

6" 7 1/2" W-Beam Panel (Typ.) 5/8" Ø x 9 1/2" Button Head Bolt -Composite Block-Out Side View ⊢W-Beam Panel **Button Head Bolt PLAN VIEW** SINGLE FACE W-BEAM SINGLE FACE W-BEAM WITH STEEL POST & 8" DEEP BLOCK-OUT 12" DEEP BLOCK-OUT (Timber Post Similar) **Bolt Holes Typical** Initial ¾" Hole Rub Rail Bolt Hole (If Read, For W-Beam) (See S-GRT-1) 1 1/8" (Typ.)

ISOMETRIC

Optional

Bolt Holes

STEEL POST FOR

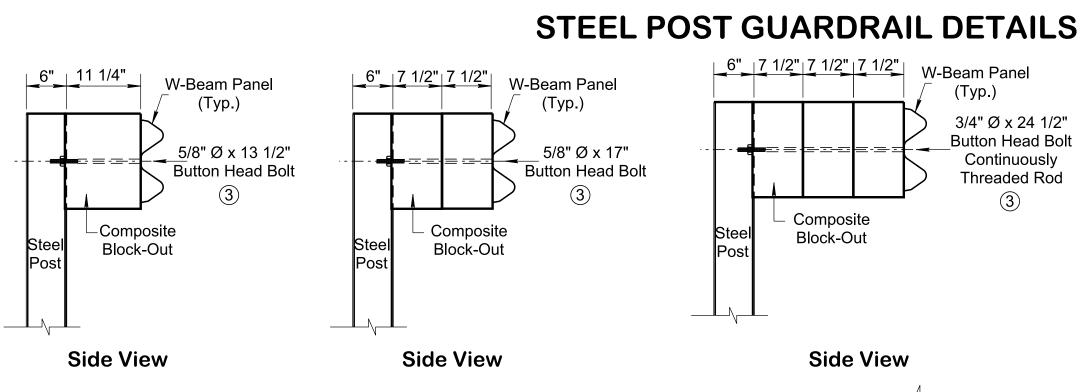
SINGLE FACE W-BEAM RAIL

WITH OPTIONAL RUB RAIL

(If Required)

FRONT VIEW

(5) $\frac{3}{4}$ " $\emptyset \longrightarrow$



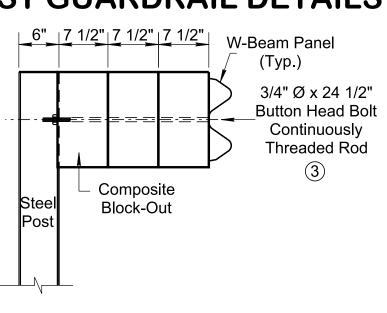
- W-Beam Panel

PLAN VIEW

WITH STEEL POST &

(Timber Post Similar)

Button Head Bolt



Side View

PLAN VIEW

SINGLE FACE W-BEAM

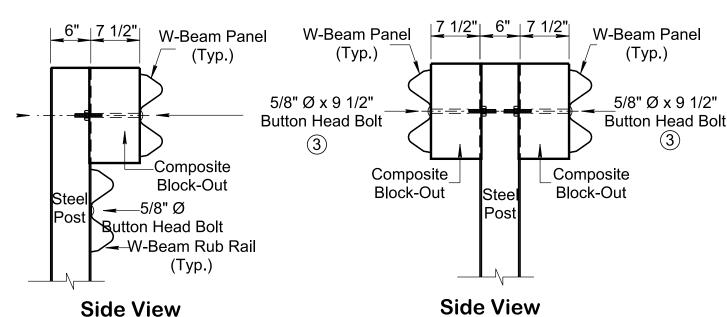
WITH STEEL POST &

-W-Beam Panel

3/4" Ø x 24 1/2"

Button Head Bolt

Continuously Threaded Rod 3



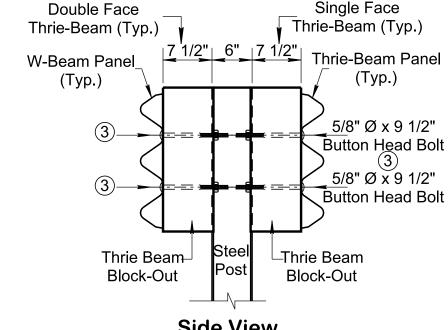
W-Beam

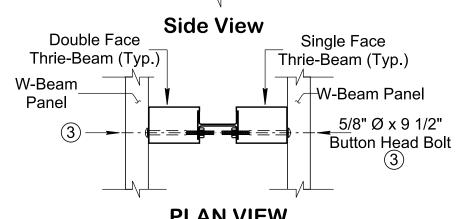
Panel

W-Beam

Panel

5/8" Ø x 9 1/2"





