

MDSHA BOOK OF STANDARD
FOR HIGHWAYS, INCIDENTAL STRUCTURES AND TRAFFIC CONTROL APPLICATIONS

STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
	CATEGORY "6" SHOULDERS		
MD 605.01	TRAFFIC BARRIER W BEAM WITH TYPE A END ANCHORAGE (SINGLE RAIL)	05/29/07	05/02/07
MD 605.01-01	TRAFFIC BARRIER W BEAM WITH TYPE A END ANCHORAGE (DOUBLE RAIL)	05/29/07	05/02/07
MD 605.01-02	TRAFFIC BARRIER W BEAM WITH TYPE A END ANCHORAGE (OPTION 1)	03/15/06	04/05/06
MD 605.01-03	TRAFFIC BARRIER W BEAM WITH TYPE A END ANCHORAGE (OPTION 2)	09/30/04	03/28/01
MD 605.02	TYPE B TRAFFIC BARRIER END TREATMENT	03/15/06	04/05/06
MD 605.03	TYPE C TRAFFIC BARRIER END TREATMENT	11/08/06	10/25/06
MD 605.04	GRADING ADJUSTMENT FOR 3 R TYPE WORK	02/10/04	03/31/04
MD 605.05	TYPE D TRAFFIC BARRIER END TREATMENT	03/15/06	04/05/06
MD 605.06	TYPE E TRAFFIC BARRIER END TREATMENT (PERMANENT OR TEMPORARY)	10/01/01	03/28/01
MD 605.06-01	TYPE E TRAFFIC BARRIER END TREATMENT CRITERIA	03/15/06	04/05/06
MD 605.07	TYPE F TRAFFIC BARRIER END TREATMENT	10/01/01	03/28/01
MD 605.08	TYPE G TRAFFIC BARRIER END TREATMENT	03/15/06	04/05/06
MD 605.08-01	TYPE G TRAFFIC BARRIER END TREATMENT ANCHORAGE BRACKET	10/01/01	03/28/01
MD 605.09	TYPE H TRAFFIC BARRIER END TREATMENT	03/15/06	03/28/01
MD 605.10	TYPE K TRAFFIC BARRIER END TREATMENT OPTION 1 ANCHORAGE	03/15/06	04/05/06
MD 605.10-01	TYPE K TRAFFIC BARRIER END TREATMENT OPTION 2 & 3 ANCHORAGE	03/15/06	04/05/06
MD 605.10-02	TYPE K TRAFFIC BARRIER END TREATMENT ANCHORAGE DETAILS	03/15/06	04/05/06

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STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
CATEGORY "6" SHOULDERS			
MD 605.11	TYPE J TRAFFIC BARRIER END TREATMENT (PERMANENT OR TEMPORARY)	10/01/01	03/28/01
MD 605.11-01	TYPE J TRAFFIC BARRIER END TREATMENT CRITERIA	03/15/06	04/05/06
MD 605.13	TYPE L TRAFFIC BARRIER ANCHORAGE	11/08/06	10/25/06
MD 605.20	TRAFFIC BARRIER W BEAM END SECTIONS	03/31/06	07/02/99
MD 605.21	TRAFFIC BARRIER W BEAM WITH WOOD OFFSET BLOCK	03/15/06	04/05/06
MD 605.22	TRAFFIC BARRIER W BEAM SINGLE FACE	03/15/06	04/05/06
MD 605.23	TRAFFIC BARRIER W BEAM METAL POST, W BEAM SPLICE AND WOOD OFFSET BLOCK	03/29/07	10/25/06
MD 605.23-01	TRAFFIC BARRIER W BEAM METAL POST ADAPTABLE TO 8"x 6"x 14" WOOD OFFSET BLOCK	10/01/01	07/02/99
MD 605.23-02	TRAFFIC BARRIER W BEAM ALTERNATE 'C' SHAPE STRONG POST	03/29/07	10/25/06
MD 605.25	TRAFFIC BARRIER W BEAM WITH WOOD OFFSET BLOCK USING 8 FOOT 0 INCH LONG POST	11/08/06	10/25/06
MD 605.26	TRAFFIC BARRIER W BEAM POST PLACEMENT DETAILS FOR SPANNING 12'-2" TO 18'-5" OPENINGS	10/01/01	07/02/99
MD 605.27	TRAFFIC BARRIER W BEAM BARRICADE	10/01/01	07/02/99
MD 605.28	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	02/10/04	03/31/04
MD 605.28-01	TRAFFIC BARRIER W BEAM MEDIAD BARRIER WITH BOTTOM PANEL	05/29/07	05/02/07
MD 605.29	TRAFFIC BARRIER THRIE BEAM SINGLE FACE	10/01/01	07/02/99
MD 605.29-01	TRAFFIC BARRIER MODIFIED THRIE BEAM WOOD OFFSET BLOCK SINGLE FACE	10/01/01	07/02/99
MD 605.30	TRAFFIC BARRIER THRIE BEAM DOUBLE FACE	10/01/01	07/02/99
MD 605.31	TRAFFIC BARRIER W BEAM PLACEMENT DETAILS	11/08/06	10/25/06

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STANDARD NUMBERS	DESCRIPTION	Dates	
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CATEGORY "6" SHOULDERS			
MD 605.32	TRAFFIC BARRIER W BEAM FLARE RATES	11/08/06	10/25/06
MD 605.41	TRAFFIC BARRIER THRIE BEAM ANCHORAGE TO VERTICAL FACE (WOOD POST)	10/01/01	07/02/99
MD 605.41-01	SPECIAL TRAFFIC BARRIER THRIE BEAM ANCHORAGE TO VERTICAL FACE (STEEL POST)	10/01/01	07/02/99
MD 605.41-02	TRAFFIC BARRIER THRIE BEAM ANCHORAGE TO VERTICAL FACE	10/01/01	07/02/99
MD 605.42	TRAFFIC BARRIER W BEAM ANCHORAGE TO VERTICAL FACE	10/01/01	07/02/99
MD 605.43	TRAFFIC BARRIER W BEAM ANCHORAGE WITH RUB RAIL TO JERSEY SHAPE AND F SHAPE	10/01/01	07/02/99
MD 605.43-01	TRAFFIC BARRIER W BEAM ANCHORAGE WITH RUB RAIL TO JERSEY SHAPE AND F SHAPE	10/01/01	07/02/99
MD 605.43-02	TRAFFIC BARRIER W BEAM ANCHORAGE WITH RUB RAIL TO JERSEY SHAPE AND F SHAPE	10/01/01	07/02/99
MD 605.43-03	TRAFFIC BARRIER W BEAM ANCHORAGE WITH RUB RAIL TO JERSEY SHAPE AND F SHAPE	10/01/01	07/02/99
MD 605.44	TRAFFIC BARRIER W BEAM ANCHORAGE TO TRAIL END OF JERSEY SHAPE OR F SHAPE	10/01/01	07/02/99
MD 605.45	MEDIAN BARRIER W BEAM ANCHORAGE TO TRAIL END VERTICAL WALL	05/19/08	07/02/99
MD 605.46	TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT JERSEY SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END	02/10/04	03/31/04
MD 605.46-01	TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT JERSEY SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END	02/10/04	03/31/04
MD 605.47	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURES	02/10/04	03/31/04
MD 605.49	TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END	02/10/04	03/31/04

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FOR HIGHWAYS, INCIDENTAL STRUCTURES AND TRAFFIC CONTROL APPLICATIONS

STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
CATEGORY "6" SHOULDERS			
MD 605.49-01	TRAFFIC BARRIER THREE BEAM ANCHORAGE AT F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END	05/19/08	03/31/04
MD 605.49-02	TRAFFIC BARRIER THREE BEAM MEDIAN BARRIER ANCHORAGE AT JERSEY SHAPE CONCRETE MEDIAN TRAFFIC BARRIER TERMINAL END	09/30/04	06/26/92
MD 605.50	MEDIAN BARRIER THREE BEAM ANCHORAGE TO VERTICAL FACE	10/01/01	07/02/99
MD 605.51	TRAFFIC BARRIER THREE BEAM ANCHORAGE AT BRIDGE END POSTS	02/10/04	03/31/04
MD 605.51-01	TRAFFIC BARRIER THREE BEAM ANCHORAGE AT BRIDGE END POSTS DETAILS	02/10/04	03/31/04
MD 615.01	STANDARD HOT MIX ASPHALT CURB	10/01/01	07/14/60
MD 620.02	STANDARD TYPES A & B CONCRETE CURB AND COMBINATION CONCRETE CURB & GUTTER	02/10/04	03/31/04
MD 620.02-01	STANDARD TYPES C AND D CONCRETE CURB AND COMBINATION CONCRETE CURB & GUTTER	04/17/07	03/31/04
MD 620.03	DEPRESSED CURB FOR COMBINATION CURB AND GUTTER AND DEPRESSED CURB FOR SIDEWALK RAMPS	04/17/07	03/31/04
MD 630.01	STANDARD ENTRANCE CONSTRUCTION RESIDENTIAL & COMMERCIAL METHOD No. 1	04/17/07	03/31/04
MD 630.02	STANDARD ENTRANCE CONSTRUCTION RESIDENTIAL & COMMERCIAL METHOD NO. 2	04/17/07	03/31/04
MD 630.03	STANDARD ENTRANCE CONSTRUCTION RESIDENTIAL & COMMERCIAL METHOD NO. 3	04/17/07	03/31/04
MD 634.04	PRECAST CONCRETE WHEEL STOPS	06/20/07	08/01/84
MD 635.01	MAILBOX PLACEMENT DETAILS	02/10/04	03/31/04
MD 635.02	SINGLE AND DOUBLE MAILBOX ASSEMBLIES TYPE A	02/10/04	03/31/04
MD 635.03	SINGLE AND DOUBLE MAILBOX ASSEMBLIES TYPE B	02/10/04	03/31/04

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STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
CATEGORY "6" SHOULDERS			
MD 640.01	STANDARD CURB OPENING DETAIL CURB SECTION	10/01/01	08/01/84
MD 640.02	STANDARD CURB OPENING DETAIL CURB & GUTTER SECTION	10/01/01	08/01/84
MD 645.01	STANDARD MONOLITHIC CONCRETE MEDIAN TYPE 'A'	11/08/06	10/25/06
MD 645.02	STANDARD MONOLITHIC CONCRETE MEDIAN TYPE 'B'	10/01/01	04/01/83
MD 645.03	STANDARD MONOLITHIC CONCRETE MEDIAN TYPE 'C'	10/01/01	04/01/83
MD 648.01	CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 1 (WITH EARTH BACKING IN FILL)	10/01/01	03/28/01
MD 648.02	CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 2 (FREE STANDING IN FILL)	10/01/01	03/28/01
MD 648.03	CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL)	02/10/04	03/31/04
MD 648.03-01	PREFABRICATED LONGITUDINAL EDGE DRAIN FOR CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 3	10/01/01	03/28/01
MD 648.04	CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT	10/01/01	03/28/01
MD 648.05	DIAGONAL BAR LOCATION CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE	10/01/01	03/28/01
MD 648.06	CONDUIT AND JUNCTION BOX LOCATION FOR CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE ALL TYPES	10/01/01	03/28/01
MD 648.10	CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE END TRANSITION	10/01/01	03/28/01
MD 648.12	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE A	10/01/01	03/28/01

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STANDARD NUMBERS	DESCRIPTION	Dates	
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	CATEGORY "6" SHOULDERS		
MD 648.13	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE B	10/01/01	03/28/01
MD 648.14	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE C	10/01/01	03/28/01
MD 648.15	DIAGONAL BAR LOCATION FOR CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER	10/01/01	03/28/01
MD 648.18	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER END TRANSITION	10/01/01	03/28/01
MD 648.20	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE D	10/01/01	03/28/01
MD 648.24	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE E	02/10/04	03/31/04
MD 648.26	CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE E CONTRACTION AND EXPANSION JOINTS	10/01/01	03/28/01
MD 648.33-04	42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER END TRANSITION	11/08/06	10/25/06
MD 648.44	42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER	02/10/04	03/31/04
MD 648.44-01	42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 0 INCH TO 1 FOOT 6 INCHES	02/10/04	03/31/04
MD 648.44-02	42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 1 FOOT 6 INCHES TO 4 FEET 0 INCHES	02/10/04	03/31/04
MD 648.44-03	42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 4 FEET 0 INCHES TO 8 FEET 0 INCHES	02/10/04	03/31/04
MD 648.44-04	DIAGONAL BAR FOR ALL SLIP FORMED F SHAPE DOUBLE FACED CONCRETE MEDIAN TRAFFIC BARRIER	02/10/04	03/31/04

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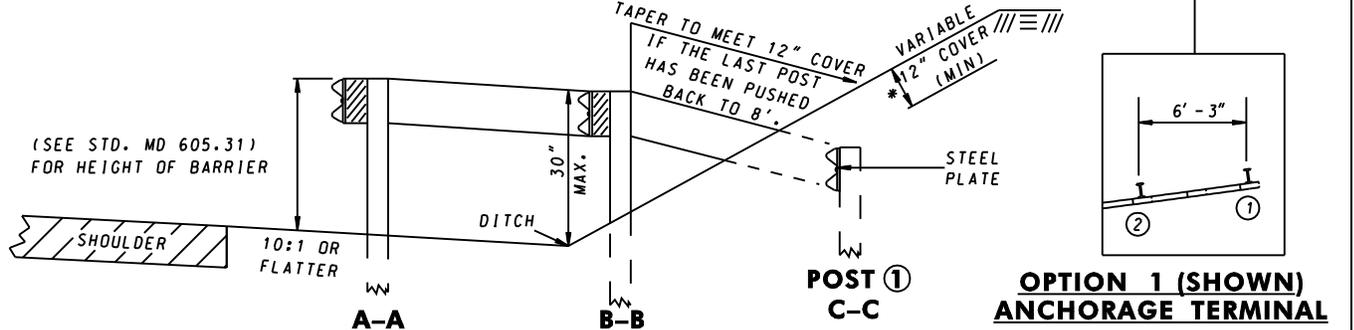
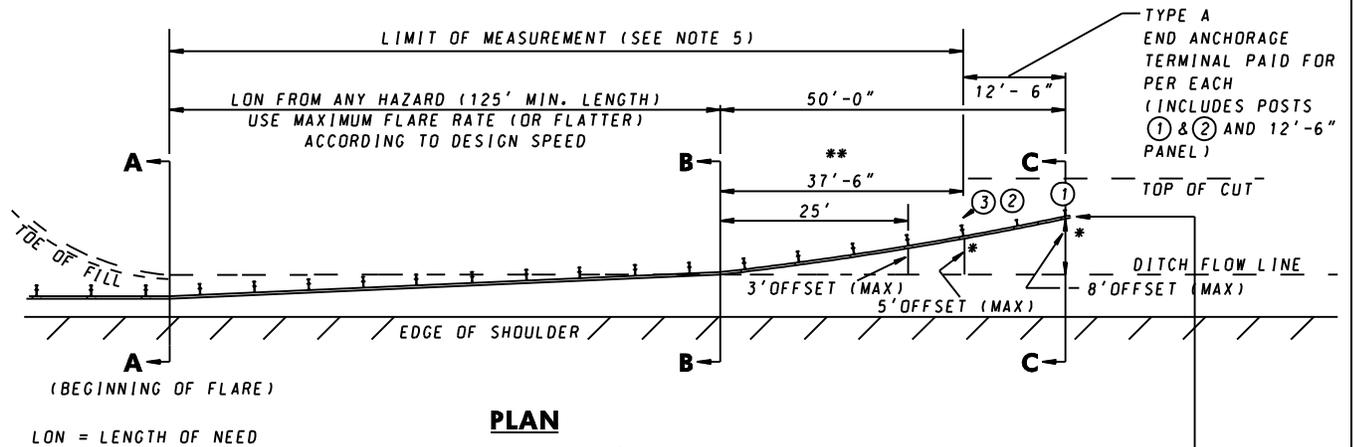
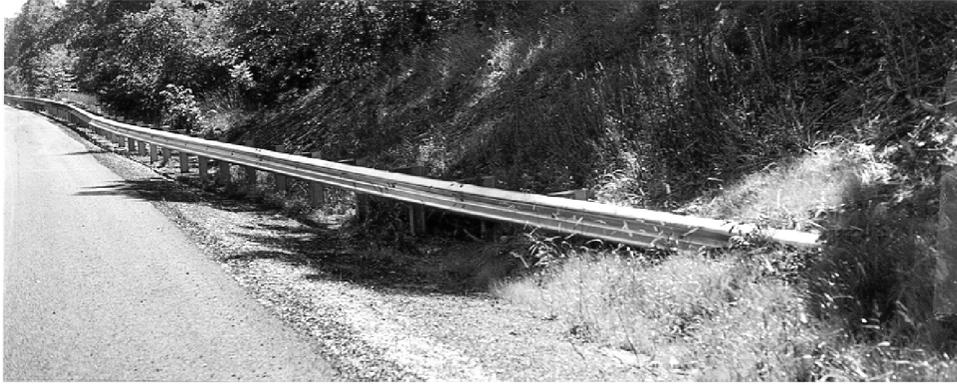
STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
CATEGORY "6" SHOULDERS			
MD 648.44-05	42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 4 FEET 0 INCHES TO 8 FEET 0 INCHES CONTRACTION AND EXPANSION JOINTS	10/01/01	03/28/01
MD 648.45	34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 (WITH EARTH BACKING IN FILL)	08/12/02	03/28/01
MD 648.46	34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 (FREE STANDING IN FILL)	08/12/02	03/28/01
MD 648.47	34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL)	02/10/04	03/31/04
MD 648.47-01	ALTERNATE PREFABRICATED LONGITUDINAL EDGE DRAIN FOR 34 INCH OR 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3	10/01/01	03/28/01
MD 648.48	34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT	08/12/02	03/28/01
MD 648.49	DIAGONAL BAR FOR SLIP FORMED 34 INCH OR 42 INCH F SHAPE SINGLE FACE CONCRETE TRAFFIC BARRIER	10/01/01	03/28/01
MD 648.50	CONDUIT AND JUNCTION BOX LOCATION FOR 34 INCH AND 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE	10/01/01	03/28/01
MD 648.51	34 INCH AND 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE END TRANSITION	10/01/01	03/28/01
MD 648.52	42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 (WITH EARTH BACKING IN FILL)	10/01/01	03/28/01
MD 648.53	42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 (FREE STANDING IN FILL)	10/01/01	03/28/01

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FOR HIGHWAYS, INCIDENTAL STRUCTURES AND TRAFFIC CONTROL APPLICATIONS

STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
CATEGORY "6" SHOULDERS			
MD 648.54	42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL)	02/10/04	03/31/04
MD 648.55	42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT	10/01/01	03/28/01
MD 655.01	SIDEWALK EXPANSION JOINTS	10/01/01	06/09/64
MD 655.02	SIDEWALK PASSING ZONES	02/10/04	03/31/04
MD 655.11	SIDEWALK RAMPS PERPENDICULAR	03/25/08	04/05/06
MD 655.12	SIDEWALK RAMPS PARALLEL	03/25/08	04/05/06
MD 655.13	SIDEWALK RAMPS COMBINATION	08/25/08	04/05/06
MD 655.21	CUT-THROUGH MEDIAN AND ISLAND OPENINGS	02/10/04	03/31/04
MD 655.22	RAMPED MEDIAN AND ISLAND OPENINGS	02/10/04	03/31/04
MD 655.30	REST AREA PARKING FOR HANDICAPPED	10/01/01	03/16/73
MD 655.40	DETECTABLE WARNING SURFACES	03/15/06	04/05/06
MD 657.00	STANDARD STAIRWAYS	10/01/01	02/27/85
MD 665.01	POST MOUNTED DELINEATORS	11/08/06	10/25/06
MD 665.02	BARRIER MARKERS	11/08/06	10/25/06
MD 665.03	PLACEMENT OF DELINEATORS	11/08/06	10/25/06
MD 665.04	PLACEMENT OF DELINEATORS AND MARKERS	08/12/02	09/04/02
MD 665.05	ACCEL/DECEL LANE DELINEATION	11/08/06	10/25/06
MD 665.06	RAMP DELINEATION	11/08/06	10/25/06
MD 670.00	LOCATION OF SHOULDER RUMBLE STRIPS	02/10/04	03/31/04
MD 670.01	SHOULDER RUMBLE STRIP DETAILS TYPICAL LAYOUT	02/10/04	03/31/04

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FOR HIGHWAYS, INCIDENTAL STRUCTURES AND TRAFFIC CONTROL APPLICATIONS

