massDOT
Massachusetts Department of Transportation
Highway Division

Number: **E-12-004**

Date: **03/27/2012**

ENGINEERING DIRECTIVE

Thomas F. Broderick, P.E. (signature on original)

CHIEF ENGINEER

Revised and Updated Construction Standard Details

The purpose of this Engineering Directive is to revise and update certain drawings contained in the *Construction Standard Details*, as follows:

New Drawing Number and Date	Replaces Drawing Number and Date	Drawing Title	Change
E 106.3.0R March 2012	E 106.3.0 August 2010	Method of Setting Vertical Curb	Extends the HMA Binder Course to the curb to help prevent surface cracking along the cut line.
E 201.3.0R March 2012	E 201.3.0 August 2010	Concrete Block Catch Basin	Standard Depth error 9'-6" corrected to 6'-6".
E 202.6.0R March 2012	E 202.6.0 August 2010	Manhole Frame and Cover – A Frame	Dimension Arrows extended from border to outside edge of standard cover drawing indicating a 26-inch overall diameter manhole cover.
E 401.2.0R March 2012	E 401.2.0 August 2010	Installation For Steel W Beam Highway Guard for Sign Protection	Deletion of Note 3 referencing back up plates. Approach slope to guard rail indicated.
E 401.5.1R March 2012	E 401.5.1 August 2010	Bridge Rail to Highway Guard Transition	Deletion of Notes 1 and 4. Drawing rescaled to show full length of payment unit. Allows for quicker transition to W Beam guard rail.
E 401.6.0R March 2012	E 401.6.0 August 2010	Steel Thrie Beam Highway Guard Details	Deletion of Steel Back Up Plate Detail from drawing and deletion of reference to Back Up Plate in Note 3.
E 401.8.0R March 2012	E 401.8.0 August 2010	Steel W Beam Highway Guard Posts and Terminal Section Details	Deletion of reference to Back Up Plate in Note 3.
E 401.11.0R March 2012	E 401.11.0 August 2010	Special Base Anchor for Highway Guard Installation on Concrete	Deletion of references to Back-Up Plate in drawing and in Note 7.
E 401.16.0R March 2012	E 401.16.0 August 2010	Steel Thrie Beam Highway Guard Median – Barrier	Deletion of references to Back-Up Plate in drawings.

Distribution:_____ **Please Post:**_____ **Do Not Post:**_____

CONSTRUCTION STANDARDS

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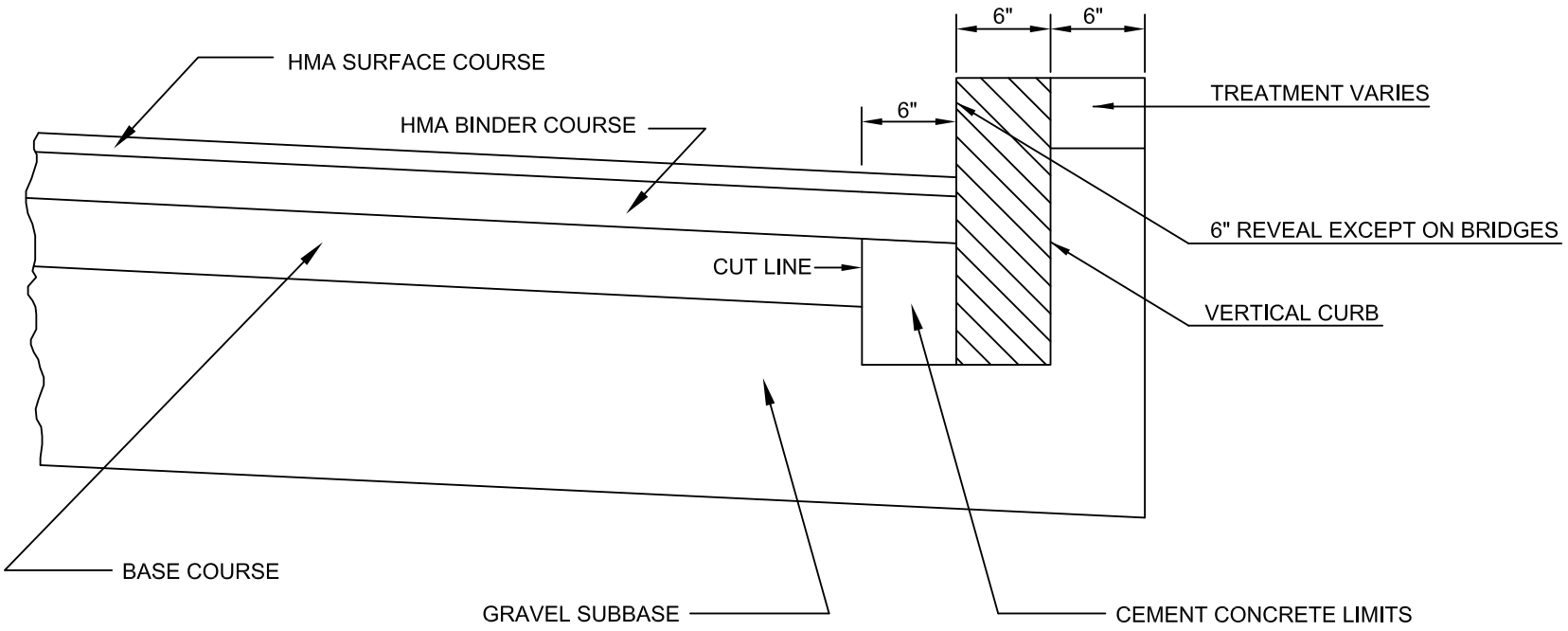
METHOD OF SETTING VERTICAL CURB



NOTES:

1. THIS PROCEDURE IS APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE COURSE IS IN PLACE PRIOR TO BINDER AND TOP PLACEMENT.

2. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BASE AND GRAVEL. REPLACE WITH CEMENT CONCRETE.

3. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT TO BE USED AS A SUBSTITUTE.

