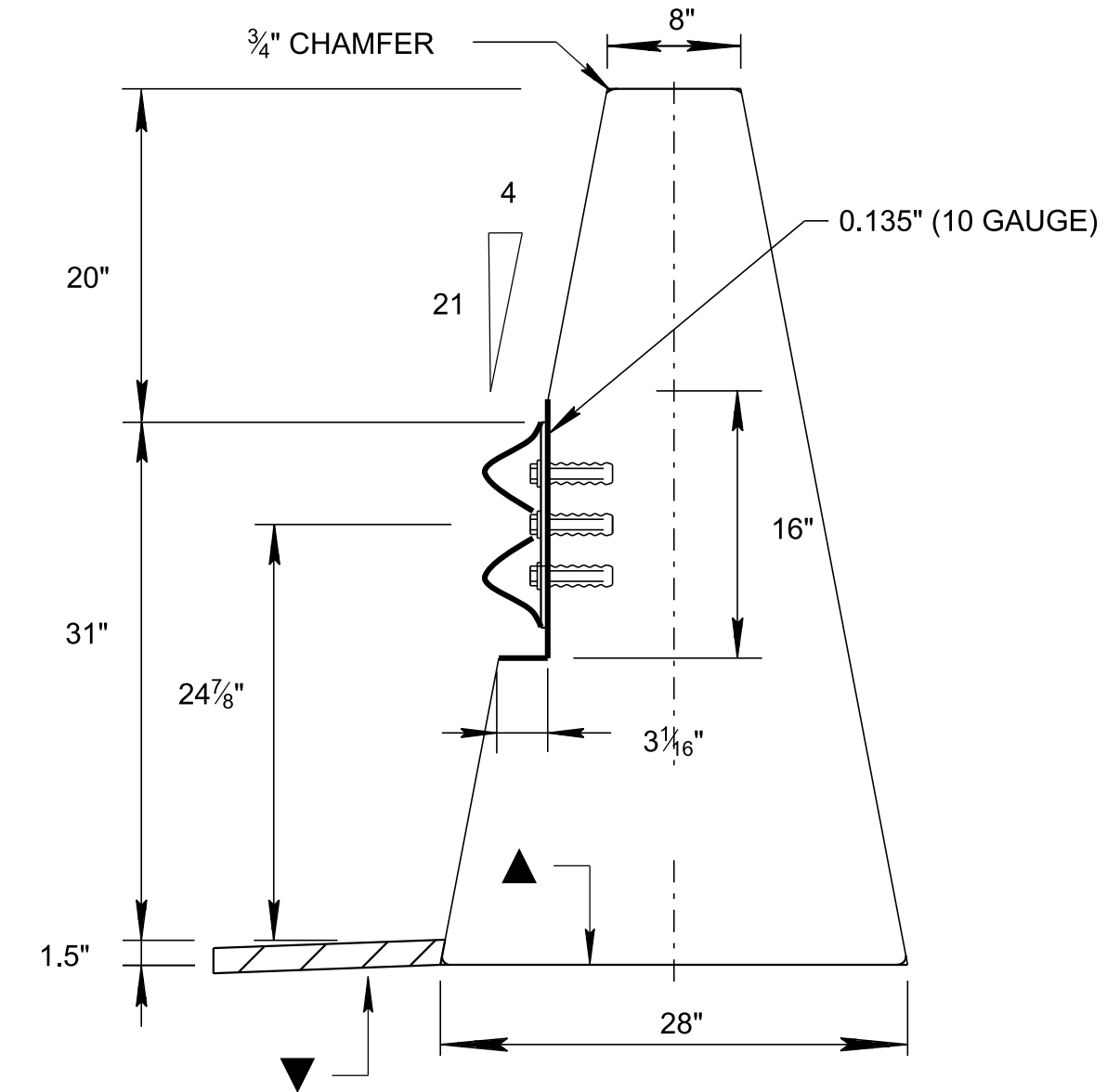
PLAN VIEW



CROSS-SECTION VIEW (ALTERNATE)



ELEVATION VIEW



CROSS-SECTION VIEW

51" SINGLE SLOPE CONCRETE BARRIER WALL

GENERAL NOTES

- ① THE INSERTS ARE TO BE THREADED A MINIMUM OF 1 3/4". THE CONTRACTOR SHALL FURNISH ANCHOR PULL-OUT DATA FROM AN INDEPENDENT TESTING LABORATORY USING CLASS "A" CONCRETE IN ACCORDANCE WITH STATE OF TENNESSEE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION". THE ULTIMATE LOAD FOR 7/8" ANCHOR SHALL BE 19,000 POUNDS. BOLTS SHALL CONFORM TO ASTM A307.
- ② THE MASONRY ANCHORS SHALL BE SUB-SET IN THE CONCRETE AT A DEPTH OF BETWEEN 3/32" TO 1/4" AND TORQUED WITH THE END TERMINAL IN THE PLACE TO AN EQUIVALENT DIRECT PULL-OUT LOAD OF 12,000 POUNDS. SLIPPAGE SHALL NOT EXCEED 1/4".
- ③ THE CONTRACTOR WILL PERFORM ON-SITE TESTING OF EACH BOLT IN THE PRESENCE OF TDOT PERSONNEL TO ENSURE THESE REQUIREMENTS ARE MET. ANY INSTALLATION NOT MEETING WILL BE REJECTED.
- ④ BOLTS AND WASHERS TO BE GALVANIZED CONFORMING TO REQUIREMENTS OF ASTM A153.
- ⑤ SEE S-SSMB-1 AND S-SSMB-2 FOR ADDITIONAL DETAILS.