STANDARD NUMBERS	DESCRIPTION	Dates	
		MDSHA	FHWA
CATEGORY "6" SHOULDERS			
MD 670.02	LOCATION OF SHOULDER RUMBLE STRIPS AT CRITICAL LOCATIONS	06/01/08	03/31/04
MD 690.01	CHAIN LINK FENCE TYPICAL 5 FT. RURAL 6 FT. & 8 FT.	10/01/01	10/10/89
MD 690.02	CHAIN LINK FENCE AT GRADE CHANGES & DEPRESSIONS	10/01/01	04/23/85
MD 690.03	4'-0" FARM TYPE FENCE	08/05/08	07/28/08
MD 690.11	CHAIN LINK FENCE BRACE & ROD ATTACHMENTS- ROUND CONSTRUCTION	10/01/01	08/01/94
MD 690.12	CHAIN LINK FENCE BRACE & ROD ATTACHMENTS- SQUARE CONSTRUCTION	10/01/01	09/14/71
MD 690.21	CHAIN LINK FENCE DRIVE ANCHOR AND POST ATTACHMENT AT BRIDGE	10/01/01	04/23/85
MD 690.23	CHAIN LINK FENCE DOUBLE DRIVE ANCHOR AND DITCH TREATMENT	10/01/01	08/01/84
MD 690.24	CHAIN LINK FENCE DRIVE ANCHOR SHOE ASSEMBLY	10/01/01	08/01/84
MD 692.01	CHAIN LINK FENCE GATE DETAILS	10/01/01	04/23/85



* WHEN EARTH COVER OVER POST ① EXCEEDS 12", OFFSET DISTANCES 5' & 8' MAY BE LESSENED. HEIGHT OF THE PANEL MUST REMAIN CONSTANT RELATIVE TO DITCH ELEVATION.
 ** POSTS IN BACK OF DITCH BOTTOM MAY BE SHORTENED - MINIMUM EMBEDMENT INTO EXISTING GROUND IS 4'

NOTES

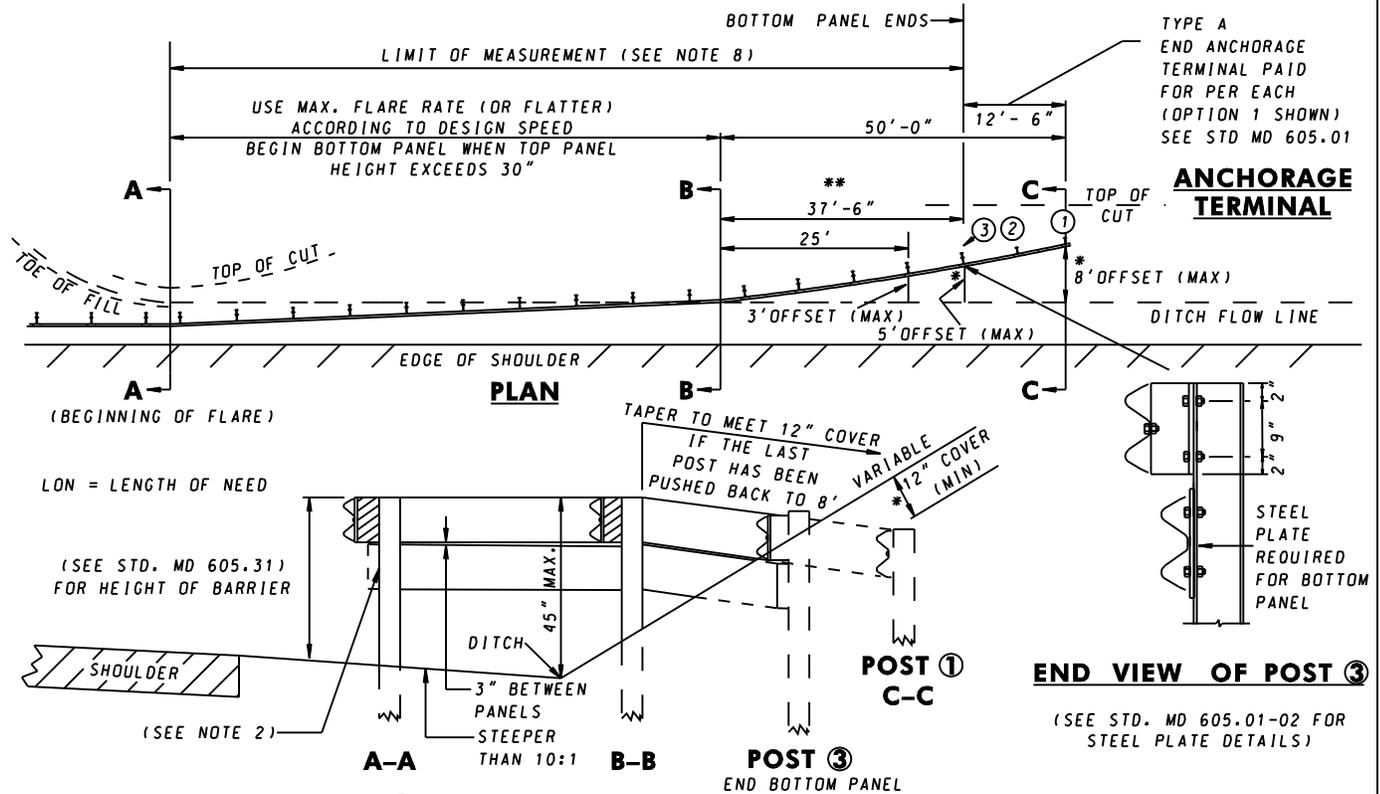
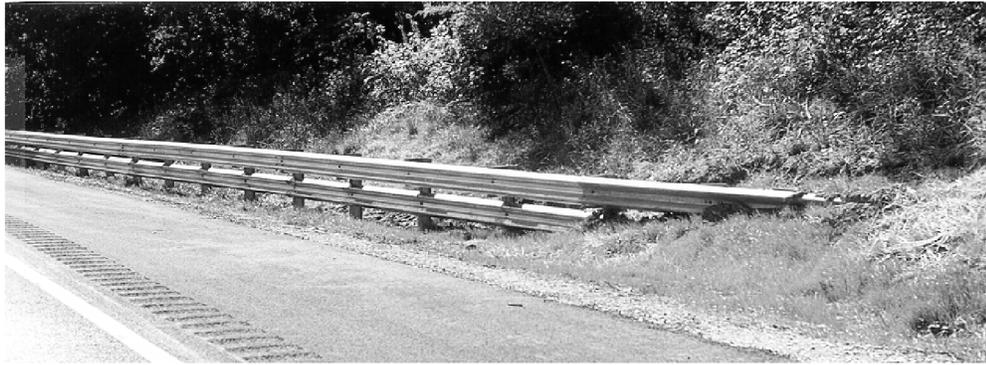
1. ALL POSTS SHALL BE 6' IN LENGTH. POSTS ① AND ② SHALL BE 4'-0" IN LENGTH.
2. THE SLOPE BACK FILL MATERIAL SHALL BE COMPACTED FIRMLY TO THE ESTABLISHED SLOPE AND STABILIZED AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE END ANCHORAGE TERMINAL USING ONE OF THE TWO OPTIONS.
 OPTION 1 - 4' STEEL POSTS (SEE STD. MD 605.01-02)
 OPTION 2 - CONCRETE ANCHOR BLOCK (SEE STD. MD 605.01-03)
4. LOW SPEED INSTALLATIONS REQUIRES 50 FEET (MINIMUM) "LON".
5. PAID FOR PER LINEAR FOOT OF "TRAFFIC BARRIER W BEAM USING 6 FOOT POST." THE "END ANCHORAGE TERMINAL FOR TYPE A END TREATMENT EITHER OPTION." PAID FOR PER EACH.
6. FOR ALTERNATIVE OFFSET BLOCKS SEE STD. MD 605.21 NOTE 5.

SECTION

SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-99
	REVISED 5-29-07	REVISED 5-2-07
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH
TYPE A END ANCHORAGE
(SINGLE RAIL)

STANDARD NO. MD 605.01



* WHEN EARTH COVER OVER POST ① EXCEEDS 12", OFFSET DISTANCES 5' & 8' MAY BE LESSENED. HEIGHT OF THE PANEL MUST REMAIN CONSTANT RELATIVE TO DITCH ELEVATION.

** POSTS IN BACK OF DITCH BOTTOM MAY BE SHORTENED - MINIMUM EMBEDMENT INTO EXISTING GROUND IS 4'.

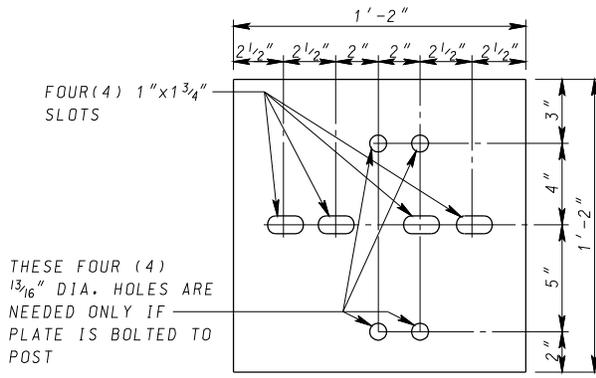
NOTES

1. ALL POSTS SHALL BE 8' IN LENGTH INCLUDING POST ③. POSTS ① & ② SHALL BE 4' IN LENGTH.
2. THE BOTTOM PANEL SHALL BE TUCKED BEHIND AND BOLTED TO POST A-A USING A 5/8" DIA. HEX. HEAD BOLT.
3. OFFSET BLOCKS ARE NOT USED FOR THE BOTTOM PANEL.
4. MAINTAIN HEIGHT OF TOP PANEL RELATIVE TO EDGE OF SHOULDER UNTIL A MAXIMUM HEIGHT OF 45" ABOVE GROUND IS REACHED.
5. THE SLOPE BACK FILL MATERIAL SHALL BE COMPACTED FIRMLY TO THE ESTABLISHED SLOPE AND STABILIZED AS DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE END ANCHORAGE TERMINAL USING ONE OF THE FOLLOWING TWO OPTIONS:
OPTION 1 - 4' STEEL POSTS (SEE STD. MD 605.01 & 605.01-02)
OPTION 2 - CONCRETE ANCHOR BLOCK (SEE STD. MD 605.01-03)
7. LOW SPEED INSTALLATIONS REQUIRE 50 FEET (MINIMUM) "LON".
8. TOP PANEL PAID FOR PER LINEAR FOOT OF "TRAFFIC BARRIER W BEAM USING 8 FOOT POST" (FROM POST A-A, TO & INCLUDING POST ③). BOTTOM PANEL PAID FOR PER LINEAR FOOT OF "TRAFFIC BARRIER W BEAM PANEL." THE END ANCHORAGE TERMINAL FOR TYPE A END TREATMENT (EITHER OPTION) PAID FOR PER EACH.
9. FOR ALTERNATIVE OFFSET BLOCKS SEE STD. MD 605.21 NOTE 5.

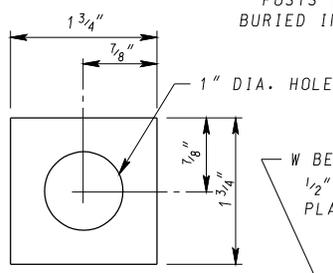
SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-99
	REVISED 5-29-07	REVISED 5-2-07
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH
TYPE A END ANCHORAGE
(DOUBLE RAIL)

STANDARD NO. MD 605.01-01



1/2" STEEL PLATE
(GALVANIZED)
WELDED OR BOLTED TO
POSTS ① AND ②
BURIED IN BACK SLOPE

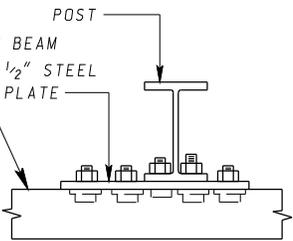


SQUARE WASHER
(3/16" THICK GALVANIZED)

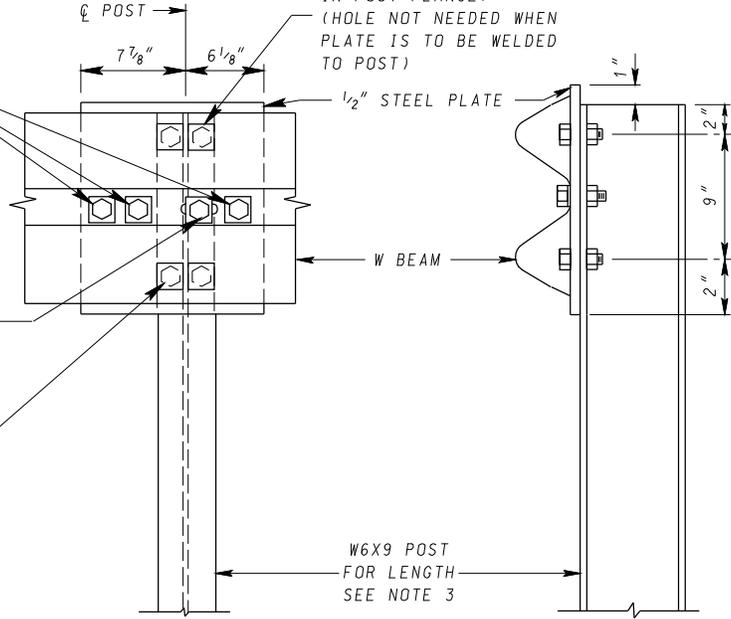
THREE (3) 1" DIA. HOLES TO BE FIELD DRILLED IN W BEAM ELEMENT AND ATTACHED WITH 5/8" DIA. HEX. HEAD BOLTS 1 1/2" LONG EACH WITH ONE SQUARE WASHER AND HEX NUT

1" DIA. HOLE TO BE FIELD DRILLED THROUGH W BEAM AND THROUGH POST FLANGE. ATTACH W BEAM WITH 5/8" HEX. HEAD BOLT 2" LONG WITH ONE SQUARE WASHER AND HEX NUT

DRILL EXTRA 1 3/16" DIA. HOLE IN POST FLANGE. (HOLE NOT NEEDED WHEN PLATE IS TO BE WELDED TO POST)



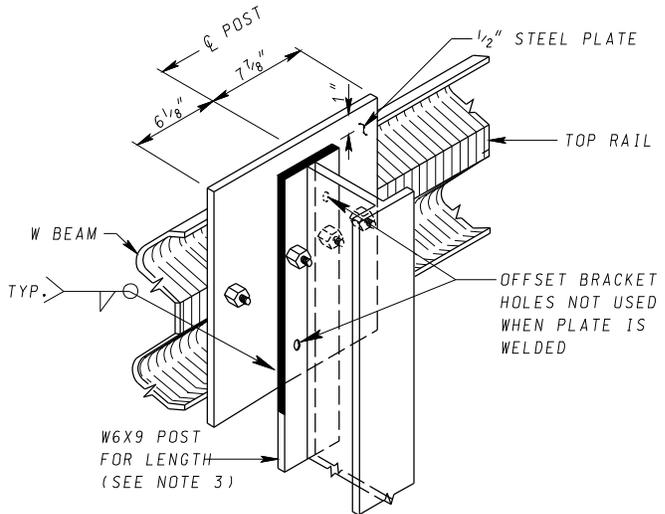
PLAN VIEW
(BOLTED)



FRONT VIEW

END VIEW

1/2" STEEL PLATE BOLTED TO POSTS ① & ②



1/2" STEEL PLATE ATTACHED TO POSTS ① & ②

NOTES

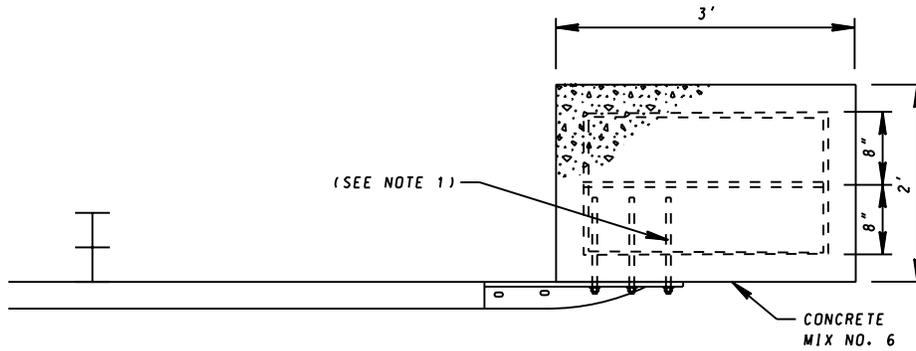
1. THE 1/2" STEEL PLATE SHALL CONFORM TO THE REQUIREMENTS OF A-36. THE PLATE MAY BE WELDED OR BOLTED TO POSTS ① AND ② BURIED IN THE CUT SLOPE.
2. FIELD DRILLED HOLES AND WELDED AREAS SHALL BE COATED WITH ZINC RICH PAINT.
3. SINGLE OR DOUBLE RAIL POSTS ① AND ② LENGTH 4'-0". POST ③ LENGTH 8'-0" WHEN DOUBLE RAIL IS USED. FOR SINGLE RAIL POST ③ LENGTH IS 6'-0"
4. A STEEL PLATE SHALL BE USED ON POST ③ WHEN THE DOUBLE RAIL SYSTEM IS USED.

DRILL EXTRA HOLE IN POST FLANGE. (HOLE NOT NEEDED WHEN PLATE IS TO BE WELDED TO POST)

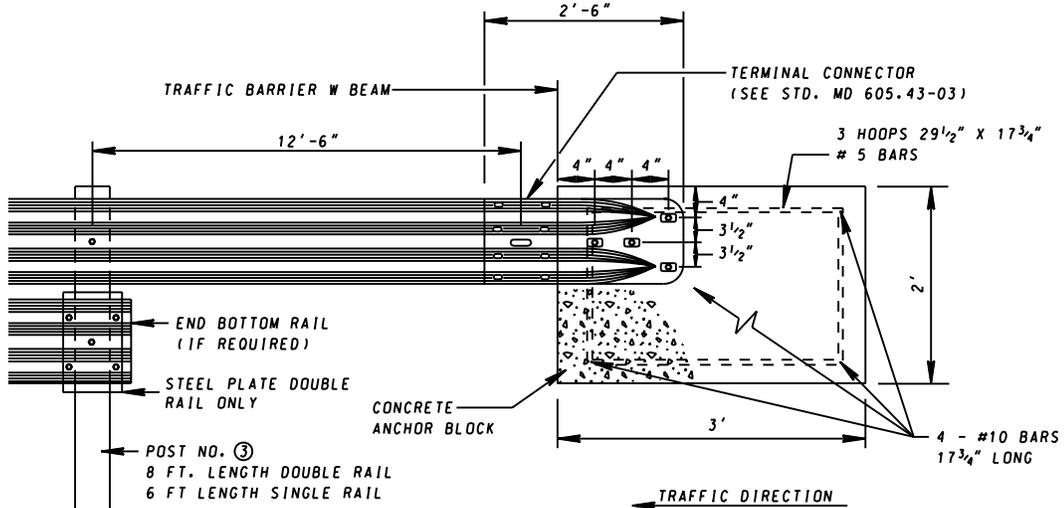
THESE DETAILS ARE APPLICABLE TO POSTS ① AND ② ONLY.