4. PAYMENT PER FOOT OF CURB IS INCLUSIVE OF ALL ITEMS OF WORK REQUIRED TO COMPLETE PROPER INSTALLATION OF THE CURB.

DATE OF ISSUE
MARCH 2012

DRAWING NUMBER
E 106.3.0R

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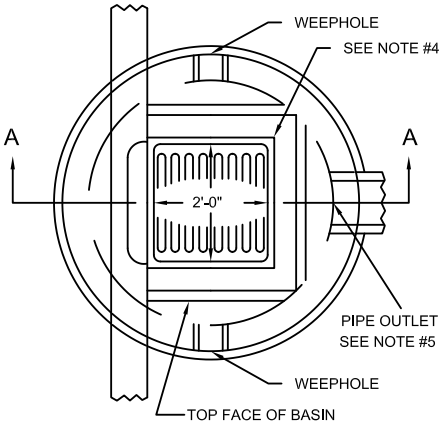
CONSTRUCTION STANDARDS

CONCRETE BLOCK CATCH BASIN

DATE OF ISSUE
MARCH 2012

DRAWING NUMBER
E 201.3.0R

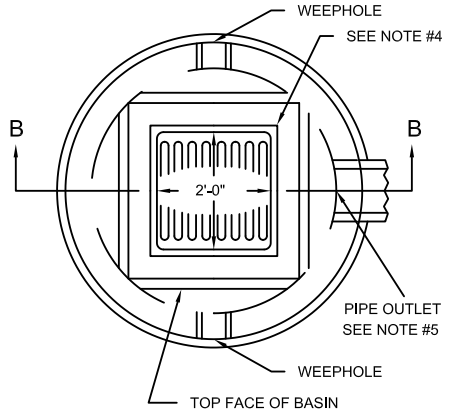


BASIN WITH CURB INLET

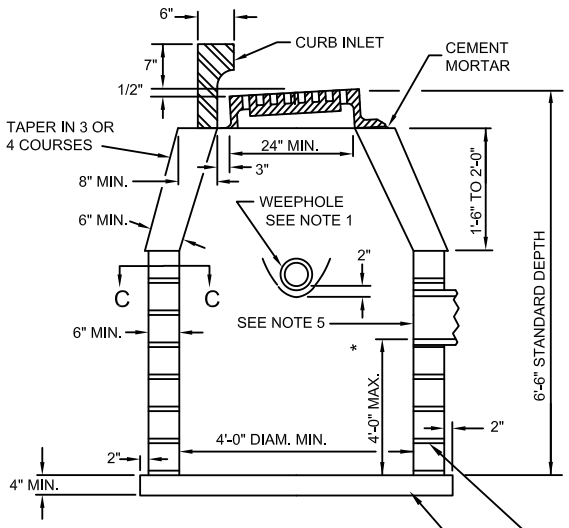
* MINIMUM DEPTH OF SUMP TO BE 2'
STANDARD DEPTH 3"

NOTES:

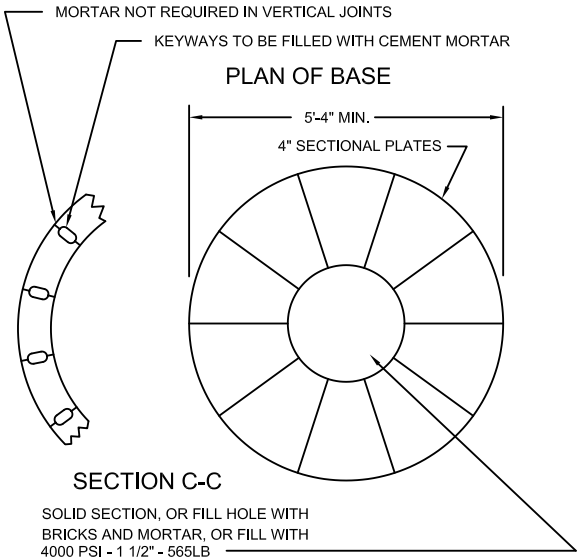
1. WEEPHOLES SHALL BE 4" PIPE OPENING OR EQUIVALENT WITH 1/4 IN. MESH, 23 GAGE GALVANIZED WIRE SCREEN COVERING. 2 CUBIC FEET OF CRUSHED STONE SHALL BE PLACED AROUND EACH WEEPHOLE.
2. BRICKS MAY BE USED BETWEEN TOP COURSE AND C.B. FRAME FOR GRADE ADJUSTMENT. FRAME SHALL BE SET IN FULL BED OF MORTAR.
3. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHODS, SEE STANDARD SPECIFICATIONS.
4. DETAILS SHOWN ON DRAWINGS E 201.6.0 - E 201.11.0
5. FACE OF PIPE FLUSH OR NOT TO PROJECT MORE THAN 4 IN. FROM FACE OF WALL ALONG CENTERLINE OF PIPE.



BASIN WITH 4 FLANGE INLET



SECTION A-A

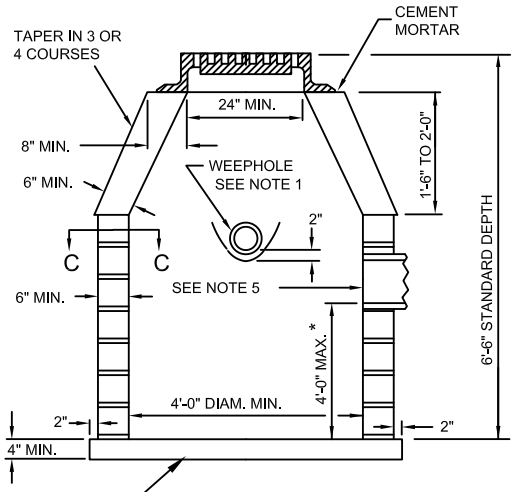


SECTION C-C

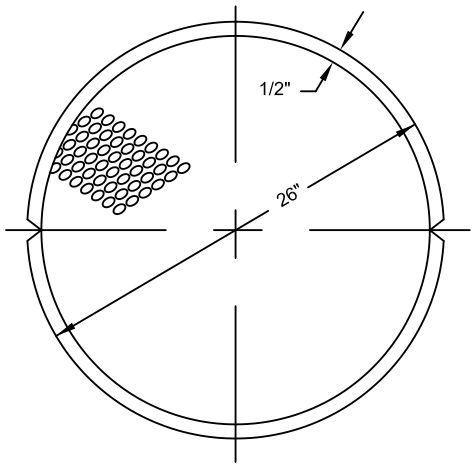
SOLID SECTION, OR FILL HOLE WITH BRICKS AND MORTAR, OR FILL WITH
4000 PSI - 1 1/2" - 565LB
OR 4000 PSI - 3/4" - 610 LB
(IF CONCRETE IS HAND MIXED SEE LATEST SPECIFICATIONS.)