Button Head Bolt PLAN VIEW DOUBLE FACE W-BEAM SINGLE FACE W-BEAM WITH STEEL POST WITH RUB RAIL (Timber Post Similar)

PLAN VIEW SINGLE/DOUBLE FACE THRIE-BEAM WITH STEEL POST (Timber Post Similar)

GENERAL NOTES

THE CONTRACTOR MAY HAVE THE CHOICE OF EITHER HOT ROLLED OR WELDED STEEL W6 X 8.5 OR W6 X 9 OR 8" X 6" WOOD POST EXCEPT AS NOTED:

W-Beam Panel

5/8" Ø x 9 1/2"

Button Head Bolt

- THE MIXING OF ANY POST TYPES ON A GIVEN PROJECT WILL BE AVOIDED IF AT ALL POSSIBLE. SHOULD IT BECOME NECESSARY TO MIX POST TYPES ON A GIVEN PROJECT POSTS SHALL NOT BE MIXED ON A SINGLE RUN OF GUARDRAIL EXCEPT AS NECESSARY AT END TERMINALS

- (D) WELDED STEEL POSTS SHALL CONFORM TO ASTM A769 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123. UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- (E) SEE STANDARD DRAWING S-PL-6 FOR POST LENGTH REQUIREMENTS AND PAID UNDER ITEM NUMBERS.

BLOCK-OUTS

- BLOCK OUTS SHALL BE WOOD CONFORMING TO THE REQUIREMENTS OF TDOT CONSTRUCTION STANDARD SPECIFICATIONS OR PLASTIC GUARDRAIL BLOCK-OUTS LISTED ON THE TDOT QUALIFIED PRODUCT LIST.
- (G) ONLY WOODEN BLOCK-OUTS MAY BE USED WITH WOODEN POSTS, PLASTIC OR WOODEN BLOCK-OUTS MAY BE USED WITH STEEL POSTS.
- (H) ALL BLOCK-OUTS SHALL MEET MASH GUIDELINES AND NCHRP-350 GUIDELINES.
- (I) FOR BLOCK-OUT DETAILS SEE STANDARD DRAWING S-GR31-1A.
- RECYCLED PLASTIC GUARDRAIL BLOCK-OUTS LISTED ON THE TDOT QUALIFIED PRODUCTS LIST MAY BE SUBSTITUTED FOR WOOD BLOCK-OUTS. THE USE OF RECYCLED PLASTIC GUARDRAIL BLOCK-OUTS ARE SUBJECT TO THE FOLLOWING STIPULATIONS:
 - 1. THE MIXING OF BLOCK-OUTS ON A GIVEN PROJECT WILL BE AVOIDED IF POSSIBLE.
 - 2. SHOULD IT BECOME NECESSARY TO CHANGE THE BLOCK-OUT TYPE ON A GIVEN PROJECT, THE BLOCK-OUTS SHOULD NOT BE MIXED ON A GIVEN RUN OF GUARDRAIL.
 - 3. THE COST OF BLOCK-OUTS SHALL BE INCLUDED IN THE BID PRICE FOR GUARDRAIL.

FUTURE ADJUSTMENTS

- (K) WOOD BLOCK OUTS SHALL HAVE ONE ADDITIONAL ¾" HOLE, FOUR INCHES BELOW THE INITIAL HOLE FOR FUTURE ADJUSTMENT.
- $\mathsf{(L)}^-$ INITIAL INSTALLATION REQUIRES ONE BOLT CONNECTION, EACH ADJUSTMENT THEREAFTER REQUIRES TWO BOLT CONNECTIONS.

END TREATMENTS

- $(exttt{M})$ ALL RUNS OF GUARDRAIL WILL BEGIN AND END WITH AN ANCHOR SYSTEM (SEE S-GRA-SERIES)
- (N) GUARDRAIL ENDS THAT ARE INSIDE THE CLEAR ZONE AND EXPOSED TO ONCOMING TRAFFIC SHALL HAVE A CRASH WORTHY END TERMINAL AS NOTED:
 - 1. ANY ROAD WITH SUITABLE BACK SLOPES SHALL USE END TERMINALS BURIED IN BACK SLOPE
 - 2. ÀLL HIGHWAY SYSTEM ROADS WITHOUT SUITABLE BACK SLOPES SHALL USE MASH TL-3 TANGENTIAL END TERMINALS (SEE S-GRT-2).
 - 3. ALL OTHER ROADS WITH POSTED SPEED < 45 MPH SHALL USE MASH TL-2 END TERMINALS UNLESS OTHERWISE NOTED (SEE S-GRT-3).