SPECIFICATION 605	CATEGORY CODE ITEMS										
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT											
	<table border="1"> <tr> <td>APPROVAL • SHA REVISIONS</td> <td>APPROVAL • FEDERAL HIGHWAY ADMINISTRATION</td> </tr> <tr> <td>APPROVAL 4-6-88</td> <td>APPROVAL 4-22-90</td> </tr> <tr> <td>REVISED 3-15-06</td> <td>REVISED 4-5-06</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> </table>	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 4-6-88	APPROVAL 4-22-90	REVISED 3-15-06	REVISED 4-5-06	REVISED	REVISED	REVISED	REVISED
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION									
	APPROVAL 4-6-88	APPROVAL 4-22-90									
	REVISED 3-15-06	REVISED 4-5-06									
	REVISED	REVISED									
REVISED	REVISED										

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH
TYPE A END ANCHORAGE
(OPTION 1)
STANDARD NO. MD 605.01-02



PLAN VIEW



FRONT VIEW

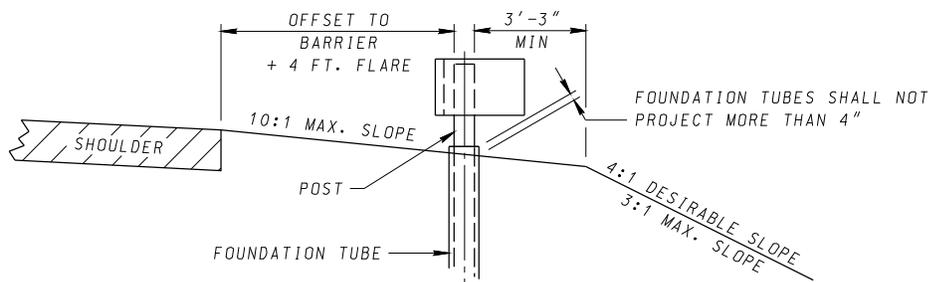
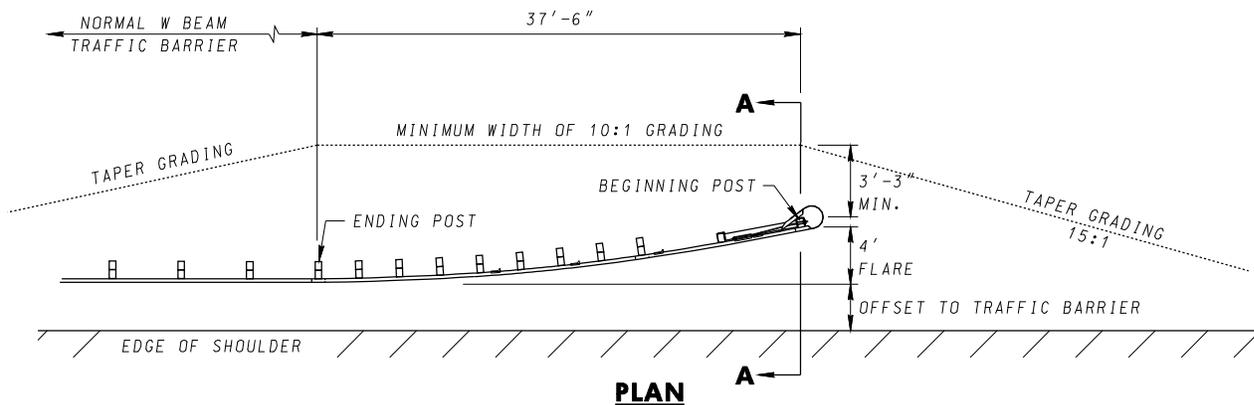
NOTES

1. THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 3/8" DIA X 10" LENGTH HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.
2. THIS OPTION REPLACES POSTS 1 AND 2 AS SHOWN IN OPTION 1
3. CONCRETE ANCHOR BLOCK MAY BE PRECAST OR CAST IN PLACE.
4. THE COST OF THE TERMINAL CONNECTOR SHALL BE INCIDENTAL TO THE CONTRACT PRICE PER EACH FOR THE TYPE A END ANCHORAGE TERMINAL.

SPECIFICATION 605	CATEGORY CODE ITEMS		
APPROVED		DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
	APPROVAL 11-10-99	APPROVAL 7-2-99	
	REVISED 9-30-04	REVISED 3-28-01	
	REVISED	REVISED	
	REVISED	REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH
TYPE A END ANCHORAGE
(OPTION 2)

STANDARD NO. MD 605.01-03



SECTION A-A

NOTES

APPLICABLE TO ALL TYPE B TERMINALS

1. 6:1 MAX GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 12 FT. OR MORE FROM THE OUTSIDE EDGE OF SHOULDER.
2. ADD DELINEATION ON END OF TREATMENT AS DIRECTED BY THE OFFICE OF TRAFFIC AND SAFETY.
3. 4' FLARE REQUIRED
4. TYPE B TERMINAL SHALL ONLY BE USED WHEN THE GRADING AS SHOWN AND THE REQUIRED LENGTH OF NEED IS PROVIDED.

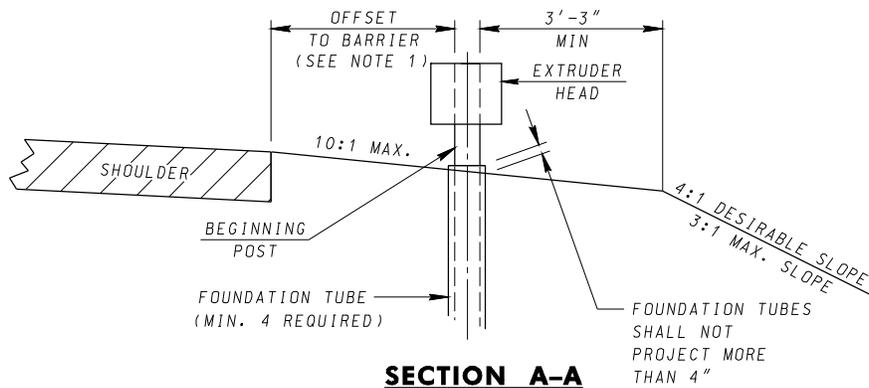
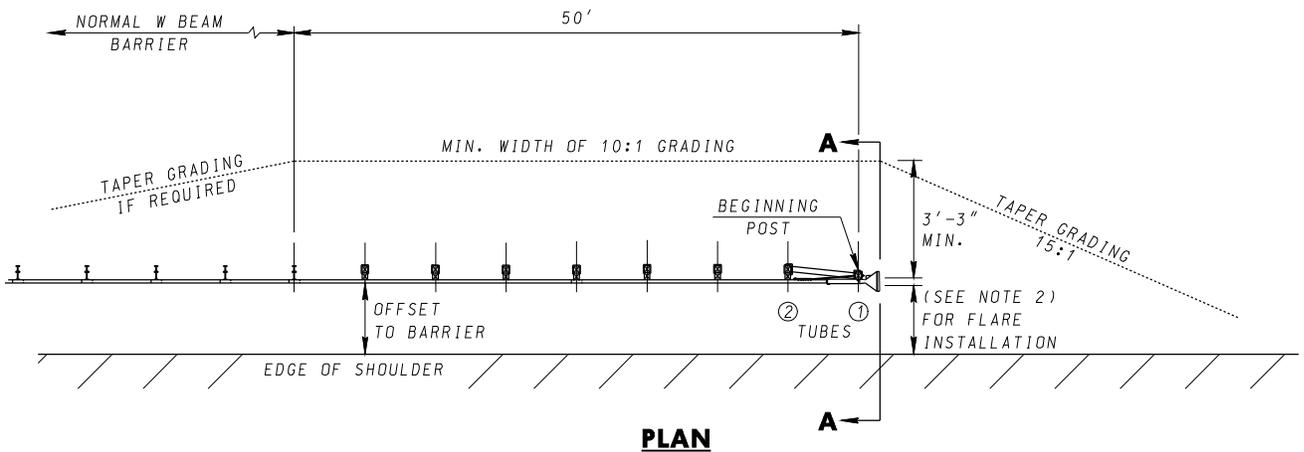
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99
	APPROVAL 7-2-99
	REVISD 3-15-06
REVISD 4-5-06	
REVISD	REVISD
REVISD	REVISD

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TYPE B TRAFFIC BARRIER END TREATMENT

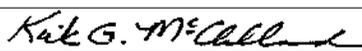
STANDARD NO.

MD 605.02



NOTES APPLICABLE TO ALL TYPE C TERMINALS

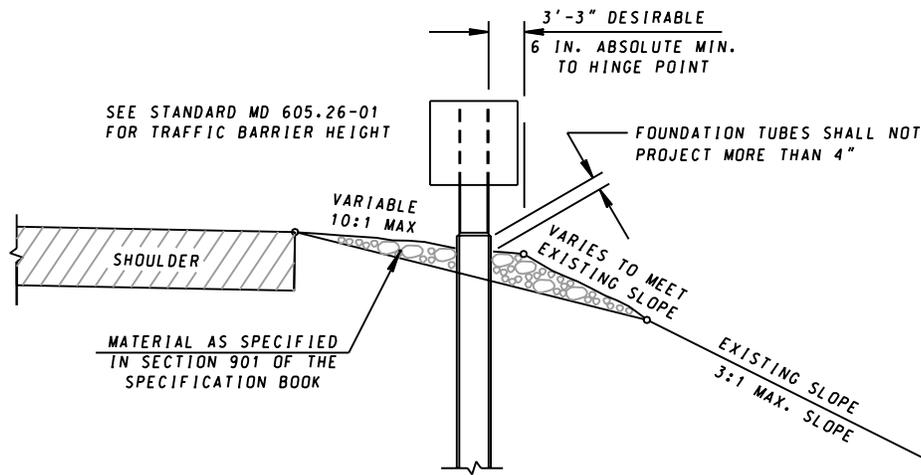
1. 6:1 MAX GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 12 FT. OR MORE FROM THE OUTSIDE EDGE OF SHOULDER.
2. WHEN THE TRAFFIC BARRIER POST IS PLACED LESS THAN 4' FROM THE EDGE OF SHOULDER/PAVEMENT THE END TREATMENT SHALL BE FLARED AT A RATE OF 50:1
3. GRADING SHALL BE AS SHOWN ABOVE.

SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-99
	REVISED 11-08-06	REVISED 10-25-06
	REVISED	REVISED
	REVISED	REVISED

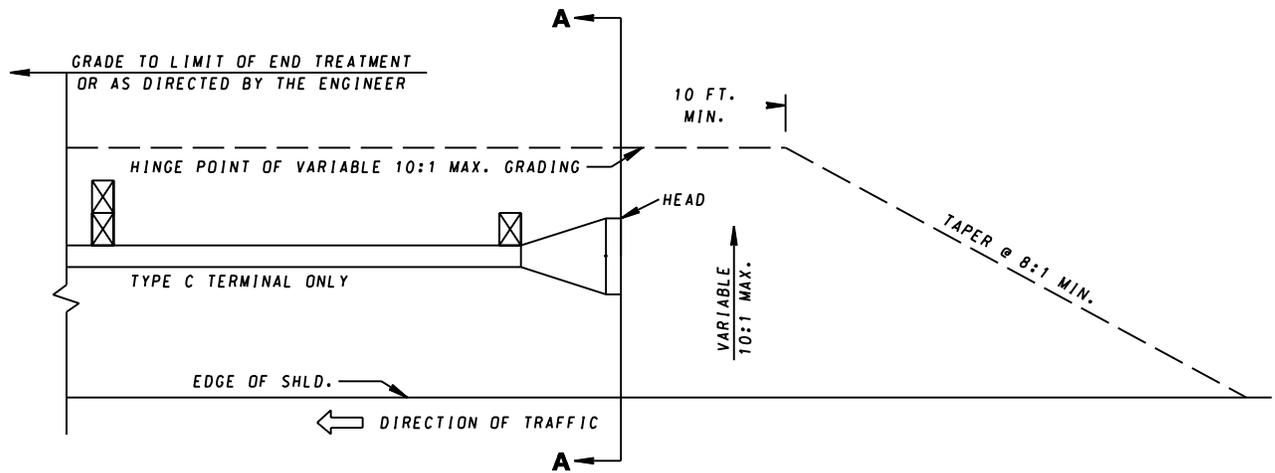
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TYPE C TRAFFIC BARRIER END TREATMENT

STANDARD NO. MD 605.03



SECTION A-A



PLAN VIEW

NOTES

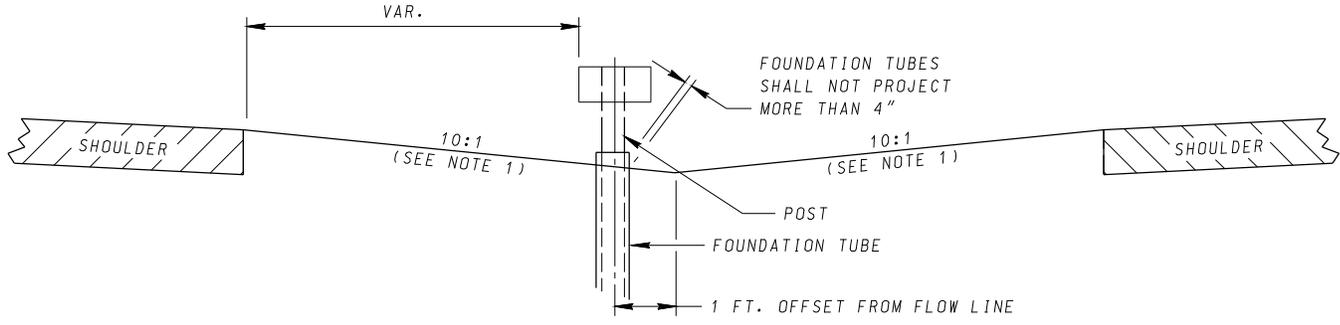
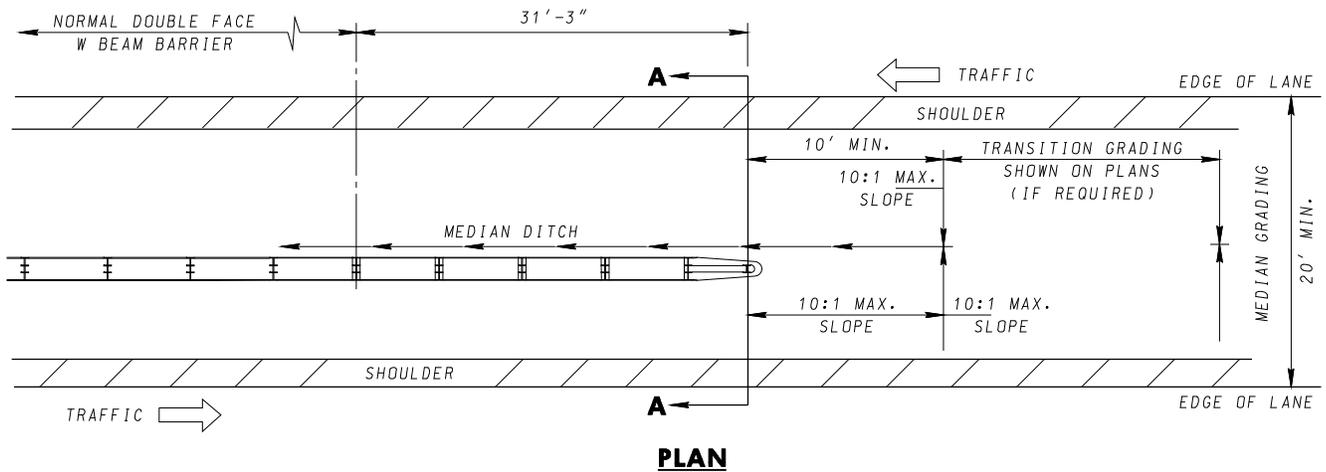
1. SURFACE ADJUSTMENT SHALL BE STABILIZED WITHIN 48 HOURS.
2. PAID FOR USING CATEGORY CODE ITEM 661550.
3. DEFINITION OF 3 R TYPE WORK IS RESURFACE, REHABILITATION & RESTORATION

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 2-10-04
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-2-99
	REVISED 3-31-04
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

GRADING ADJUSTMENT FOR 3 R TYPE WORK

STANDARD NO. MD 605.04



NOTES

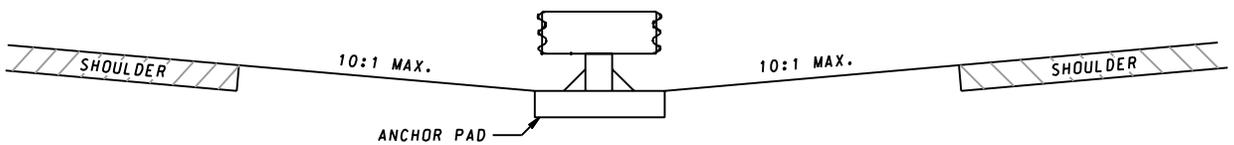
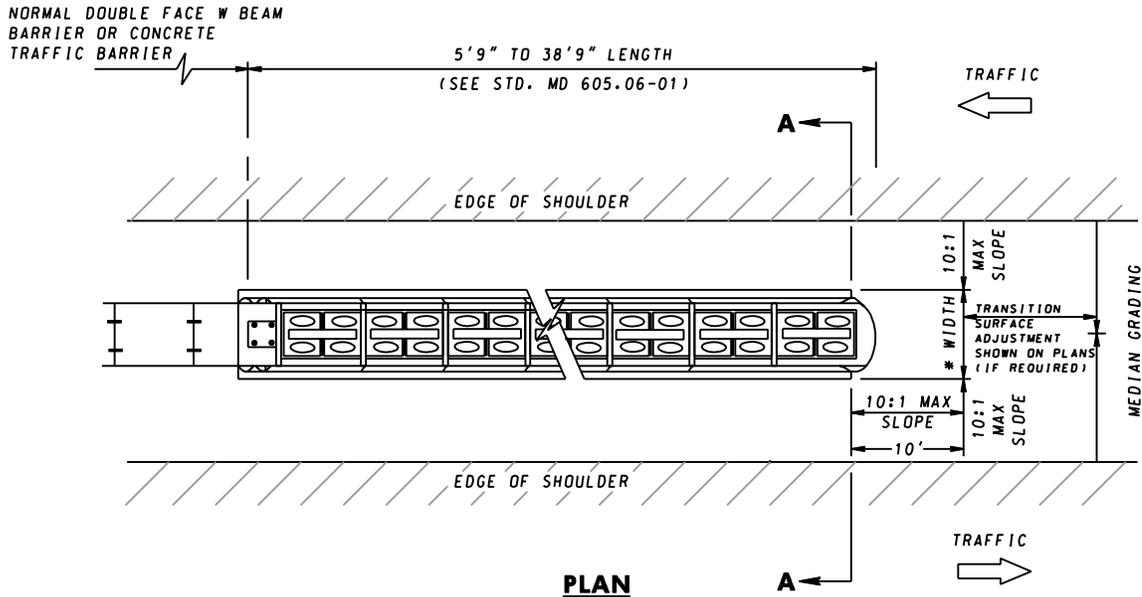
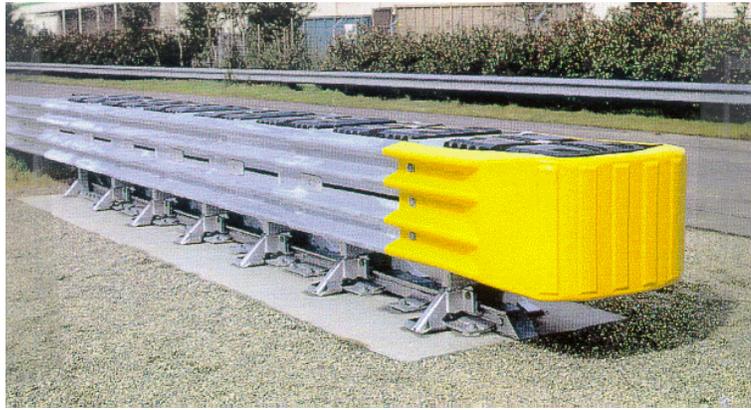
1. 6:1 MAX GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 12 FT. OR MORE FROM THE OUTSIDE EDGE OF SHOULDER.
2. THIS END TREATMENT CAN ALSO BE USED IN RAMP GORES OR OTHER AREAS WHERE 2 SECTIONS OF W BEAM SYSTEM COME TOGETHER AND TERMINATE WITH ONE END TREATMENT.
3. WHEN OPPOSING ROADWAYS HAVE EQUAL ELEVATIONS THE TRAFFIC BARRIER SYSTEM SHOULD BE PLACED ON THE OPPOSITE SIDE OF THE DITCH LINE FROM APPROACHING TRAFFIC.
4. ADD DELINEATION ON END OF TREATMENT AS DIRECTED BY THE OFFICE OF TRAFFIC AND SAFETY.