BLOCKS TO BE SET IN FULL BED OF CEMENT MORTAR

4000 PSI - 1 1/2" - 565LB
OR 4000 PSI - 3/4" - 610 LB
CEMENT COMCRETE OR PRECAST
CONCRETE SECTIONAL PLATES. SEE ABOVE.

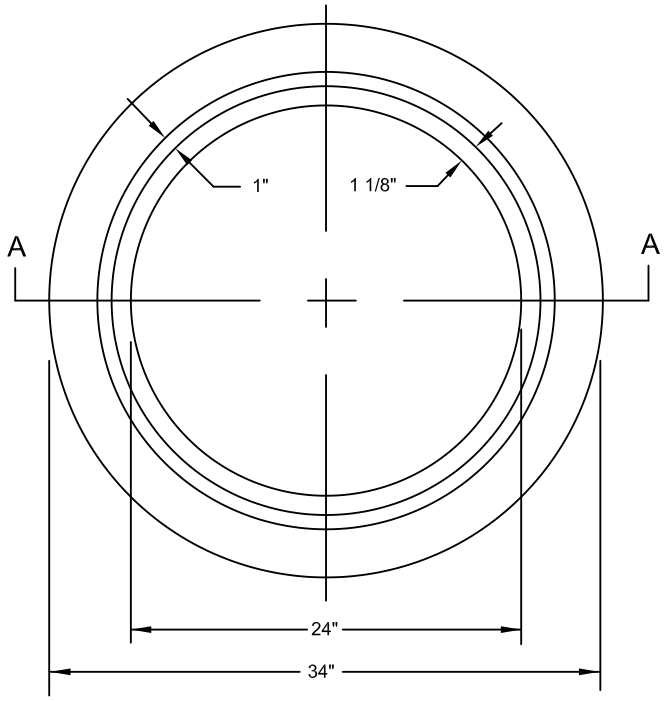


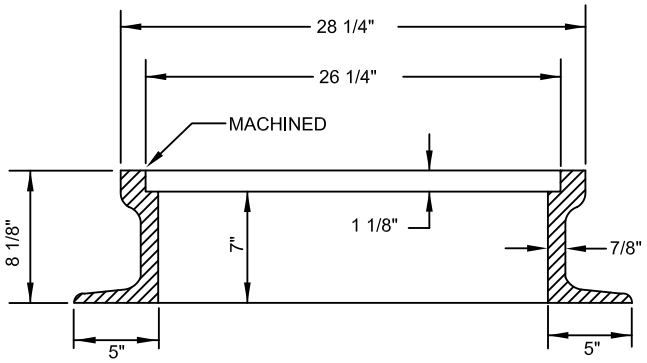
SECTION B-B



STANDARD COVER

FOR COVER DETAILS SEE DRAWING E 202.8.0





TYPE - A FRAME

NOTES:

1. MINIMUM MASS - 265 LBS.
2. MATERIAL - CAST IRON

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CONSTRUCTION STANDARDS

MANHOLE FRAME AND COVER – A FRAME

DATE OF ISSUE
MARCH 2012

DRAWING NUMBER
E 202.6.0R

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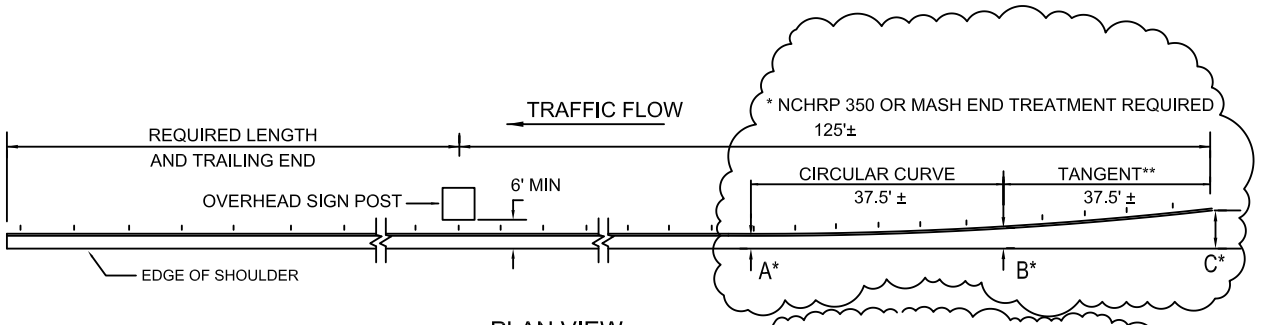
CONSTRUCTION STANDARDS