DESIGN

- (O) 4 FEET BEHIND GUARDRAIL SHALL BE CLEAR OF OBSTRUCTIONS FOR DEFLECTION.
- (P) REFER TO SAFETY PLAN STANDARDS FOR HOW TO DETERMINE THE LENGTH OF NEED
- SEE STANDARD DRAWING S-GR31-1B FOR FASTENING HARDWARE DETAILS.

STATE OF TENNESSEE STANDARD DRAWING _ **DEPARTMENT OF TRANSPORTATION**

REV. 06-15-2021: REVISED GENERAL NOTES (A3) AND (E). REVISED PLASTIC

ON SIDE VIEWS.

BLOCK-OUTS.

BLOCK-OUT TO COMPOSITE BLOCK-OUT

REV. 07-07-2023: REVISED FOOT NOTE(3)

AND SIDE VIEW DRAWINGS FOR 12" DEEP,

DOUBLE 8" DEEP, AND TRIPLE 8"

AND GENERAL NOTE(J). ADDED PLAN VIEW

GUARDRAIL GENERAL NOTES AND POST DETAILS

06-28-2019

NOT TO SCALE

TRIPLE 8" DEEP BLOCK-OUT AND STEEL POST (Timber Post Similar) (Timber Post Similar) **POST** ¾" Ø W6 X 15 IS USED WITH GUARDRAIL CONNECTION TO STRUCTURES FOR MAINTENANCE ACTIVITIES ONLY. **Bolt Holes** Typical **Initial Hole** 4 Thrie Beam Rail

PLAN VIEW

Bolt Holes 0 0 1 1/8" (Typ.) – **ISOMETRIC** Optional (5) $\frac{3}{4}$ " \emptyset \longrightarrow \emptyset \vdots \emptyset **Bolt Holes**

STEEL POST FOR **DOUBLE FACE W-BEAM RAIL**

1 1/8" (Typ.) -

Optional

Bolt Holes

 $(5) \quad \frac{3}{4} \text{" } \emptyset \longrightarrow \oplus \frac{1}{4}$

FRONT VIEW

ISOMETRIC

-W-Beam Panel

PLAN VIEW

SINGLE FACE W-BEAM

WITH STEEL POST &

DOUBLE 8" DEEP BLOCK-OUT

(Timber Post Similar)

Bolt Holes

Typical

5/8" Ø x 17"

Button Head Bolt

E

STEEL POST FOR SINGLE AND DOUBLE **FACE THRIE-BEAM**

FRONT VIEW

FOOTNOTES

- BOLT HOLES ON THE BACKSIDE ARE FOR DOUBLE FACE GUARDRAIL (IF REQUIRED).
- ADDITIONAL 3/4" HOLES ON OTHER SIDE OF THE FLANGE OR BACK FLANGE WILL BE ACCEPTABLE IF THEY ARE LOCATED WITHIN TOP 9" OF THE POST (FOR SINGLE FACE).
- BUTTON HEAD BOLT WITH RECESSED NUT OR HEX NUT AND 1 WASHER PER BOLT: 5/8" DIA. x 9 1/2" LENGTH, FOR 8" DEEP BLOCK-OUT,
 - 5/8" DIA. x 13 1/2" LENGTH, FOR 12" DEEP BLOCK-OUT, 5/8" DIA. x 17" LENGTH, FOR DOUBLE 8" BLOC-KOUT AND
 - 3/4" DIA. x 24 1/2" LENGTH, CONTINUOUSLY THREADED ROD FOR TRIPLE 8" DEEP BLOCK-OUT.
- (4) 2 EXTRA 3/4" HOLES IN POST ABOVE INITIAL HOLE AND 1 EXTRA 3/4" HOLE BELOW FOR VERTICAL ADJUSTMENT.
- ADDITIONAL BOLT HOLES ON THE POST BOTTOM MAY BE ACCEPTABLE FOR MANUFACTURING PURPOSES.

S-GR31-1C