SECTION A-A

SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-99
	REVISED 3-15-06	REVISED 4-5-06
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE D TRAFFIC BARRIER END TREATMENT

STANDARD NO. MD 605.05



NOTES

1. FOR THE ANCHORING PAD DIMENSIONS AND MATERIALS AND TO ANCHOR THE UNIT TO EXISTING PAVEMENT REFER TO THE MANUFACTURERS PRODUCT MANUAL OR INSTRUCTIONS.
2. THE COST OF THE ANCHOR PAD, EXCAVATION, DRILLED HOLES, EPOXY, BOLTS, AND ALL LABOR AND MATERIALS NECESSARY TO ANCHOR THE UNIT SHALL BE INCIDENTAL TO THE TYPE E END TREATMENT SPECIFIED IN THE CONTRACT DOCUMENTS.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-2-99
REVISED	REVISED 3-28-01
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE E TRAFFIC BARRIER
END TREATMENT
(PERMANENT OR TEMPORARY)
STANDARD NO. MD 605.06

TYPE E TRAFFIC BARRIER CRITERIA

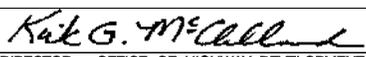
DESIGN SPEED mph	NUMBER OF BAYS	LENGTH
25	1	5' 9"
30	2	8' 9"
40	3	11' 9"
50	4	14' 9"
60	6	20' 9"
65	8	26' 9"
70	9	32' 9"

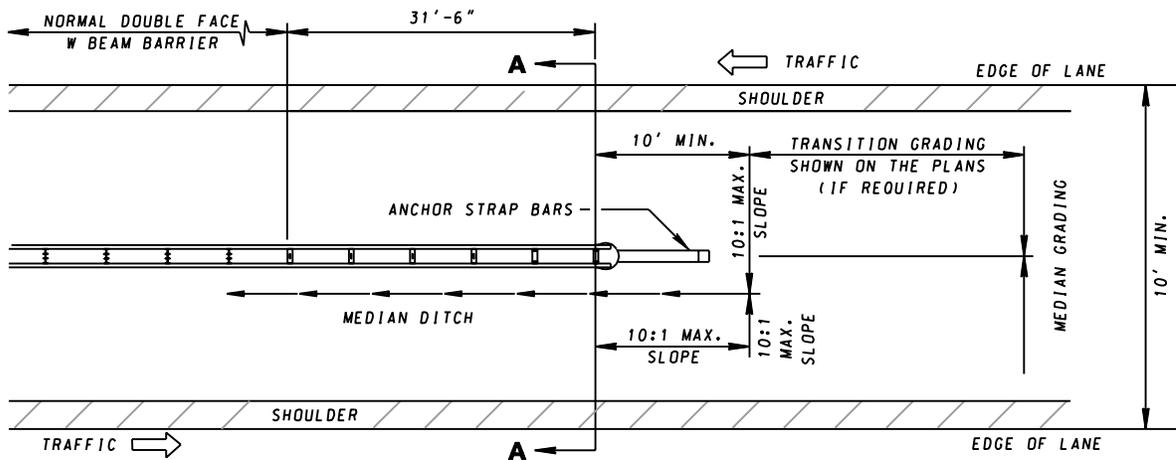
NOTES

1. LENGTH:
 - a. USE THE DESIGN SPEED AS INDICATED ON THE PLANS TO DETERMINE THE LENGTH OF THE SYSTEM.
 - b. FOR 3R (RESURFACE, REHABILITATION, AND RESTORATION) OR MAINTENANCE PROJECTS USE THE POSTED SPEED PLUS 10 MPH TO DETERMINE THE LENGTH OF THE SYSTEM.
2. WIDTH:

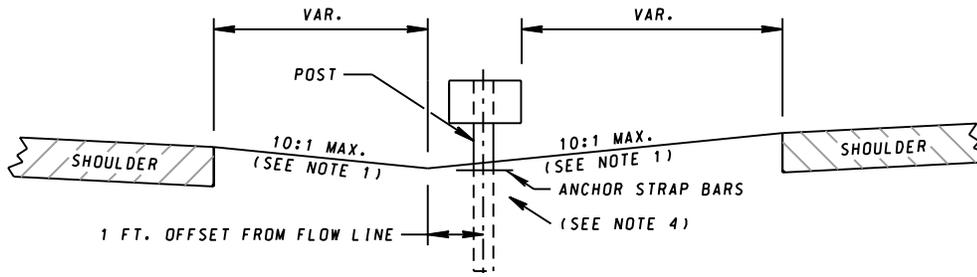
AVAILABLE IN 2'-0", 2'-6", 3'-0" AND ALSO 5'-9" AND 7'-6" WIDTHS. THE WIDTH OF THE UNIT DEPENDS UPON THE HAZARD TO BE SHIELDED.

THE ABOVE CRITERIA AND NOTES APPLIES TO THE TYPE E THAT'S SHOWN ON MD 605.06. WHEN USING A UNIT THAT IS ON THE "APPROVED SUBSTITUTES LIST", THE UNIT MUST BE INSTALLED IN ACCORDANCE WITH THE INSTRUCTIONS AND CRITERIA SUPPLIED BY THE MANUFACTURER.

SPECIFICATION 605	CATEGORY CODE ITEMS	<p>Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES</p> <p>TYPE E TRAFFIC BARRIER END TREATMENT CRITERIA</p> <p>STANDARD NO. MD 605.06-01</p>	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99		APPROVAL 7-2-99
	REVISED 3-15-06	REVISED 4-5-06	
	REVISED	REVISED	
	REVISED		



PLAN



SECTION A-A

NOTES

1. 6:1 MAX GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 12' OR MORE FROM THE OUTSIDE EDGE OF THE SHOULDER.
2. THIS END TREATMENT CAN ALSO BE USED IN RAMP GORES OR OTHER AREAS WHERE 2 RAILS OF W BEAM COME TOGETHER AND TERMINATE WITH ONE END TREATMENT.
3. ADD DELINEATION ON END OF TREATMENT AS DIRECTED BY THE OFFICE OF TRAFFIC AND SAFETY.
4. FOUNDATION GRADING REQUIRED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
5. WHEN ANCHOR STRAP BARS ARE LOCATED ON BITUMINOUS SURFACES REMOVE 3" OF BITUMINOUS INSTALL ANCHOR STRAP BARS AND COVER WITH HOT MIX ASPHALT PATCH. COST IS INCIDENTAL TO END TREATMENT.

*** THIS SYSTEM MAY ALSO BE USED AS AN ALTERNATE TO TYPE D WHEN CONDITIONS ARE EQUAL IN APPLICATION.**

SPECIFICATION 605	CATEGORY CODE ITEMS
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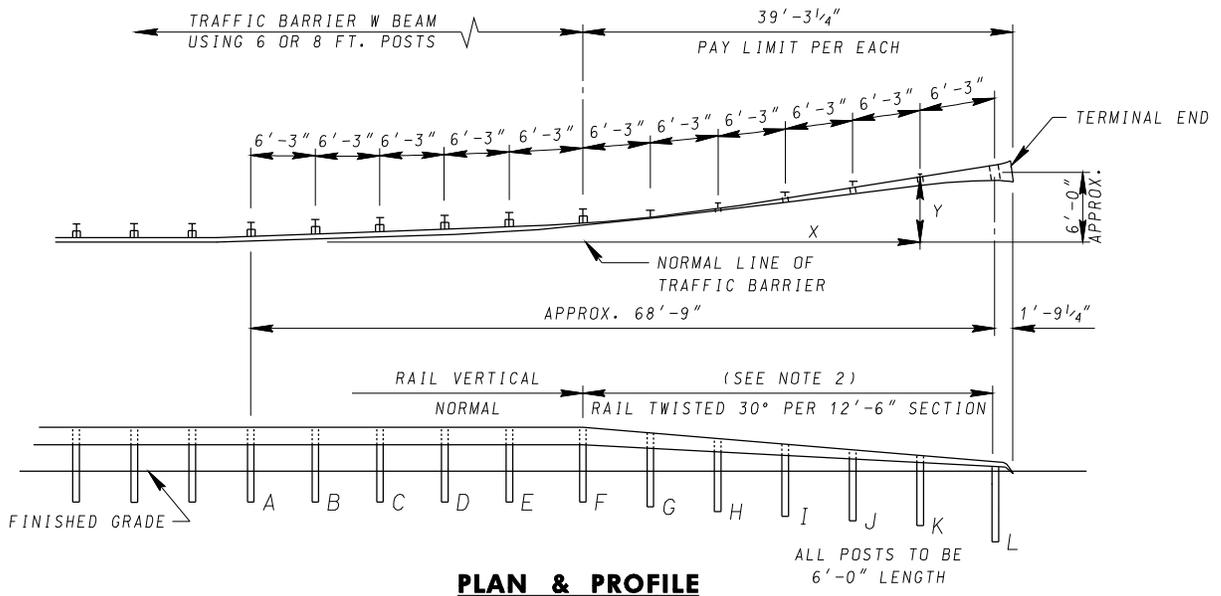
APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

	APPROVAL • SHA	APPROVAL • FEDERAL
	REVISIONS	HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-99
	REVISED 10-1-01	REVISED 3-28-01
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

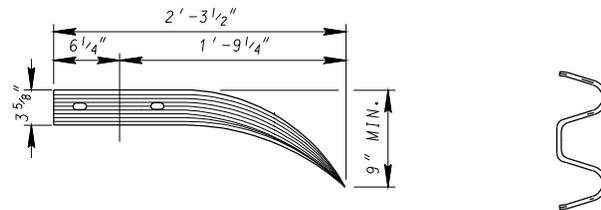
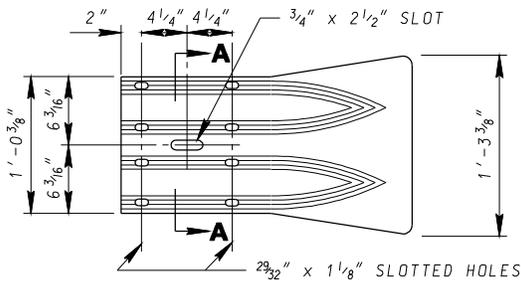
TYPE F TRAFFIC BARRIER END TREATMENT

STANDARD NO. MD 605.07



PLAN & PROFILE

ALL POSTS TO BE 6'-0" LENGTH



NOTES

TERMINAL END

SECTION A-A

1. THE USE OF THIS END TREATMENT IS LIMITED TO POSTED SPEEDS OF 40 MPH OR LESS AND ADT LESS THAN 10,000. CAN BE USED ON CURBED OR OPEN ROADWAYS.
2. USE TYPE G TRAFFIC BARRIER END TREATMENT ANCHORAGE BRACKET (SEE STD. MD 605.08-01) FROM POST G TO POST L.
3. SEE STD. MD 605.08-01 FOR X AND Y DISTANCES.
4. FOR ALTERNATE OFFSET BLOCKS SEE STD MD 605.21 NOTE 5.

NOT TO BE USED ON THE NATIONAL HIGHWAY SYSTEM (NHS)

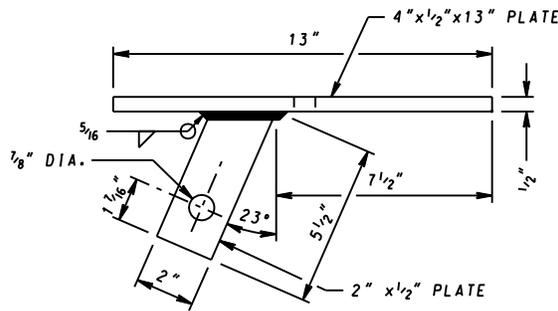
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-15-78
	APPROVAL 7-11-78
REVISED 3-15-06	REVISED 4-5-06
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

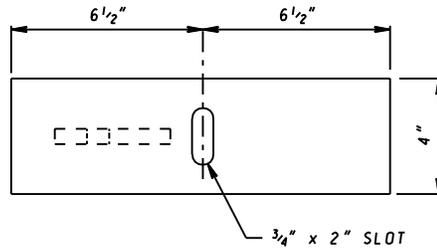
TYPE G TRAFFIC BARRIER END TREATMENT

STANDARD NO.

MD 605.08

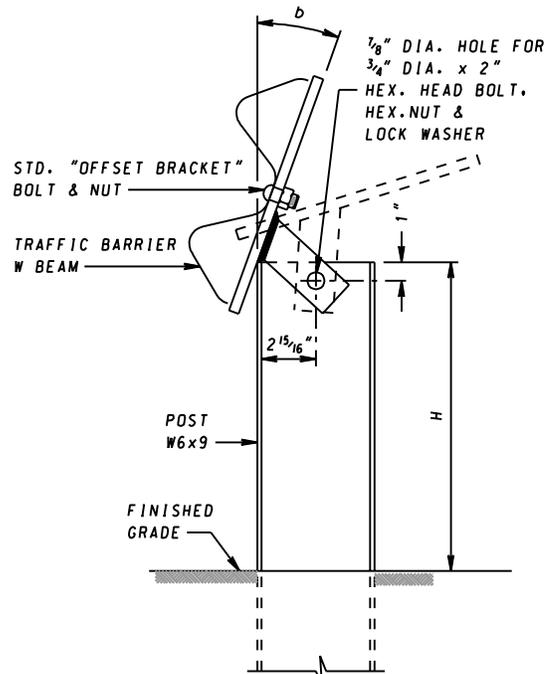


ANCHORAGE BRACKET



H = POST HEIGHT ABOVE FINISHED GRADE
 b = ANGLE FROM THE BACK OF THE ANCHORAGE BRACKET TO THE FACE OF THE TRAFFIC BARRIER POST
 X, Y = SEE MD 605.08
 POST ID = SEE MD 605.08

POST	H	b	X	Y
A	2'-3"	0°	0.00'	.77'
B	2'-3"	0°	6.25'	.81'
C	2'-3"	0°	12.50'	.94'
D	2'-3"	0°	18.75'	1.16'
E	2'-3"	0°	24.99'	1.46'
F	2'-3"	0°	31.23'	1.61'
G	1'-1 3/4"	15°	37.46'	1.85'
H	0'-10 1/4"	30°	43.68'	2.39'
I	0'-7"	45°	49.90'	3.03'
J	0'-4 1/4"	60°	56.11'	3.77'
K	0'-1 1/4"	75°	62.30'	4.58'
L	0'-0"	90°	68.49'	5.95'

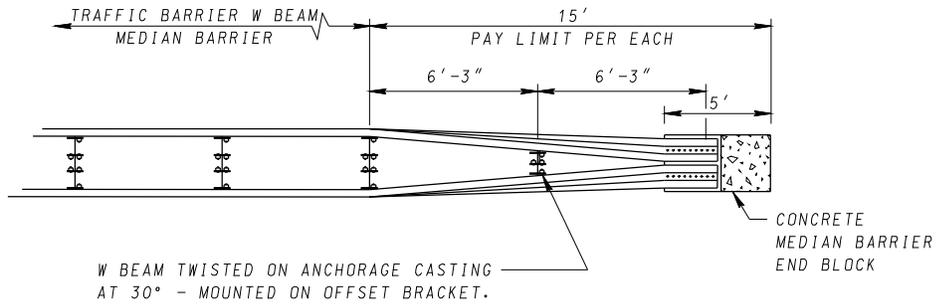


METHOD OF ANCHORAGE
 (POST G, H, I, J & K)

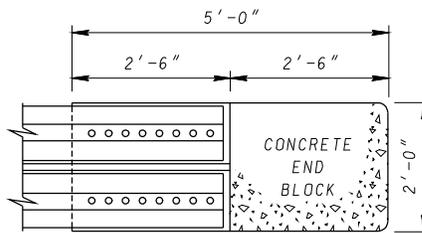
NOTES

- ALL STEEL SHALL BE M 183 HOT DIPPED GALVANIZED AFTER FABRICATION TO M 111.
- USE OF ANCHORAGE BRACKET IN PLACE OF OFFSET BRACKET BEGINS AT POST G WITH AN ANGLE OF 15 DEGREES.

SPECIFICATION 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TYPE G TRAFFIC BARRIER END TREATMENT ANCHORAGE BRACKET
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-27-81	APPROVAL 5-6-81
	REVISED 10-1-01	REVISED 3-28-01
	REVISED	REVISED
STANDARD NO. MD 605.08-01		

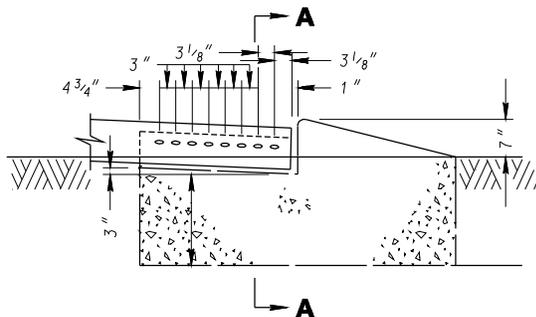


PLAN VIEW

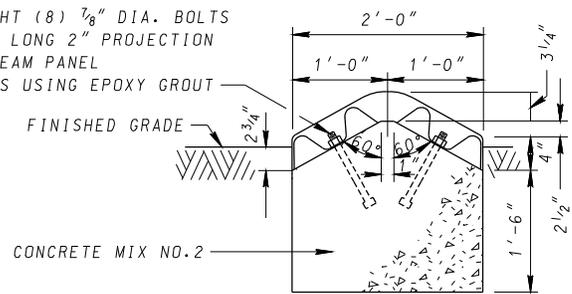


PLAN

INSTALL EIGHT (8) 7/8" DIA. BOLTS & NUTS, 10" LONG 2" PROJECTION ON EACH W BEAM PANEL ANCHOR BOLTS USING EPOXY GROUT



ELEVATION



SECTION A-A

END BLOCK DETAILS

NOTE

1. THE USE OF THIS END TREATMENT IS LIMITED TO POSTED SPEEDS OF 40 MPH OR LESS AND ADT LESS THAN 10,000.
2. FOR ALTERNATIVE OFFSET BLOCKS SEE STD MD 605.21 NOTE 5.

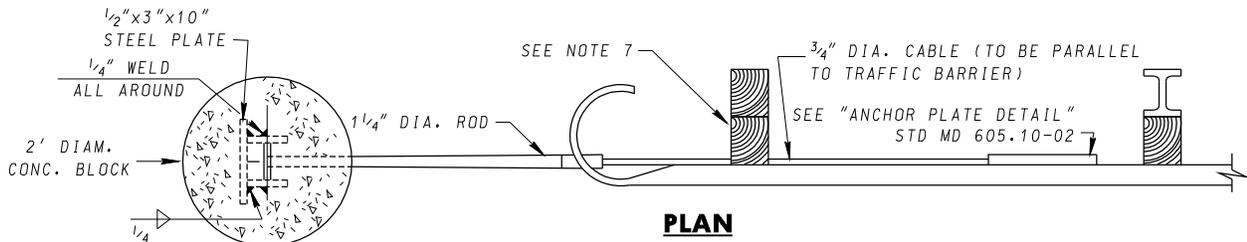
NOT TO BE USED ON THE NATIONAL HIGHWAY SYSTEM (NHS)

SPECIFICATION 605	CATEGORY CODE ITEMS												
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT												
	<table border="1"> <tr> <td>APPROVAL • SHA</td> <td>APPROVAL • FEDERAL</td> </tr> <tr> <td>REVISIONS</td> <td>HIGHWAY ADMINISTRATION</td> </tr> <tr> <td>APPROVAL 6-2-75</td> <td>APPROVAL 9-30-75</td> </tr> <tr> <td>REVISED 3-15-06</td> <td>REVISED 4-5-06</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> </table>	APPROVAL • SHA	APPROVAL • FEDERAL	REVISIONS	HIGHWAY ADMINISTRATION	APPROVAL 6-2-75	APPROVAL 9-30-75	REVISED 3-15-06	REVISED 4-5-06	REVISED	REVISED	REVISED	REVISED
	APPROVAL • SHA	APPROVAL • FEDERAL											
	REVISIONS	HIGHWAY ADMINISTRATION											
	APPROVAL 6-2-75	APPROVAL 9-30-75											
	REVISED 3-15-06	REVISED 4-5-06											
REVISED	REVISED												
REVISED	REVISED												

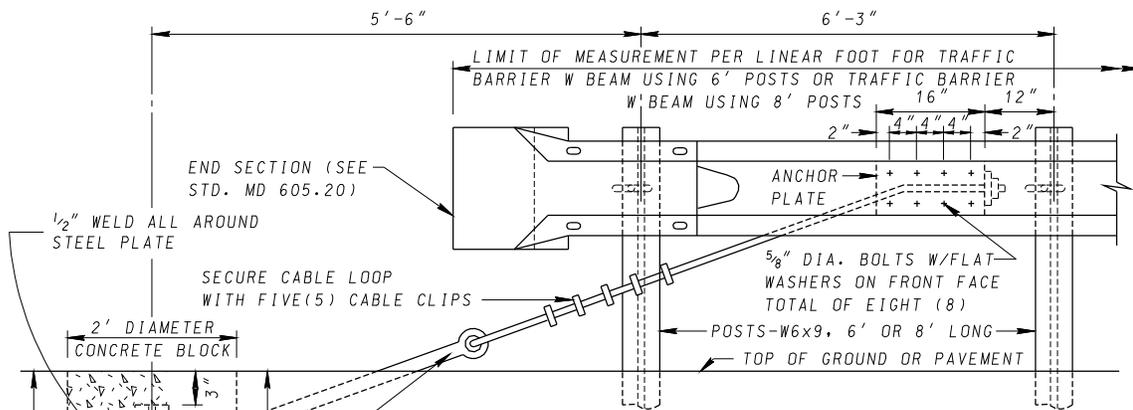
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE H TRAFFIC BARRIER END TREATMENT

STANDARD NO.