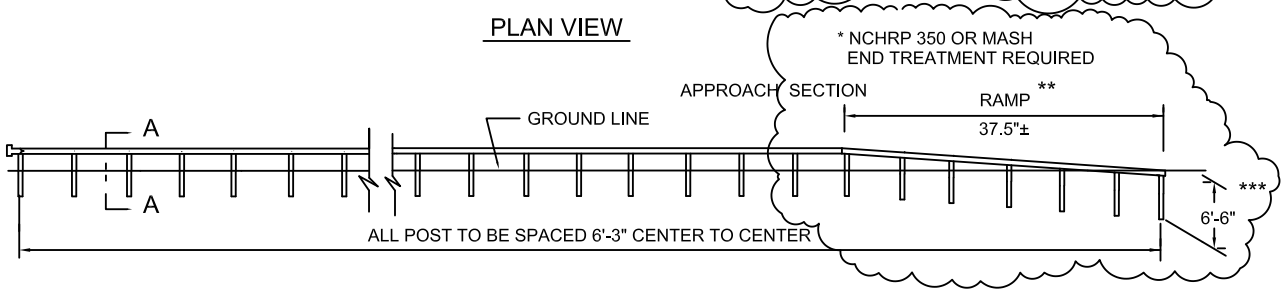
INSTALLATION FOR STEEL W BEAM HIGHWAY GUARD FOR SIGN PROTECTION

DATE OF ISSUE MARCH 2012

DRAWING NUMBER **E 401.2.0R**



PLAN VIEW

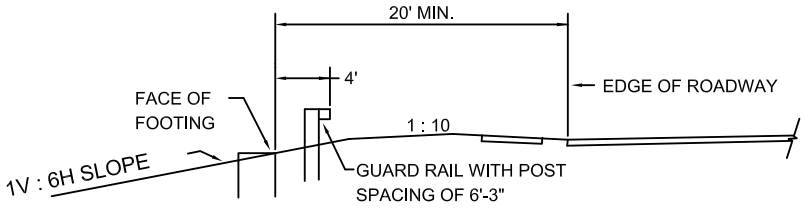


ELEVATION VIEW

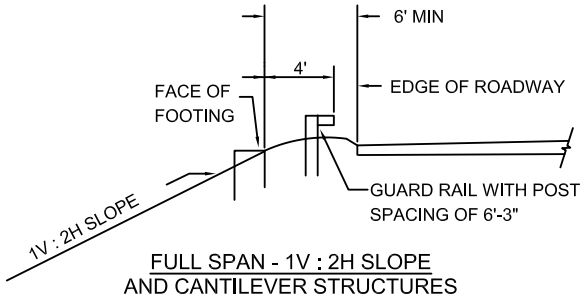
* SEE TABLE ON E 401.3.0 FOR DIMENSIONS
** 50' FOR THRIE BEAM
*** STANDARD LENGTH POSTS SHALL BE USED IN RAMPED SECTIONS

NOTES:

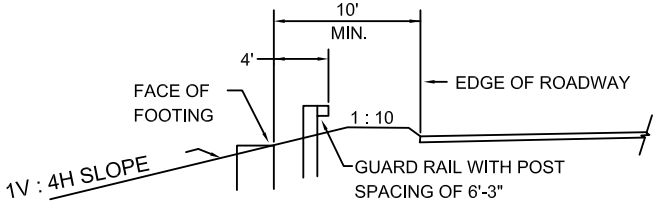
1. LENGTHS OF HIGHWAY GUARD SHOWN ARE MEASUREMENTS ALONG FACE OF RAILING.
2. FOR DESCRIPTIONS, MATERIAL AND AND CONSTRUCTION METHODS, SEE THE STANDARD SPECIFICATIONS AND CONSTRUCTION E 401.1.0 AND E 401.5.0 - E 401.10.0.
3. DETAILS SHOWN HEREIN ALSO APPLY TO THRIE BEAM GUARD RAIL, EXCEPT AS OTHERWISE NOTED.
4. WHEN PLACED IN MEDIAN, CHANGE TO THRIE BEAM & HEIGHT OF 2'-6 1/2"±1"



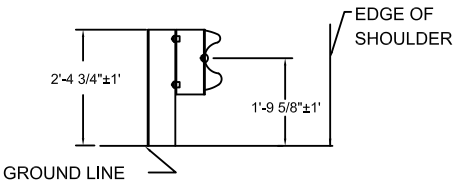
FULL SPAN - 1V : 6H SLOPE



FULL SPAN - 1V : 2H SLOPE
AND CANTILEVER STRUCTURES



FULL SPAN - 1V : 4H SLOPE



SECTION A-A

CONSTRUCTION STANDARDS

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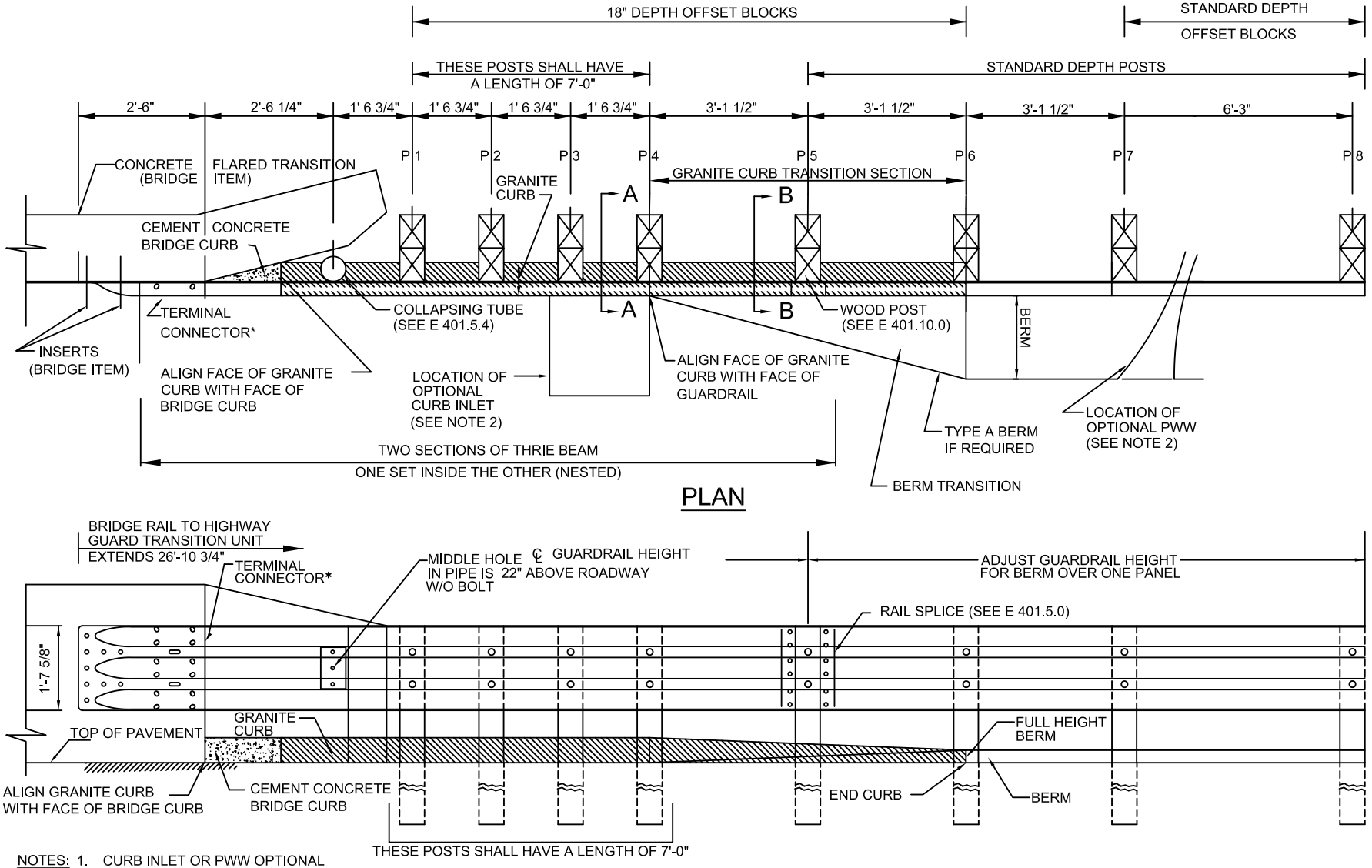
BRIDGE RAIL TO HIGHWAY GUARD TRANSITION