MD 605.09



PLAN



ELEVATION

NOTES

1. CONCRETE TO BE MIX NO. 2.
2. STEEL PLATES TO BE ASTM A 36.
3. CABLE TO CONFORM TO LATEST S.H.A. SPECIFICATIONS.
4. ALL ITEMS (ANCHOR PLATE, CABLE, ROD, EXCAVATION, CONCRETE, ETC.) NECESSARY TO ANCHOR THE END TREATMENT SHALL BE PAID FOR PER EACH OF "TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION"
5. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE END TREATMENT USING EITHER ONE OF THE THREE OPTIONS.
 OPTION 1 - OFFSET CONCRETE BLOCK;
 OPTION 2 - FOUNDATION TUBE WITH SOIL PLATE; (SEE STD. MD 605.10-01).
 OPTION 3 - FOUNDATION TUBE WITHOUT SOIL PLATE (SEE STD. MD 605.10-01).
6. TYPE K TRAFFIC BARRIER END TREATMENT NOT TO BE USED WHERE THERE IS OPPOSING TRAFFIC WITHIN 30 FT. OF THE END TREATMENT.
7. FOR ALTERNATIVE OFFSET BLOCKS SEE STD MD 605.21 NOTE 5.

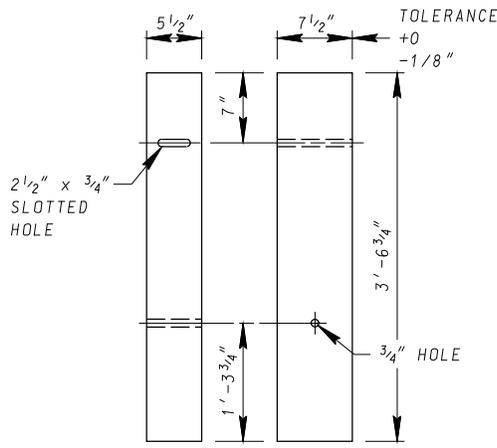
**OPTION 1 - ANCHORAGE
(OFFSET CONCRETE BLOCK)**

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 1-26-70
	APPROVAL 11-5-70
	REVISD 3-15-06
REVISD	REVISD 4-5-06
REVISD	REVISD
REVISD	REVISD

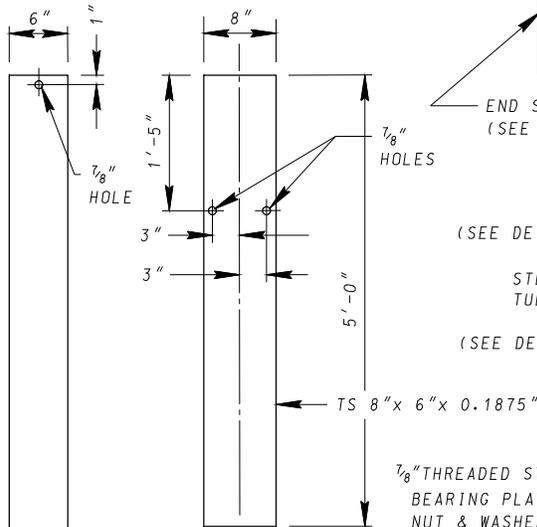
**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE K TRAFFIC BARRIER END TREATMENT
OPTION 1 ANCHORAGE**

STANDARD NO.

MD 605.10



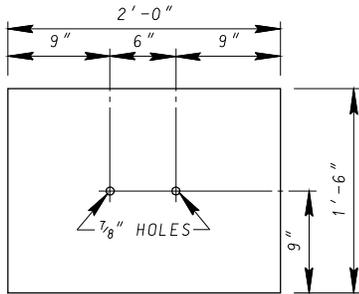
SHORT WOODEN POST



FRONT

SIDE

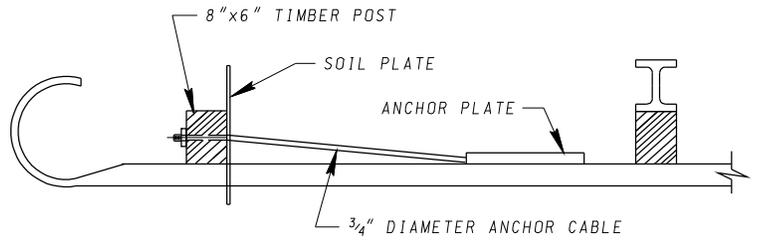
STEEL FOUNDATION TUBE



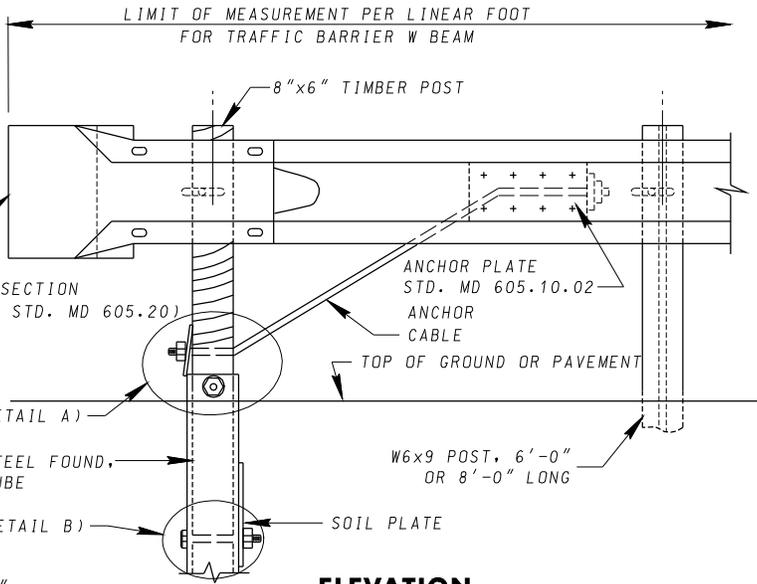
SOIL PLATE
(1/4" THICK)

NOTES

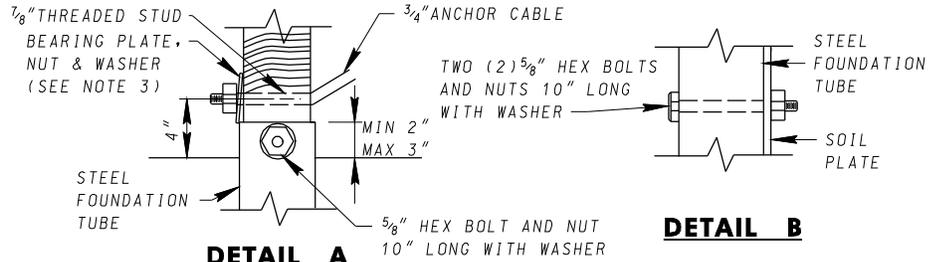
1. NOTES ON STD. MD 605.10 APPLY TO OPTION 2 & 3. (5/8" THICK)
2. IF THE FOUNDATION TUBE AND SOIL PLATE (OPTION 2) ARE DRIVEN INTO THE SOIL, PROPER CARE SHOULD BE TAKEN TO ENSURE THAT THE SOIL PLATE FASTENERS ARE NOT BROKEN DURING THE DRIVING PROCESS.
3. SECURE BEARING PLATE WITH 16 PENNY GALVANIZED NAIL TO PREVENT ROTATION OF PLATE.
4. SAME AS MD 605.01 NOTE 6



PLAN

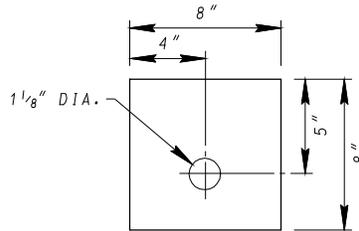


ELEVATION



DETAIL A

DETAIL B



BEARING PLATE

OPTION 2 (SHOWN ABOVE)
(FOUNDATION TUBE WITH SOIL PLATE)

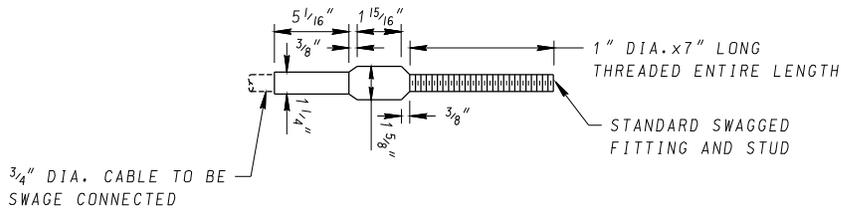
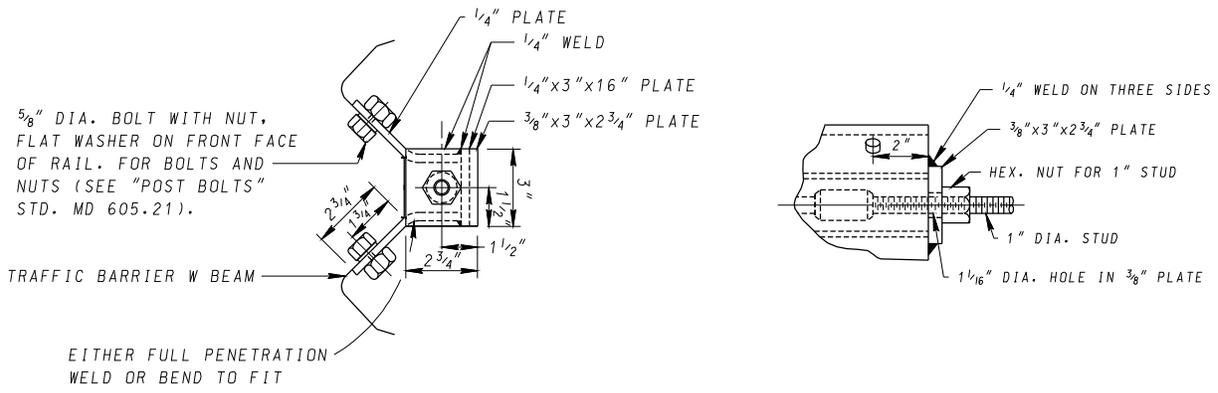
OPTION 3 (NOT SHOWN)
(FOUNDATION TUBE WITHOUT SOIL PLATE)
(SAME AS OPTION 2 EXCEPT STEEL FOUNDATION TUBE IS 6 1/2' LONG)

SPECIFICATION 605	CATEGORY CODE ITEMS										
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT										
	<table border="1"> <tr> <td>APPROVAL • SHA REVISIONS</td> <td>APPROVAL • FEDERAL HIGHWAY ADMINISTRATION</td> </tr> <tr> <td>APPROVAL 11-10-99</td> <td>APPROVAL 7-2-99</td> </tr> <tr> <td>REVISED 3-15-06</td> <td>REVISED 4-5-06</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> </table>	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 11-10-99	APPROVAL 7-2-99	REVISED 3-15-06	REVISED 4-5-06	REVISED	REVISED	REVISED	REVISED
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION									
	APPROVAL 11-10-99	APPROVAL 7-2-99									
	REVISED 3-15-06	REVISED 4-5-06									
	REVISED	REVISED									
REVISED	REVISED										

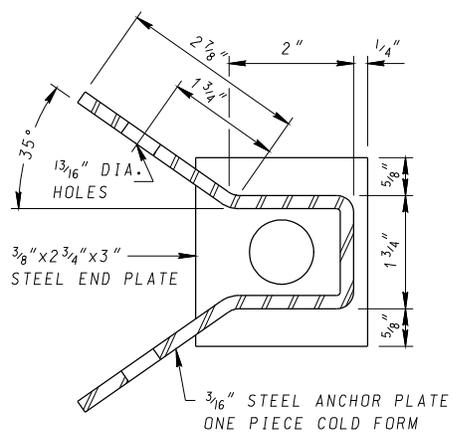
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE K TRAFFIC BARRIER END TREATMENT
OPTION 2 & 3 ANCHORAGE

STANDARD NO.

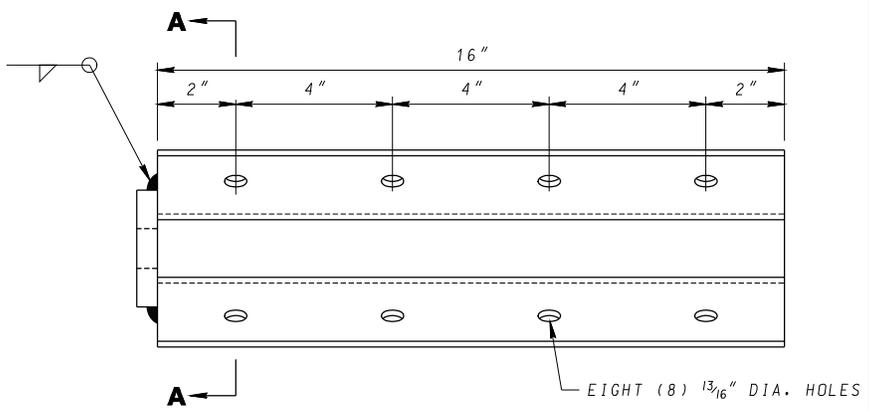
MD 605.10-01



ANCHOR PLATE DETAILS



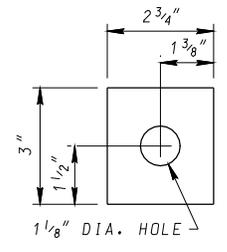
SECTION A-A



ALTERNATE ANCHOR PLATE DETAILS

NOTE

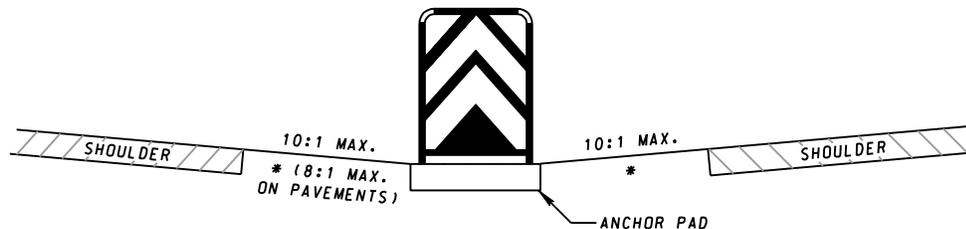
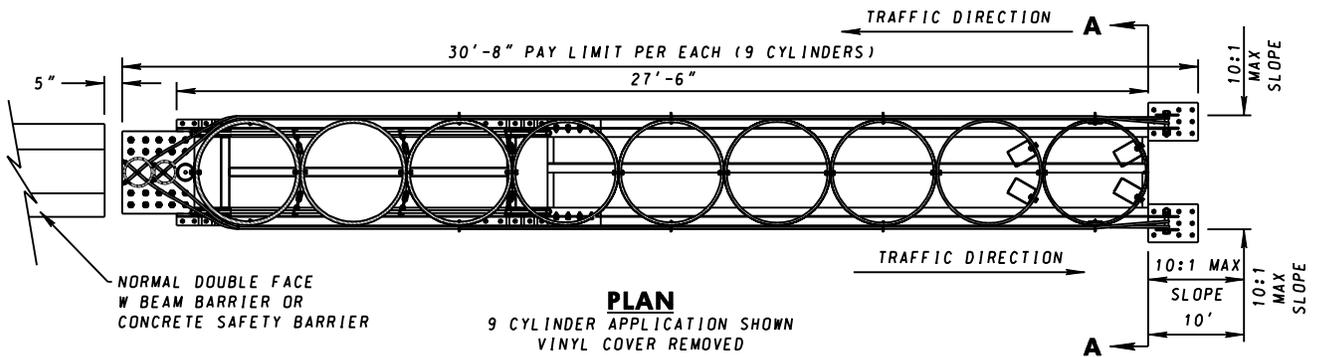
1. FOR MOUNTING DETAILS SEE STD. MD 605.10.



END PLATE

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 3-15-06
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-2-99
	REVISED 4-5-06
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE K TRAFFIC BARRIER END TREATMENT ANCHORAGE DETAILS
STANDARD NO. MD 605.10-02



NOTES

1. RECOMMENDED FOR ANTICIPATED OR HIGH IMPACT LOCATIONS.
2. FOR THE ANCHORING PAD DIMENSIONS AND MATERIALS AND TO ANCHOR THE UNIT TO EXISTING PAVEMENT REFER TO THE MANUFACTURERS PRODUCT MANUAL OR INSTRUCTIONS.
3. THE COST OF THE ANCHOR PAD, EXCAVATION, DRILLED HOLES, EPOXY, BOLTS, AND ALL LABOR AND MATERIALS NECESSARY TO ANCHOR THE UNIT SHALL BE INCIDENTAL TO THE TYPE J END TREATMENT SPECIFIED IN THE CONTRACT DOCUMENTS.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 7-2-99	
REVISED 3-28-01	
REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE J TRAFFIC BARRIER END TREATMENT
(PERMANENT OR TEMPORARY)

STANDARD NO. MD 605.11

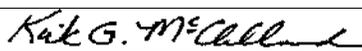
TYPE J TRAFFIC BARRIER CRITERIA

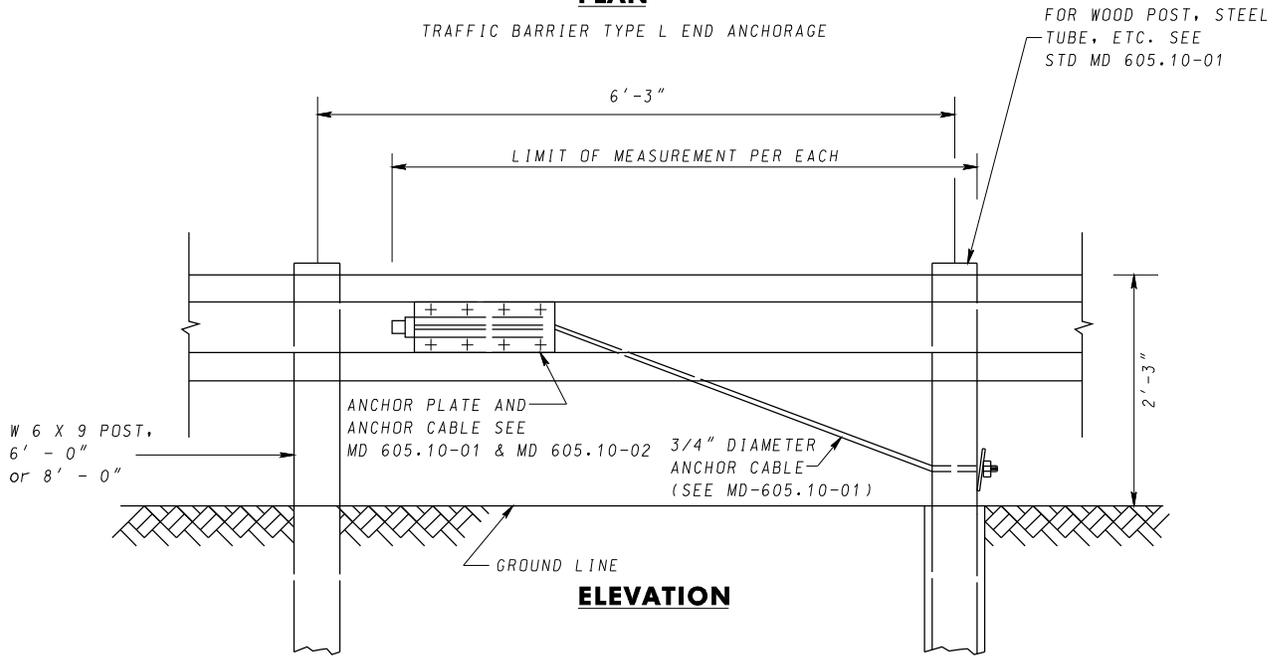
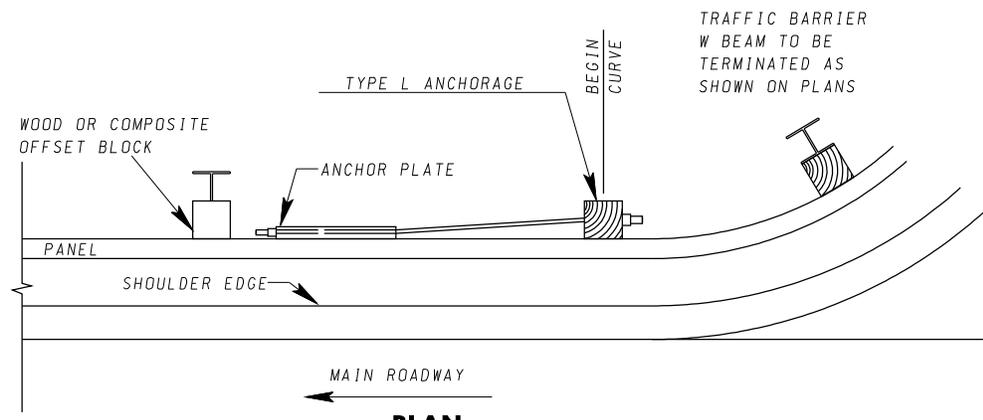
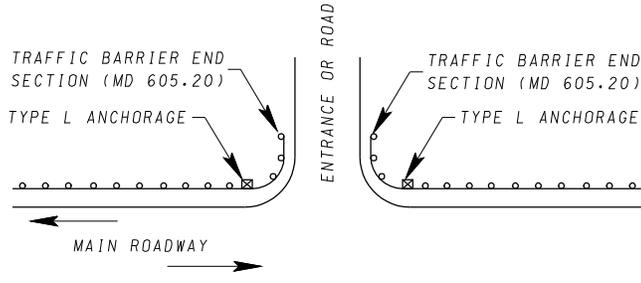
DESIGN SPEED mph	NUMBER OF CYLINDERS	OVERALL LENGTH	OVERALL WIDTH
45	4	15' 8"	3' 11"
55	6	21' 8"	3' 11"
65	9	30' 8"	3' 11"

NOTES

1. USE THE DESIGN SPEED AS INDICATED ON THE PLANS TO DETERMINE THE LENGTH OF THE SYSTEM.
2. FOR 3R (RESURFACE, REHABILITATION AND RESTORATION) OR MAINTENANCE PROJECTS USE THE POSTED SPEED PLUS 10 MPH TO DETERMINE THE LENGTH OF THE SYSTEM.

THE ABOVE CRITERIA AND NOTES APPLIES TO THE UNIT SHOWN ON MD 605.11. WHEN A UNIT THAT IS ON THE "APPROVED SUBSTITUTES LIST," THE UNIT MUST BE INSTALLED IN ACCORDANCE WITH THE INSTRUCTIONS AND CRITERIA SUPPLIED BY THE MANUFACTURER.

SPECIFICATION 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TYPE J TRAFFIC BARRIER END TREATMENT CRITERIA	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS APPROVAL 11-10-99 REVISED 3-15-06 REVISED REVISED		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 7-2-99 REVISED 4-5-06 REVISED REVISED
	STANDARD NO. MD 605.11-01		



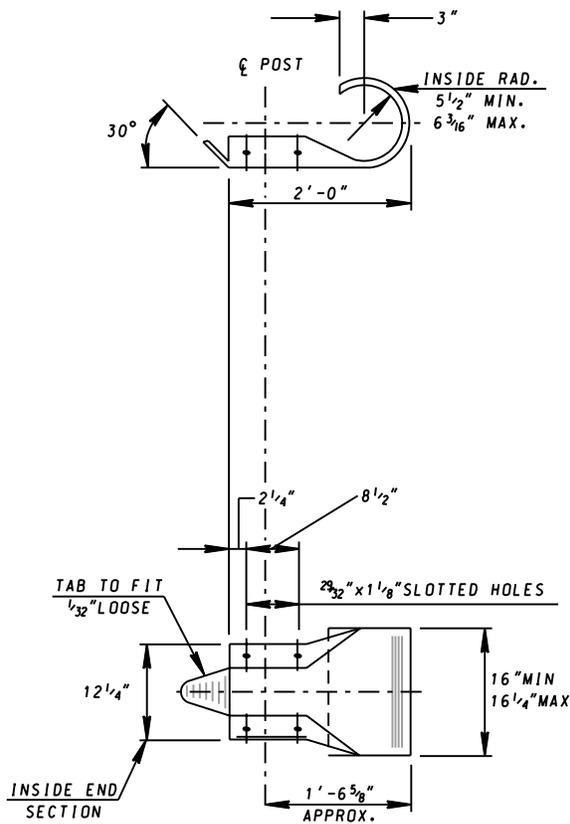
NOTES

1. APPLICABLE USING OPTION 2 OR 3 ANCHORAGE. LOCATED ON STD MD 605.10-01
2. ALL ITEMS (ANCHOR PLATE, CABLE, ROD, DRILLED HOLES, NUTS, BOLTS, ETC) NECESSARY FOR THE ANCHOR SHALL BE MEASURED AND PAID PER EACH OF "TYPE L TRAFFIC BARRIER ANCHORAGE".
3. THE TYPE L ANCHORAGE IS PERMITTED WITHIN A SINGLE RUN OF TRAFFIC BARRIER AS SHOWN. IF A TYPE L IS USED A TYPE K IS NOT REQUIRED ON THE TRAFFIC BARRIER END.

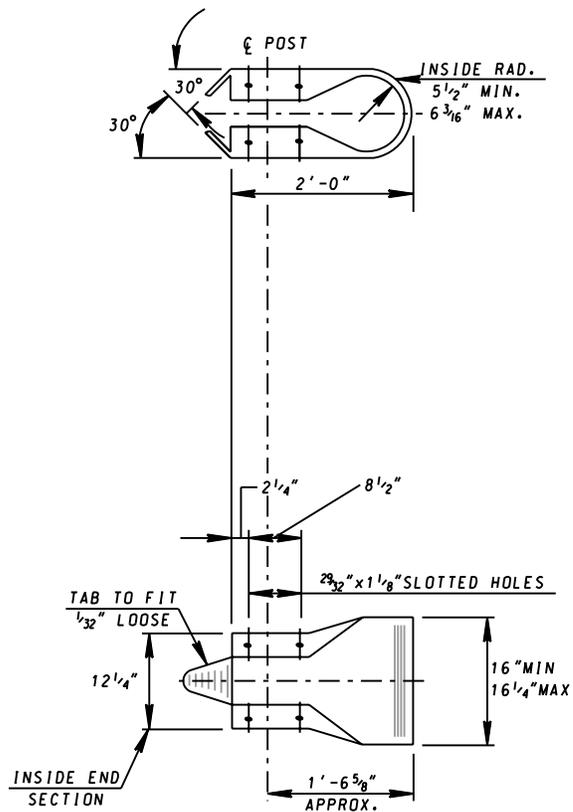
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-15-06
	REVISED 11-08-06
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 4-5-06
	REVISED 10-25-06
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TYPE L TRAFFIC BARRIER ANCHORAGE

STANDARD NO. MD 605.13



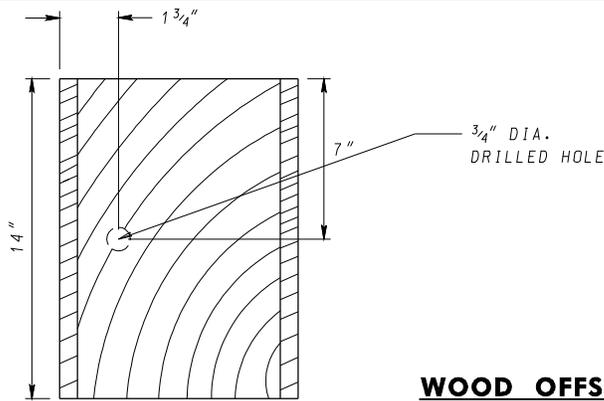
TRAFFIC BARRIER – END SECTION



**TRAFFIC BARRIER-END SECTION
(FOR BARRIER ON BOTH SIDES OF SAME POST)**

NOTE: THE END SECTIONS SHOWN ARE INCIDENTAL TO THE PAY ITEMS TRAFFIC BARRIER W BEAM USING 6 FT POSTS OR TRAFFIC BARRIER W BEAM USING 8 FT POSTS.

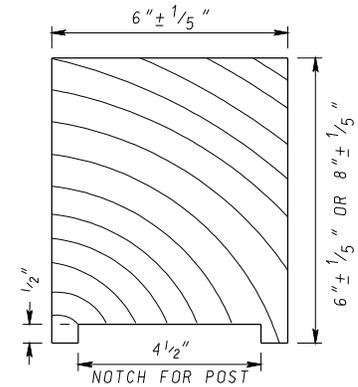
SPECIFICATION 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TRAFFIC BARRIER W BEAM END SECTIONS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-27-61	APPROVAL 2-24-82
	REVISED 3-31-05	REVISED 7-2-99
	REVISED	REVISED
		STANDARD NO. MD 605.20



FRONT VIEW

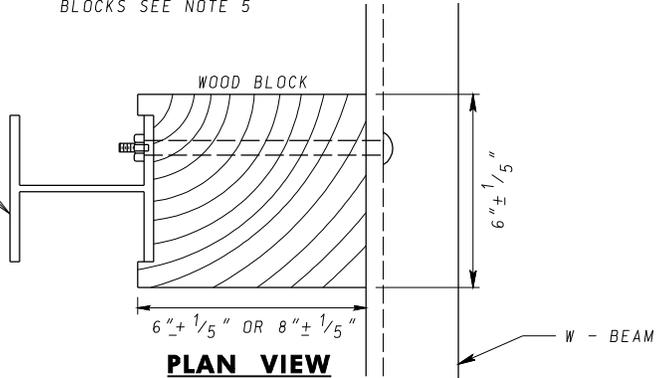
WOOD OFFSET BLOCK

USING NORMAL W BEAM PANELS
FOR COMPOSITE OFFSET
BLOCKS SEE NOTE 5



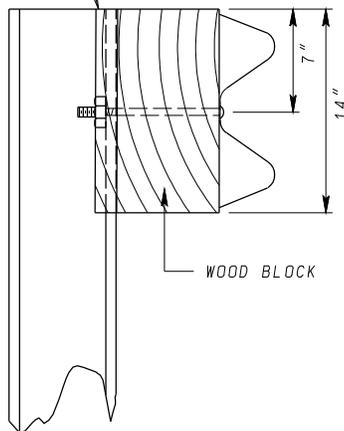
TOP VIEW

W 6X9 TRAFFIC
BARRIER POST



PLAN VIEW

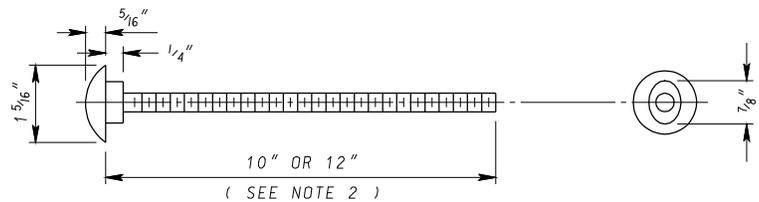
W 6X9 TRAFFIC
BARRIER POST



SIDE VIEW

TRAFFIC BARRIER POST AND OFFSET BLOCK

USING NORMAL W BEAM PANELS



OFFSET BLOCK BOLT

5/8" NC2, 11 THREADS/INCH

ALTERNATE-SINGLE RECESS NUTS
MAY BE SUBSTITUTED

5/8" NC2, 11 THREADS/INCH

1 5/16" DIA. x 3/32" DEEP RECESS TWO SIDES

NUT

NOTES

1. WOOD OFFSET BLOCKS 8x6x14 INCHES TO BE USED ON ALL NEW CONSTRUCTION AND WHEN THE EXISTING TRAFFIC BARRIER WITH METAL OFFSET BLOCKS IS TO BE REMOVED AND RESET.
2. THE CONTRACTOR HAS THE OPTION TO USE SHORTER BOLTS WITH A MINIMUM OF 1/2" PROTRUSION BEYOND NUT.
3. WOOD BLOCKS FOR THRIE BEAM PANELS SHALL BE 8x6x22 1/2 INCHES AND NOTCHED AS SHOWN IN THE TOP VIEW. TWO BOLTS ARE REQUIRED FOR ATTACHMENT TO THE POSTS.
4. THE 6x6x14 INCH WOOD OFFSET BLOCKS ARE TO BE USED FOR REPAIR WORK ONLY.
5. WHEN DIRECTED BY THE ENGINEER OR WHEN SPECIFIED IN THE CONTRACT DOCUMENTS, COMPOSITE OFFSET BLOCKS THAT ARE APPROVED BY THE ADMINISTRATION CAN BE USED IN LIEU OF THE WOOD BLOCKS. FOR THE APPROVED SUBSTITUTES LIST SEE SHEET 1 OF 1 APPROVED SUBSTITUTES FOR WOOD OFFSET BLOCKS.

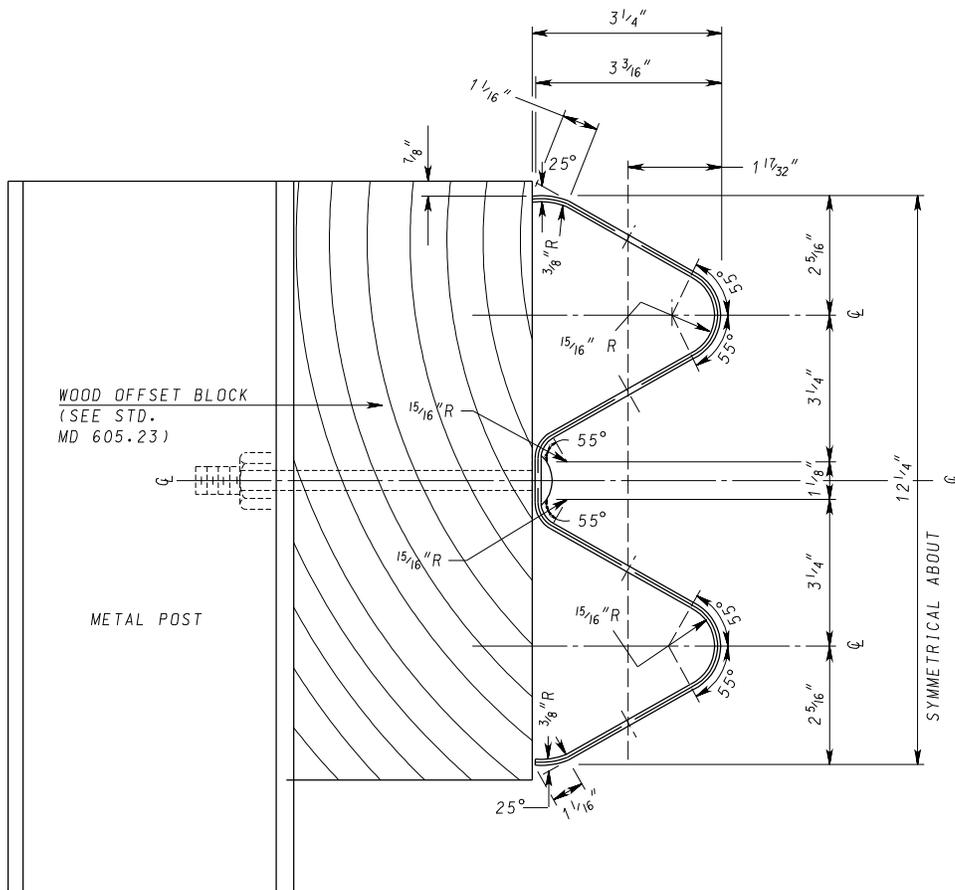
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISD 3-15-06
	REVISD
	REVISD
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 7-2-99	
REVISD 4-5-06	
REVISD	
REVISD	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**TRAFFIC BARRIER W BEAM WITH
WOOD OFFSET BLOCK**

STANDARD NO.

MD 605.21



W BEAM DETAIL

(MATERIAL: 12 GA. STEEL)

NOTES

1. RAIL ELEMENTS ARE FURNISHED SHOP CURVED, CONCAVE OR CONVEX TO RADII BETWEEN 20 FT. & 150 FT.
2. BARRIER SECTIONS SHALL BE 12'-6" OR 25'-0" LENGTHS.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21

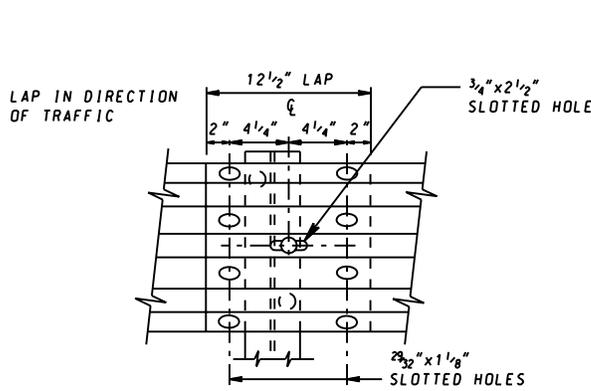
SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
SHA State Highway Administration	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-24-69	APPROVAL 3-4-69
	REVISED 3-15-06	REVISED 4-5-06
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

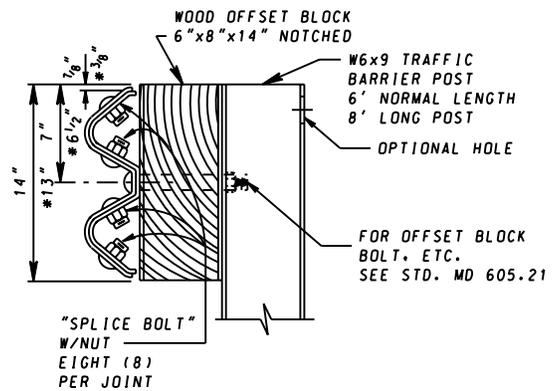
TRAFFIC BARRIER W BEAM
SINGLE FACE

STANDARD NO.

MD 605.22

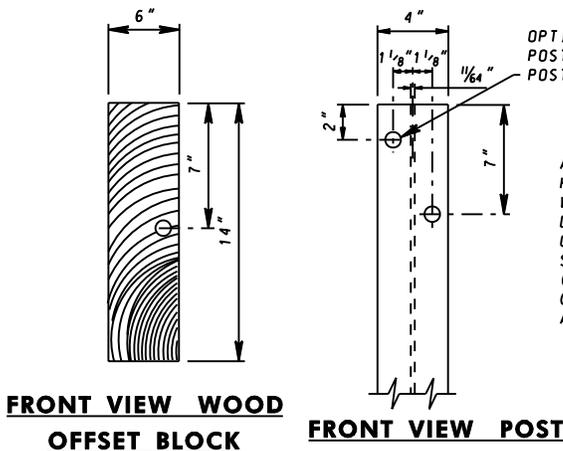


FRONT VIEW
(SPLICE BOLTS NOT SHOWN)



SIDE VIEW

TRAFFIC BARRIER W BEAM SPLICE JOINT

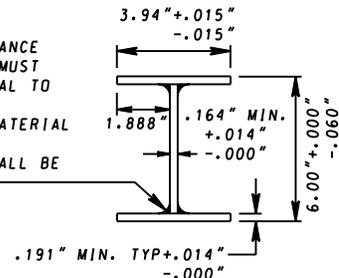


**FRONT VIEW WOOD
OFFSET BLOCK**

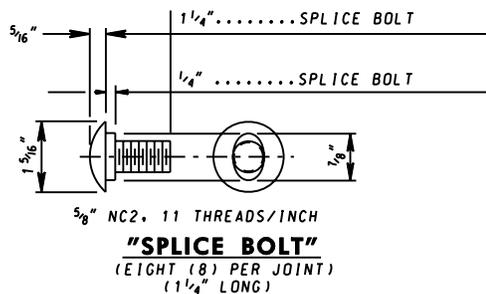
FRONT VIEW POST

OPTIONAL HOLE- THIS HOLE MAY BE DRILLED THROUGH BOTH POST FLANGES TO CREATE AN ADDITIONAL HOLE FOR RACKING POSTS WHEN GAVANIZING. (HOLE LOCATION SHOWN ON SIDE VIEW)

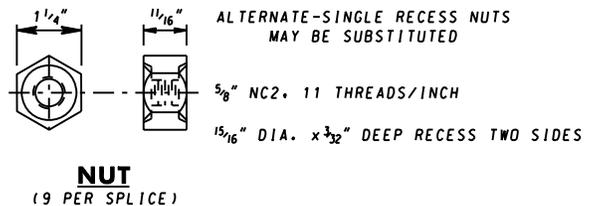
A 769 HIGH FREQUENCY RESISTANCE WELD. THE WELD JOINT MUST DEVELOP STRENGTH EQUAL TO OR EXCEEDING THE FULL STRENGTH OF THE WEB MATERIAL (MATERIAL GRADE A 36) GALVANIZED COATING SHALL BE AASHTO M 111.