PLAN

ELEVATION

NOTES:
1. CURB INLET OR PWW OPTIONAL BASED ON GENERAL PLAN REQUIREMENTS
2. FOR SECTIONS A-A AND B-B, SEE E 401.5.2
3. THRIE BEAM TO W BEAM TRANSITION RAIL (SEE E401.6.1) IS TYPICALLY PLACED OUTSIDE BRIDGE RAIL TO HIGHWAY GUARD TRANSITION UNIT LENGTH, (26'-10 3/4") AT OR BEYOND POST P8.
4. TRANSITION FROM THRIE BEAM IS ALLOWED FROM P5 TO P7 IF REQUIRED BY SITE CONSTRAINTS. PAYMENT FOR THE TRANSITION ELEMENT IS INCLUDED IN THIS ITEM IN THAT CASE.

*SEE E 401.5.3 FOR TERMINAL CONNECTOR DIMENSIONS AND DETAILS

DATE OF ISSUE
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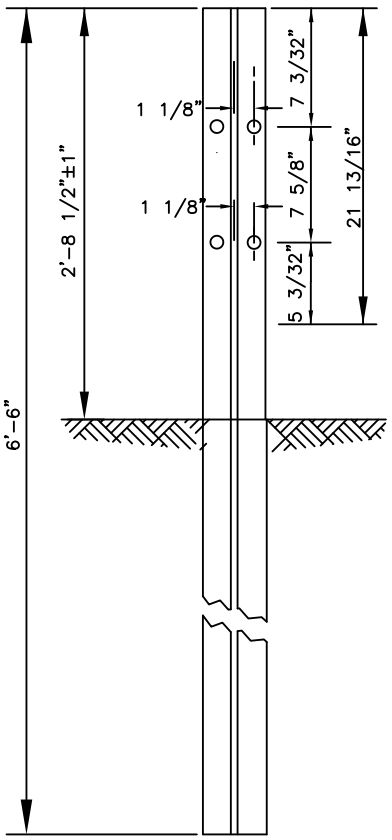
E 401.5.1R

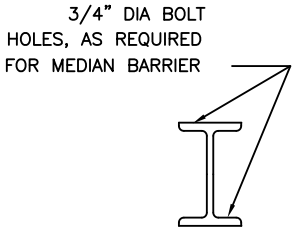
CONSTRUCTION STANDARDS

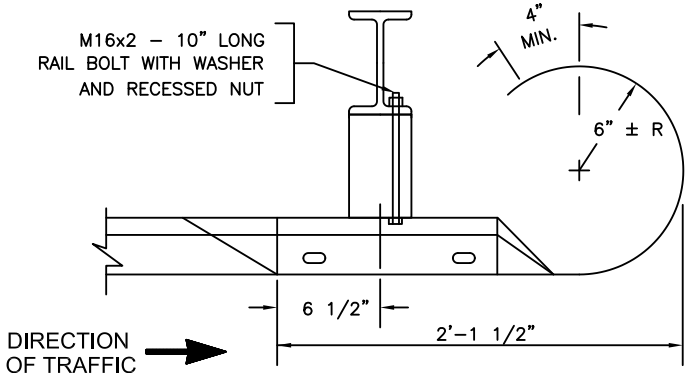
massDOT Massachusetts Department of Transportation Highway Division

STEEL THRIE BEAM HIGHWAY GUARD DETAILS



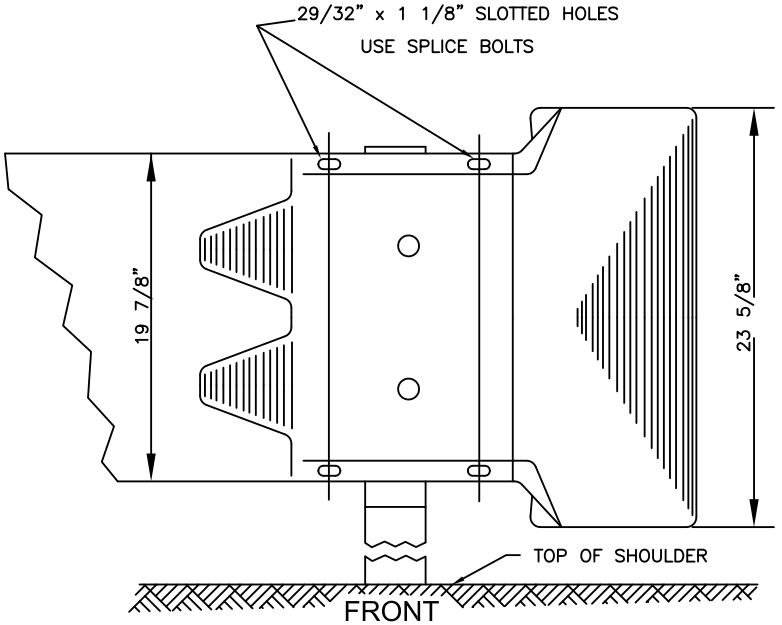
POST





PLAN

TERMINAL SECTION



FRONT

TERMINAL SECTION
DOWN STREAM OF TRAFFIC

DIRECTION
OF TRAFFIC

NOTES:

1. POST TO BE FABRICATED FROM W6"x9" STEEL SECTIONS AS SHOWN.
2. POST TO BE 3/4" DIA. (STD GALV WASHERS TO BE USED AT THESE CONNECTIONS).
3. FOR RAIL BOLT SLOT DETAILS SEE E 401.7.0.
4. FOR BLOCK–OUT DETAILS SEE E 401.21.0.

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DRAWING NUMBER
E 401.6.0R

CONSTRUCTION STANDARDS

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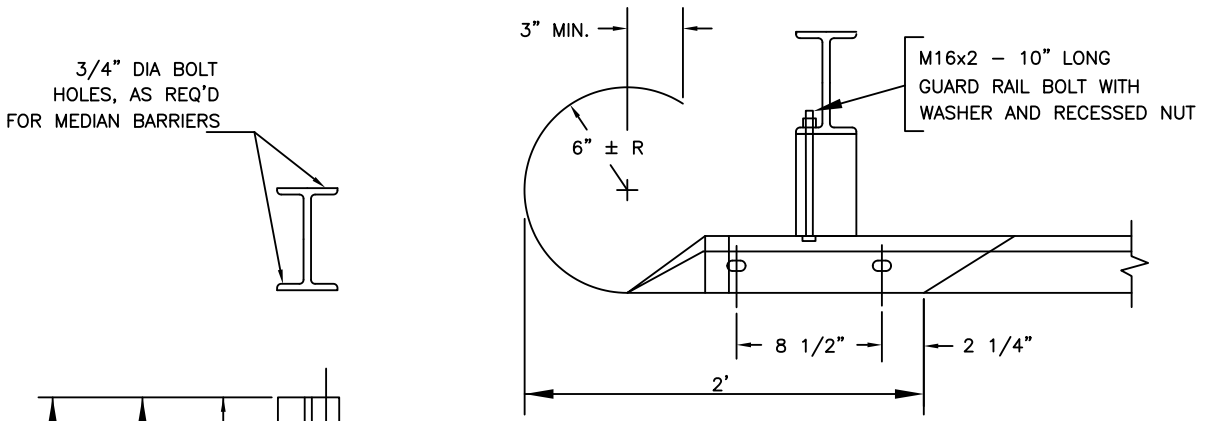
STEEL W BEAM HIGHWAY GUARD

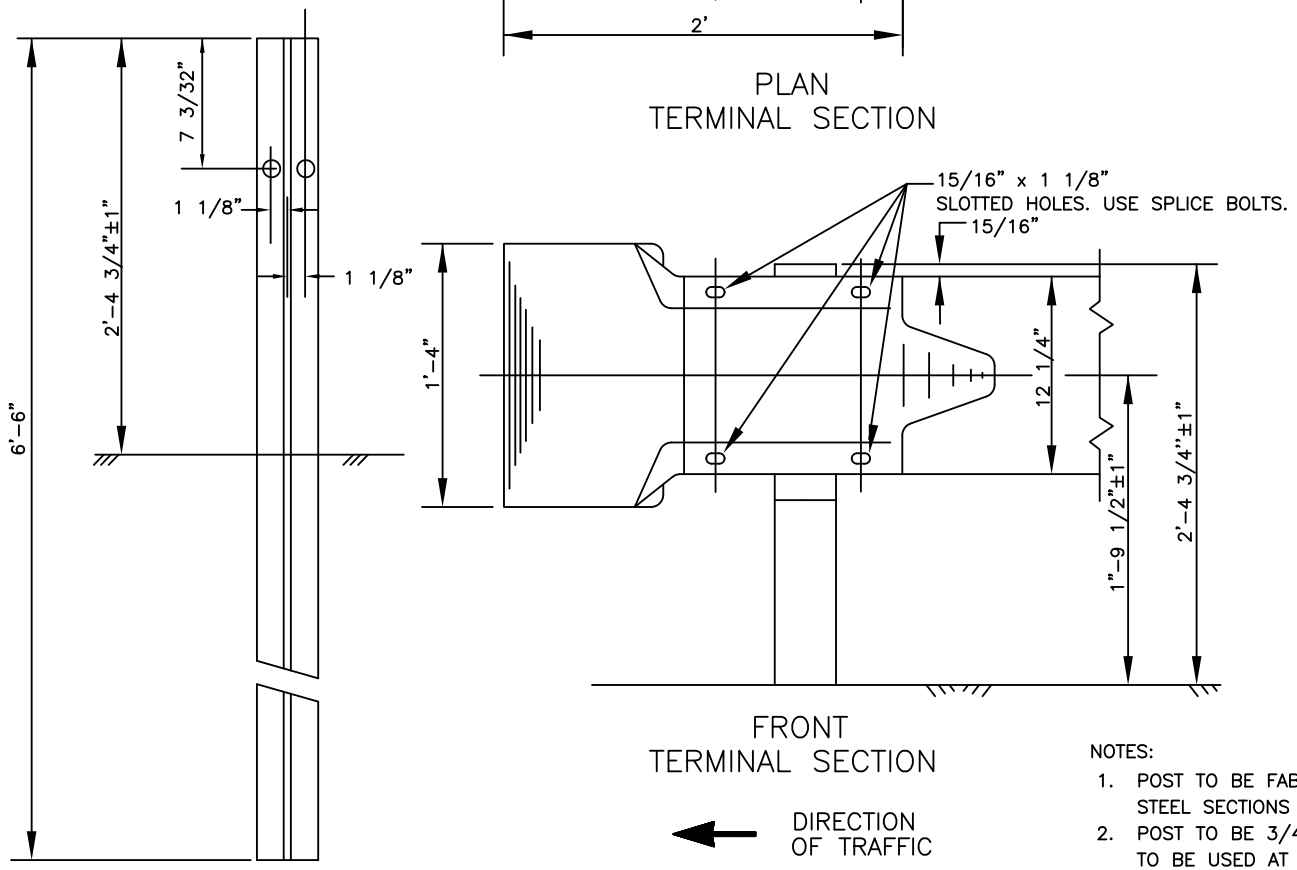
POSTS AND TERMINAL SECTION DETAILS

DATE OF ISSUE
MARCH 2012

DRAWING NUMBER
E 401.8.0R



PLAN
TERMINAL SECTION



POST

FRONT
TERMINAL SECTION

DIRECTION OF TRAFFIC

NOTES:

1. POST TO BE FABRICATED FROM W6"X9" STEEL SECTIONS AS SHOWN.
2. POST TO BE 3/4" DIA. (STD GALV WASHERS TO BE USED AT THESE CONNECTIONS).
3. FOR BLOCK–OUT DETAILS SEE E 401.20.0.

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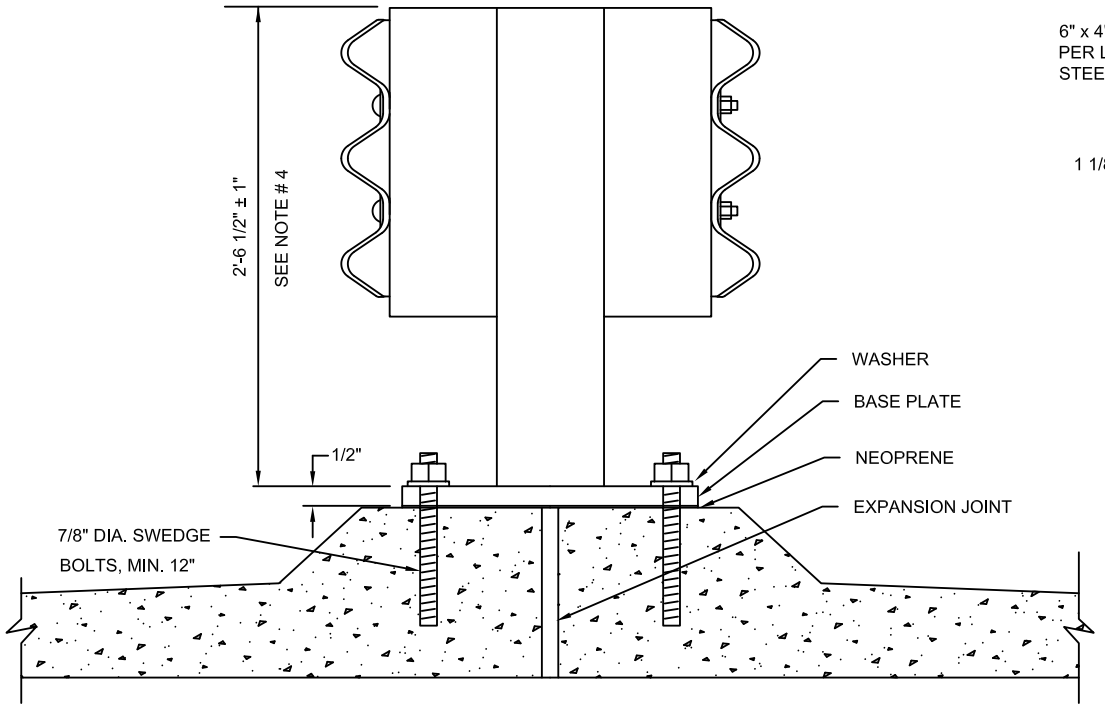
CONSTRUCTION STANDARDS

SPECIAL BASE ANCHOR FOR HIGHWAY GUARD INSTALLATION ON CONCRETE

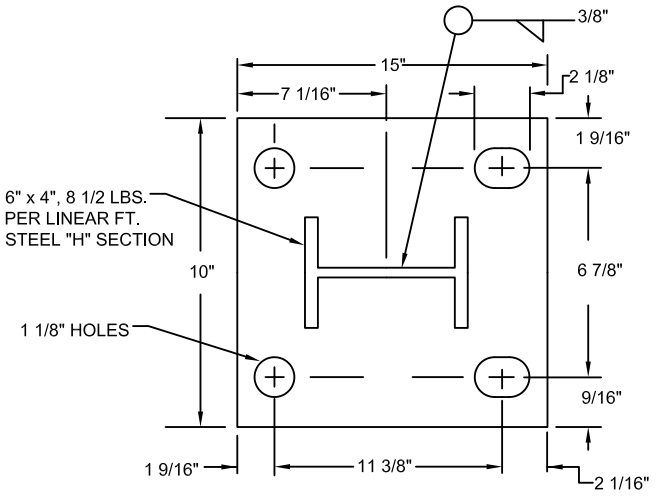
DATE OF ISSUE
MARCH 2012

DRAWING NUMBER
E 401.11.0R

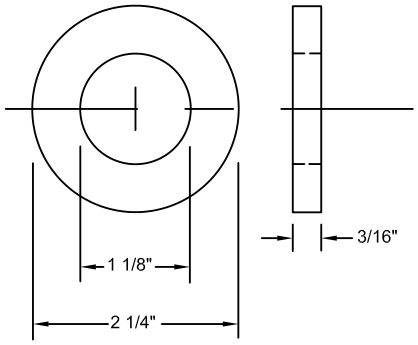


DETAIL OF POST OVER EXPANSION JOINT

SEE NOTE # 5 WHEN THERE IS NO EXPANSION JOINT.



DETAIL OF BASE PLATE

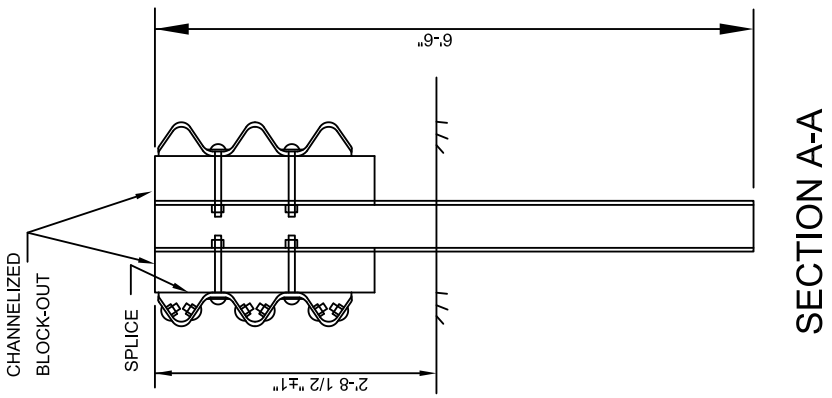


DETAIL OF WASHER

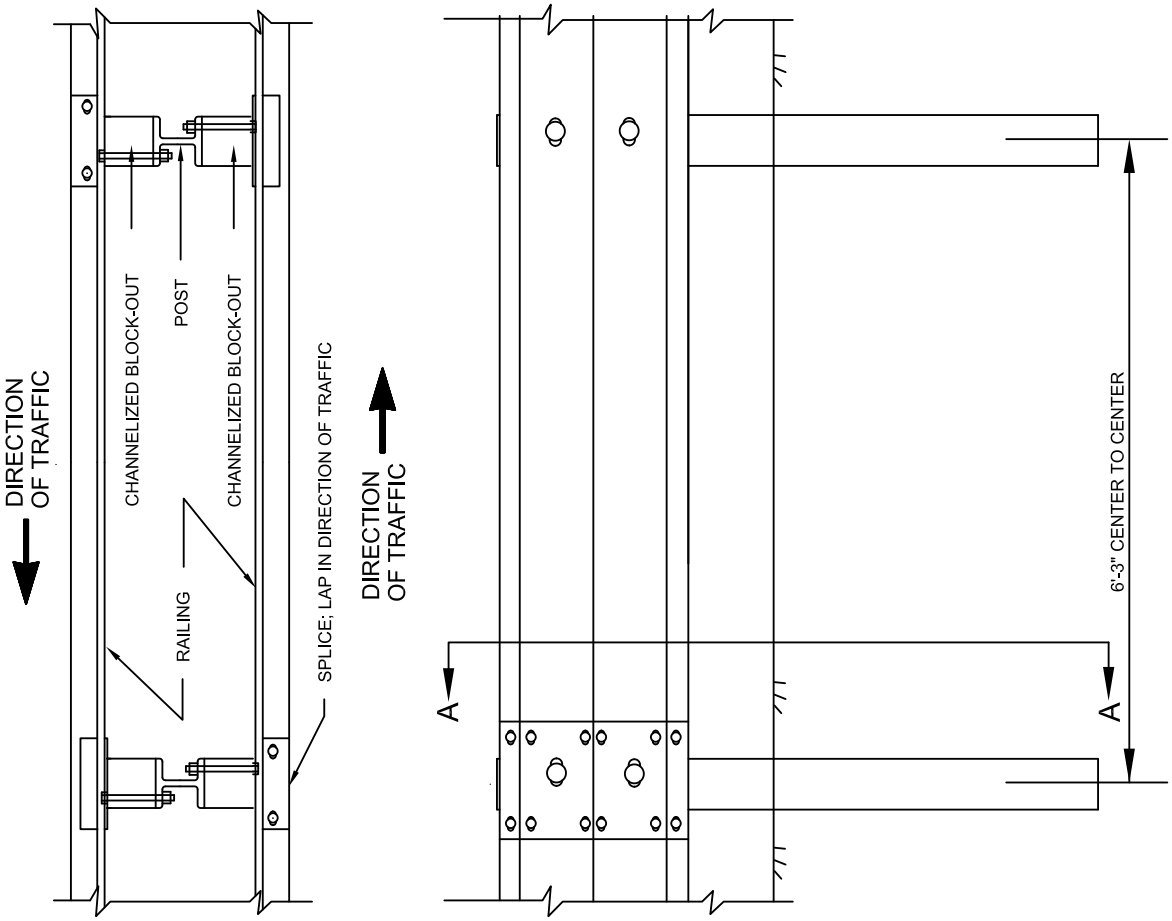
GALVANIZED

NOTES:

1. SWEDGE BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED.
2. HOLES FOR SWEDGE BOLTS SHALL BE 10" DEEP. SWEDGE BOLTS TO BE SET IN EPOXY RESIN, AS APPROVED BY THE ENGINEER.
3. BASE PLATE IS TO BE SET ON 3/32" NEOPRENE.
4. DETAILS OF HIGHWAY GUARD ARE SHOWN ON DRAWINGS E 401.1.0, E 401.5.0 & E 401.6.0
5. THE BASE PLATE AND CONSTRUCTION METHOD SHOWN ABOVE ARE ALSO USED WHEN THERE ARE NO EXPANSION JOINTS IN THE CEMENT CONCRETE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD MEASUREMENTS.
7. MAXIMUM OF TWO (2) POSTS IN A ROW OF GUARDRAIL.



SECTION A-A



NOTES:

1. ALL POSTS TO BE SPACED 6'-3" CENTER TO CENTER
2. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHODS SEE STANDARD SPECIFICATIONS.
3. FOR DETAILS OF BARRIER COMPONENTS SEE E 401.5.0 AND E 401.6.0.
4. RAIL SPLICES ON DOUBLE FACED HIGHWAY GUARD ARE TO BE STAGGERED. (i.e., SPLICES) ARE NOT TO BE MADE ON BOTH SIDES OF THE SAME POST.

massDOT Massachusetts Department of Transportation Highway Division
CONSTRUCTION STANDARDS

STEEL THRIE BEAM HIGHWAY GUARD

MEDIAN – BARRIER

DATE OF ISSUE
MARCH 2012

DRAWING NUMBER
E 401.16.0R