**PLAN VIEW
ALTERNATE WELDED
W6x8.5 METAL POST**



"SPLICE BOLT"
(EIGHT (8) PER JOINT)
(1 1/4" LONG)



NUT
(9 PER SPLICE)

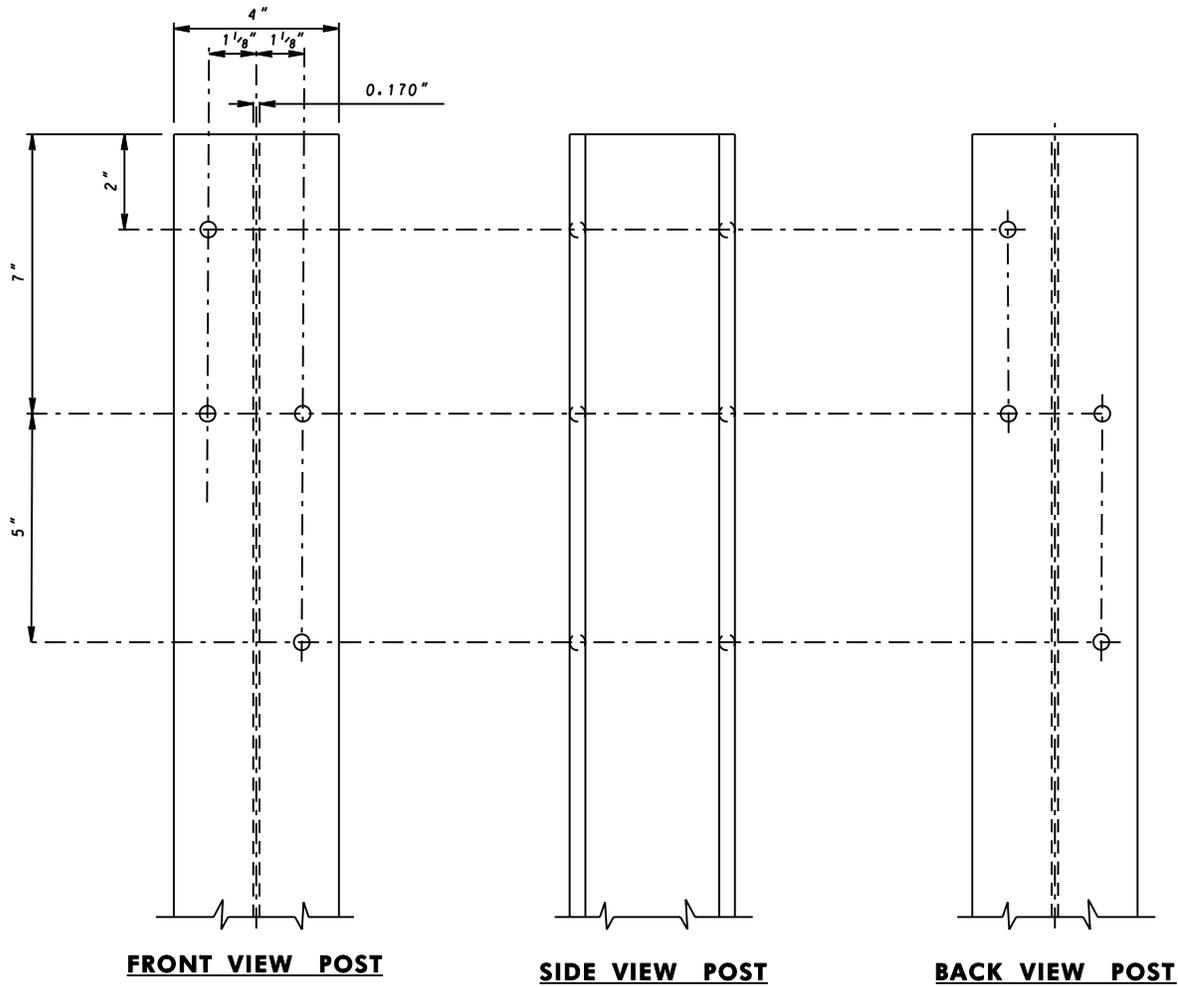
NOTES

- EXCEPT FOR THE DIMENSIONS SHOWN ON THE ALTERNATE WELDED W6x8.5 PLAN VIEW, ALL DIMENSIONS FOR HOLES, HOLE SPACING, LENGTHS, ETC. WILL REMAIN THE SAME AS THEY ARE FOR THE W6x9 POSTS AND WOOD OFFSET BLOCKS.
- FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21
- POSTS SHALL BE SPACED 6'-3" C/C, UNLESS OTHERWISE STATED ON THE PLANS OR DIRECTED BY THE ENGINEER.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 5-6-76
	APPROVAL 9-30-76
	REVISD 3-29-07
REVISD	REVISD
REVISD	REVISD
REVISD	REVISD

**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
**TRAFFIC BARRIER W BEAM METAL POST,
W BEAM SPLICE AND
WOOD OFFSET BLOCK**

STANDARD NO. MD 605.23

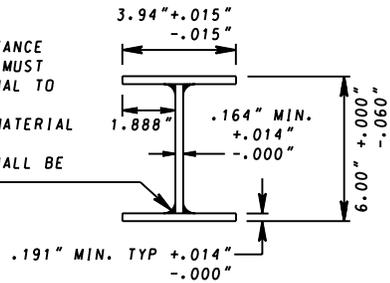


FRONT VIEW POST

SIDE VIEW POST

BACK VIEW POST

A 769
 HIGH FREQUENCY RESISTANCE
 WELD. THE WELD JOINT MUST
 DEVELOP STRENGTH EQUAL TO
 OR EXCEEDING THE FULL
 STRENGTH OF THE WEB MATERIAL
 (MATERIAL GRADE A 36)
 GALVANIZED COATING SHALL BE
 AASHTO M 111.



**TOP VIEW
 ALTERNATE WELDED W6x8.5 METAL POST**

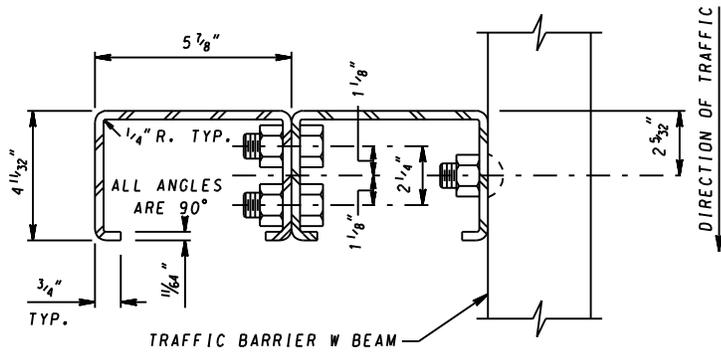
NOTE

1. SPLICING DETAILS FOR TRAFFIC BARRIER W BEAM THE SAME AS SHOWN ON STD. MD. 605.23

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-99
	REVISED 10-1-01	REVISED
	REVISED	REVISED
	REVISED	REVISED

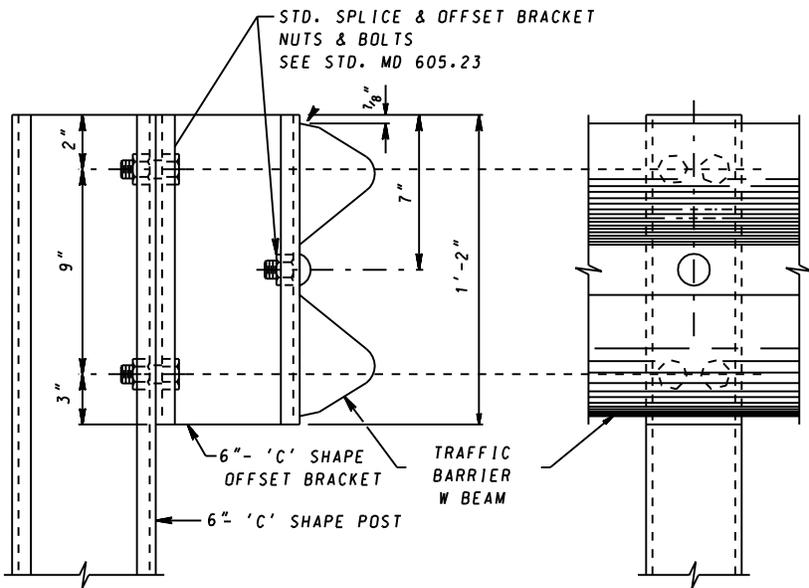
**Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION**
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
**TRAFFIC BARRIER W BEAM METAL POST
 ADAPTABLE TO 8"x 6"x 14"
 WOOD OFFSET BLOCK**

STANDARD NO. MD 605.23-01



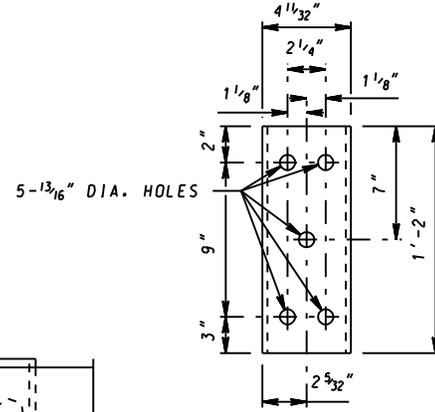
PLAN

OPEN SIDE OF C SHAPE POST
& OFFSET BRACKETS TO BE PLACED
AWAY FROM DIRECTION OF TRAFFIC

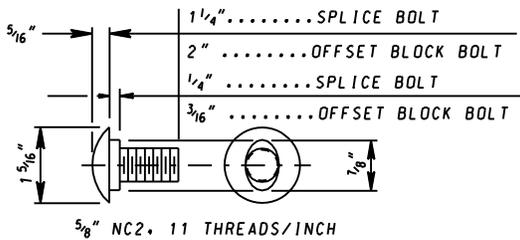


SIDE ELEVATION

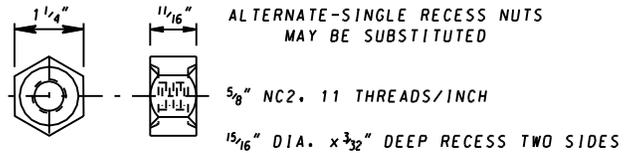
FRONT ELEVATION



OFFSET BRACKET



"SPLICE BOLT" & "OFFSET BLOCK BOLT"
(EIGHT (8) PER JOINT) (ONE (1) PER BLOCK)
(1 1/4" LONG) (2" LONG)



NUT
(9 PER SPLICE)

NOTES

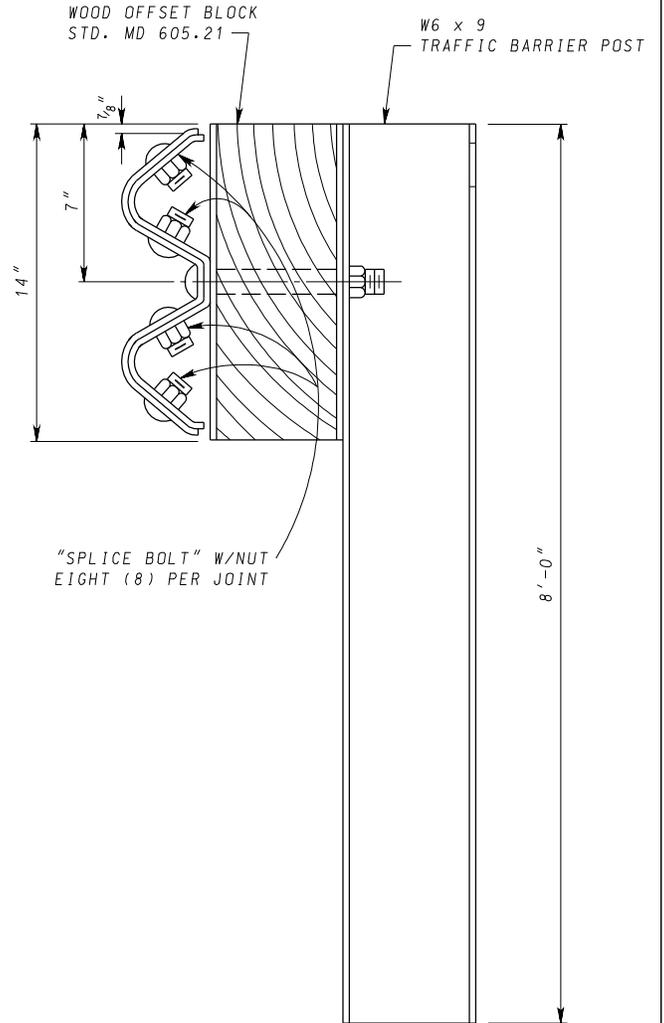
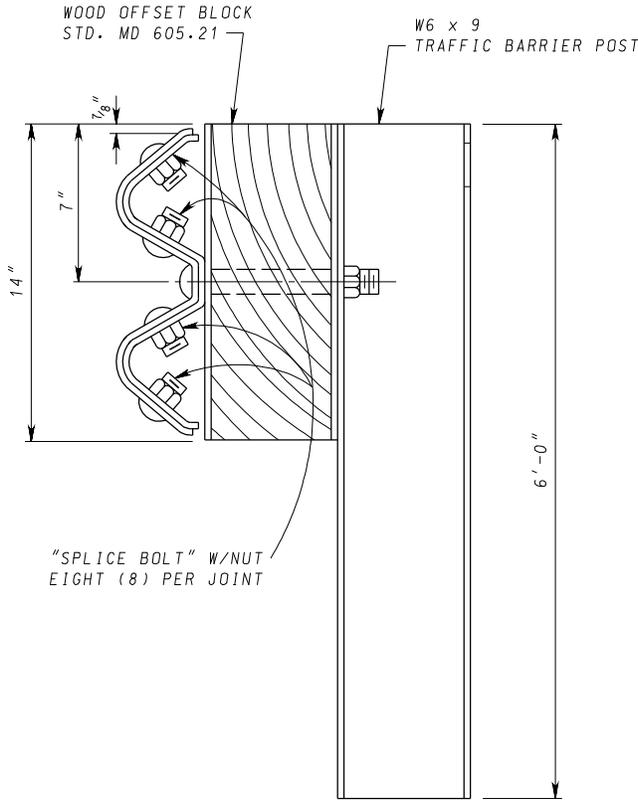
1. ALL DIMENSIONS ARE SUBJECT TO MFG. TOLERANCES.
2. POST TO BE 6'-0" LONG, SPACED AT 6'-3" C/C, UNLESS OTHERWISE STATED ON THE PLANS OR DIRECTED BY THE ENGINEER.
3. BACK-UP PLATE (12" LENGTH OF BEAM) CENTERED ON OFFSET BRACKET BOLT TO BE PLACED WHERE NO OVERLAP OF RAIL SPLICE OCCURS.
4. MATERIAL=ASTM A-570 WITH MECHANICAL PROPERTIES EQUAL TO AASHTO M-183.
5. GALVANIZING=AASHTO M-111 ASTM A-123.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 5-6-76
	REVISION 3-29-07
	REVISION
	REVISION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM
ALTERNATE 'C' SHAPE STRONG POST

STANDARD NO.

MD 605.23-02



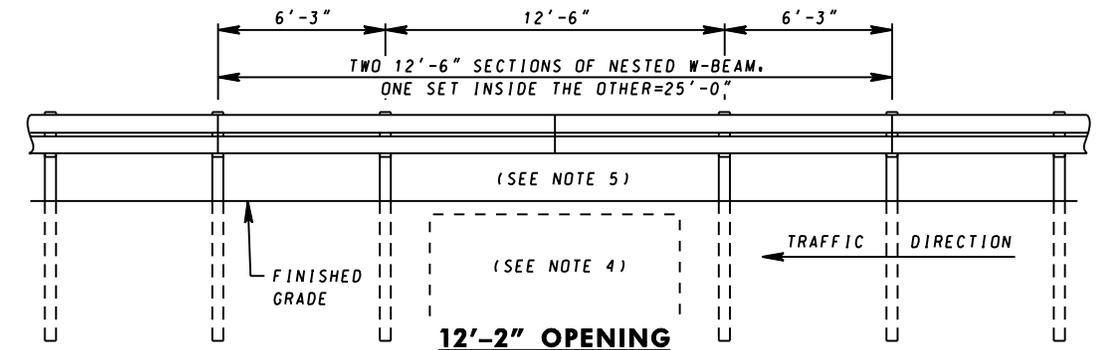
POST DETAIL

NOTE

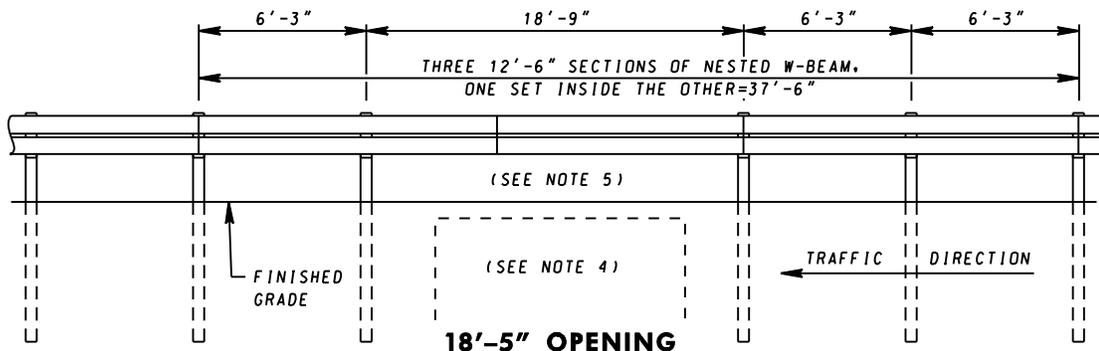
1. FOR METAL POSTS, WOOD OFFSET BLOCKS, SPLICES, SPLICE BOLTS AND OTHER DETAILS SEE STANDARD MD 605.23.
2. FOR TRAFFIC BARRIER W BEAM SEE STANDARD MD 605.22.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21
4. POSTS SHALL BE SPACED 6'-3" C/C, UNLESS OTHERWISE STATED ON THE PLANS OR DIRECTED BY THE ENGINEER.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 11-08-06
	REVISED
	REVISED
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-2-99
	REVISED 10-25-06
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH
WOOD OFFSET BLOCK USING 6 FOOT
OR 8 FOOT POSTS
STANDARD NO. MD 605.25

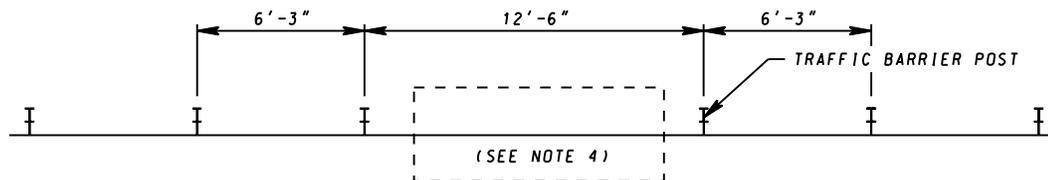


12'-2" OPENING

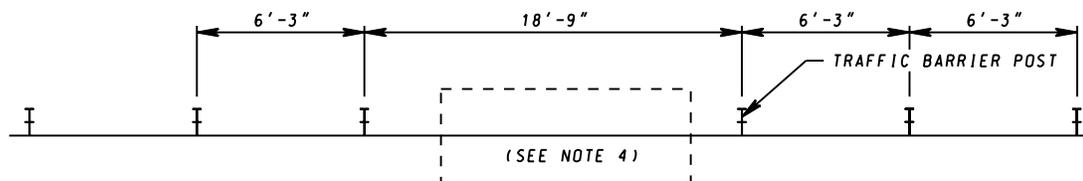


18'-5" OPENING

ELEVATION VIEW



12'-2" OPENING



18'-5" OPENING

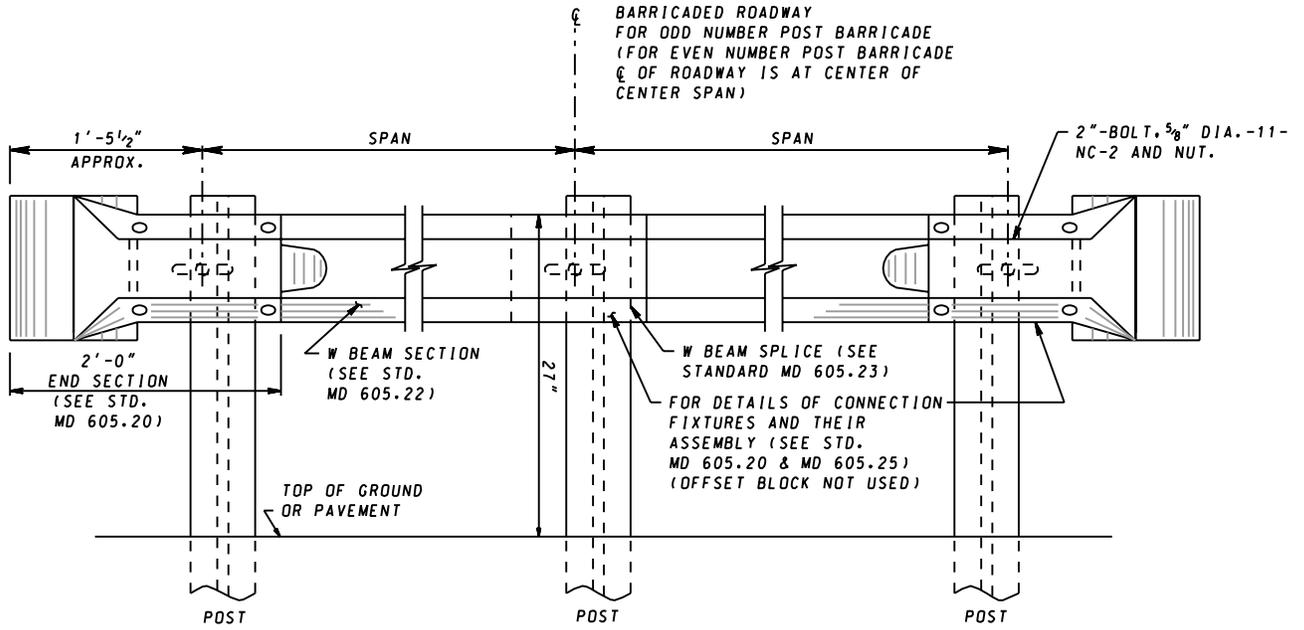
PLAN VIEW

NOTES

1. ALL POSTS SHALL BE W6 X 9 AS SHOWN ON STANDARD MD 605.23.
2. WOOD OFFSET BLOCKS SHALL BE AS SHOWN ON STANDARD MD 605.21.
3. THE TRAFFIC BARRIER W-BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
4. MAY SPAN 5', 10' & 15' COG OR COS INLETS. LOW FILL BOX CULVERT OR OTHER OBJECT WHICH INTERFERS WITH NORMAL PLACEMENT OF POST.
5. THE SPLICE ON BOTH RAILS MUST BE COINCIDENT.

SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED <i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99	APPROVAL 7-2-97
	REVISED 10-1-01	REVISED 7-2-99
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM
POST PLACEMENT DETAILS
FOR SPANNING 12'-2" TO 18'-5" OPENINGS
STANDARD NO. MD 605.26



MINIMUM NUMBER OF SPANS = 2
 MINIMUM NUMBER OF POSTS = 3
 MAXIMUM SPAN: 12'-6"
 LENGTH OF BARRICADE NOTED ON PLANS: CENTER TO CENTER OF END POSTS
 ALL SPANS TO BE EQUAL LENGTH.
 NO. OF POSTS TO BE NOTED ON PLANS.
 ALL POSTS W6x9, 6'-0" LONG (SEE STD. MD 605.10)

NOTE

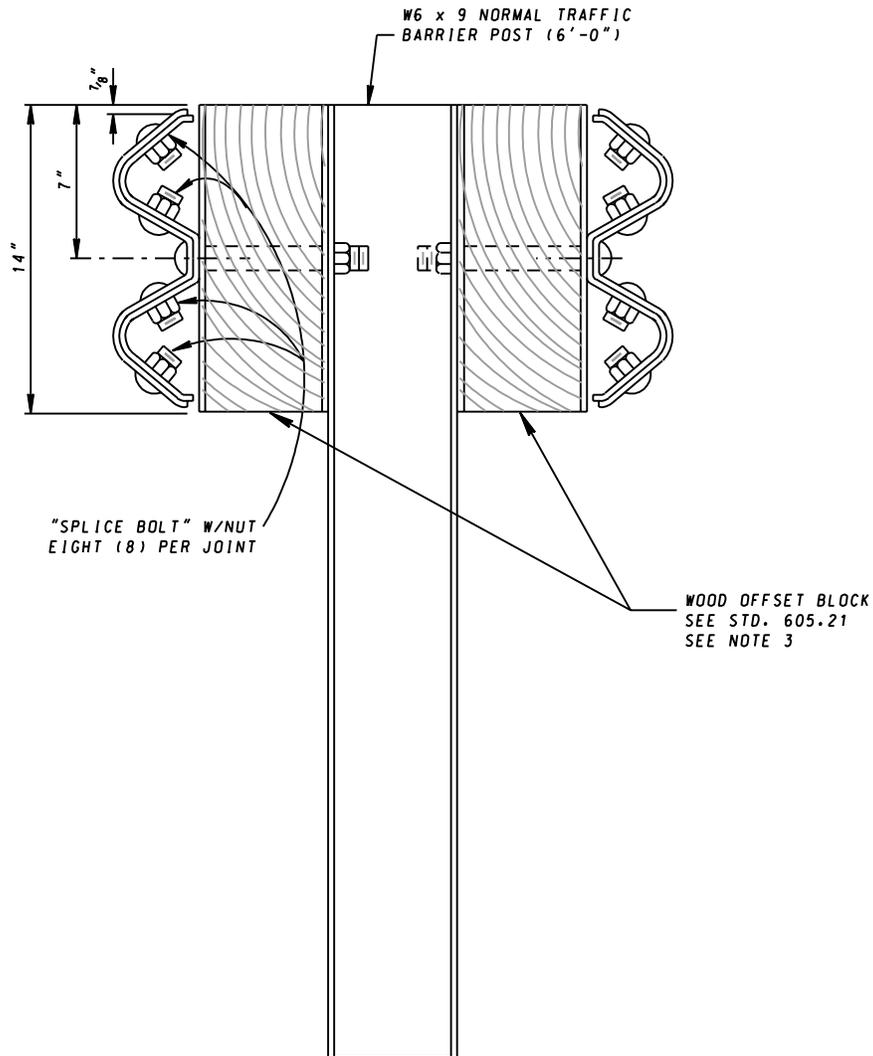
TRAFFIC BARRIER W BEAM BARRICADE SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE CONTRACT PRICE BID SHALL INCLUDE THE FURNISHING AND INSTALLATION OF ALL POSTS, W BEAM, POST AND SPLICE BOLTS WITH NUTS, END SECTIONS, GALVANIZING, THE COST OF ALL EXCAVATION, BACKFILLING AND TAMPING INCIDENTAL TO SETTING THE POSTS, OR THE COST OF DRIVING THE POSTS, THE COST OF THE REMOVAL OF EXISTING PAVEMENT WHERE NECESSARY, AS WELL AS THE COST OF ALL LABOR, APPROVED TOOLS AND EQUIPMENT INCIDENTAL TO FURNISHING AND INSTALLING THE BARRICADE AT LOCATIONS NOTED ON THE PLANS OR WHERE DIRECTED BY THE ENGINEER. FOR MATERIAL, SEE LATEST S.H.A. SPECIFICATIONS FOR TRAFFIC BARRIER W BEAM.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-21-61
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 7-7-70	
REVISED 7-2-99	
REVISED	
REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**TRAFFIC BARRIER W BEAM
BARRICADE**

STANDARD NO. MD 605.27

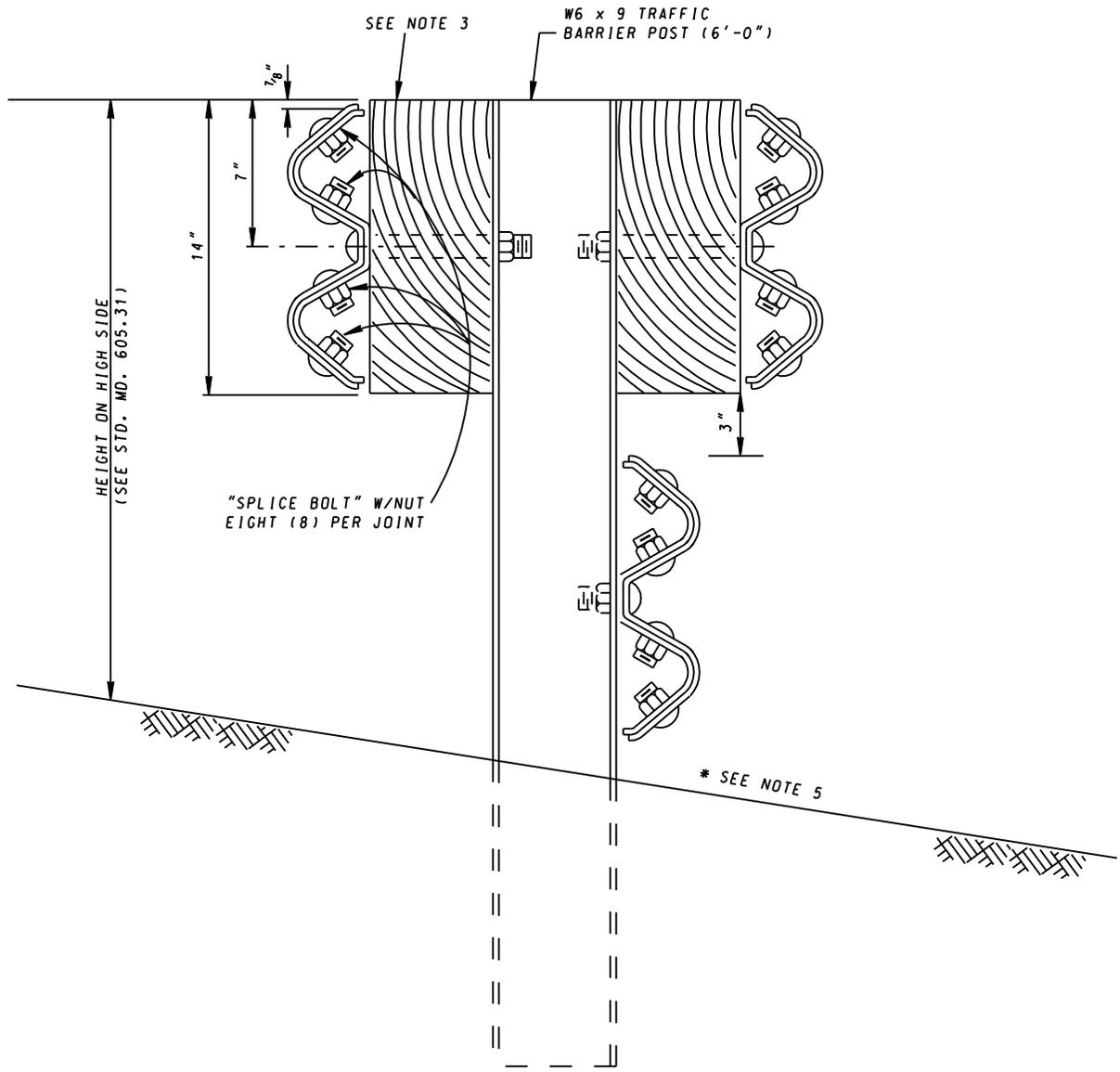


DOUBLE FACED BARRIER

NOTE

1. FOR METAL POSTS, WOOD OFFSET BLOCKS, SPLICES, SPLICE BOLTS, AND OTHER DETAILS SEE STANDARD MD 605.23.
2. FOR TRAFFIC BARRIER W BEAM SEE STANDARD MD 605.22.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21

SPECIFICATION 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TRAFFIC BARRIER W BEAM MEDIAN BARRIER
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-2-75	APPROVAL 9-30-75
	REVISED 2-10-04	REVISED 3-31-04
	REVISED	REVISED
	REVISED	REVISED
STANDARD NO. MD 605.28		



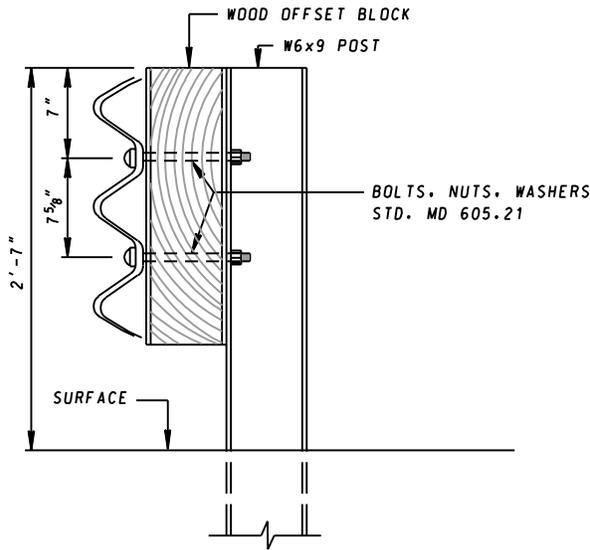
W BEAM MEDIAN BARRIER

NOTES:

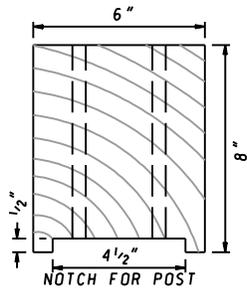
1. FOR METAL POSTS, WOOD OFFSET BLOCKS, SPLICES, SPLICE BOLTS, AND OTHER DETAILS SEE STANDARD MD 605.23.
2. FOR TRAFFIC BARRIER W BEAM SEE STANDARD MD 605.22.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21
4. THE COST FOR THE SYSTEM INCLUDING W BEAM PANEL, HARDWARE, DRILLED HOLES, LABOR AND TOOLS SHALL BE MEASURED AND PAID FOR PER LINEAR FOOT FOR THE ITEM "TRAFFIC BARRIER W BEAM MEDIAN BARRIER WITH BOTTOM PANEL."
5. USE THIS STANDARD WHEN THE SLOPE IS STEEPER THAN 6:1.

SPECIFICATION 605	CATEGORY CODE ITEMS	
APPROVED <i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-2-75	APPROVAL 9-30-75
	REVISED 5-29-07	REVISED 5-2-07
	REVISED	REVISED
	REVISED	REVISED

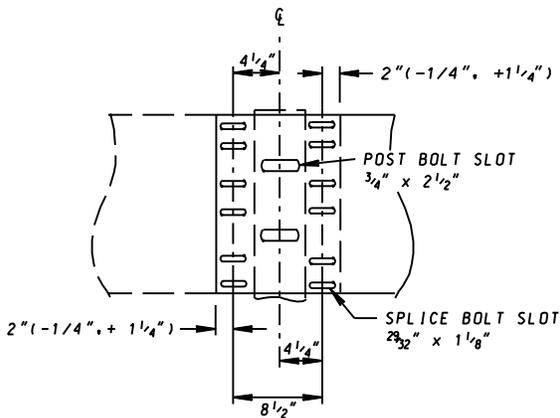
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM MEDIAN BARRIER WITH BOTTOM PANEL
STANDARD NO. MD 605.28-01



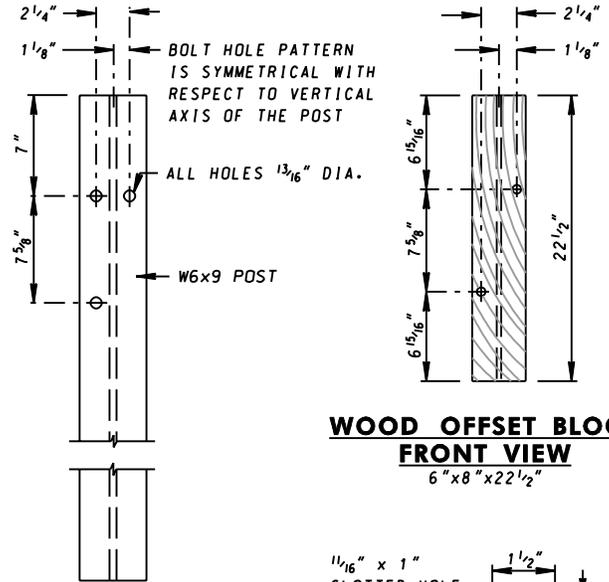
SECTION THRU BARRIER



WOOD OFFSET BLOCK

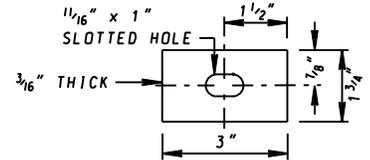


SPLICE JOINT

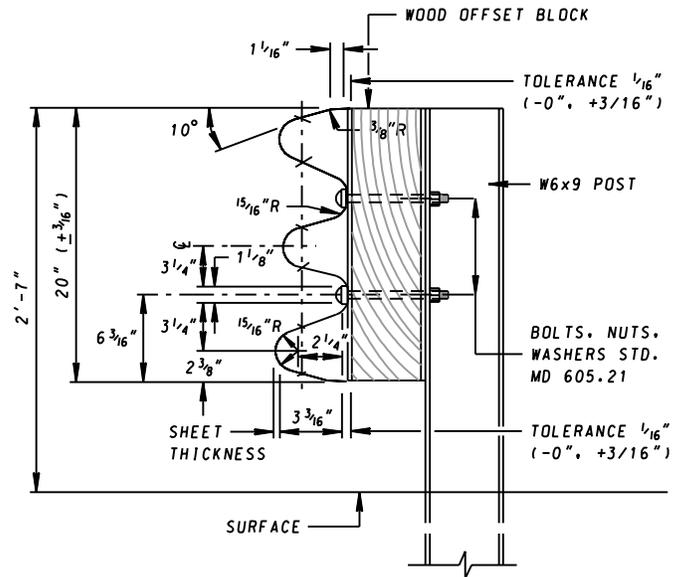


WOOD OFFSET BLOCK FRONT VIEW
6" x 8" x 22 1/2"

STANDARD POST FRONT VIEW



RECTANGULAR PLATE WASHER (GALVANIZED)



THRIE BEAM DETAIL

NOTE

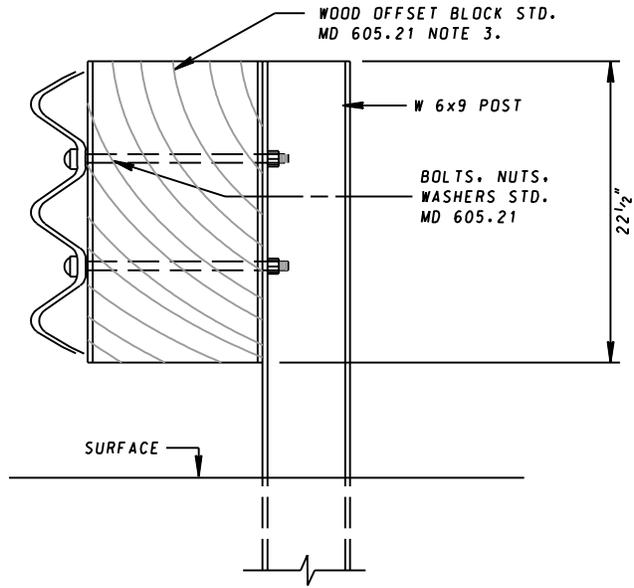
1. METAL POST SHALL CONFORM TO A36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH A123.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS APPROVAL 11-10-99 REVISED 10-1-01 REVISED REVISED
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 7-2-99 REVISED REVISED

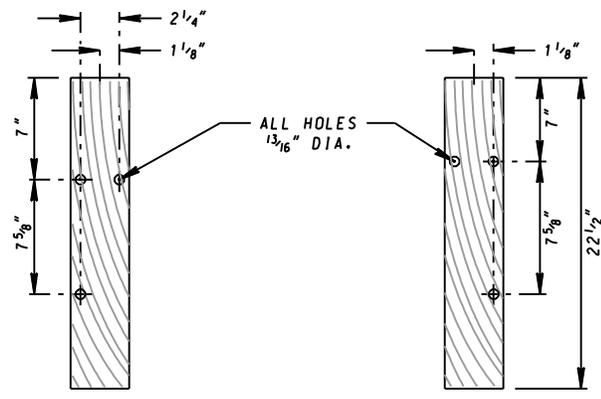
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER THRIE BEAM SINGLE FACE

STANDARD NO. MD 605.29



SECTION THRU BARRIER



FRONT VIEW

REAR VIEW

WOOD OFFSET BLOCK

NOTES

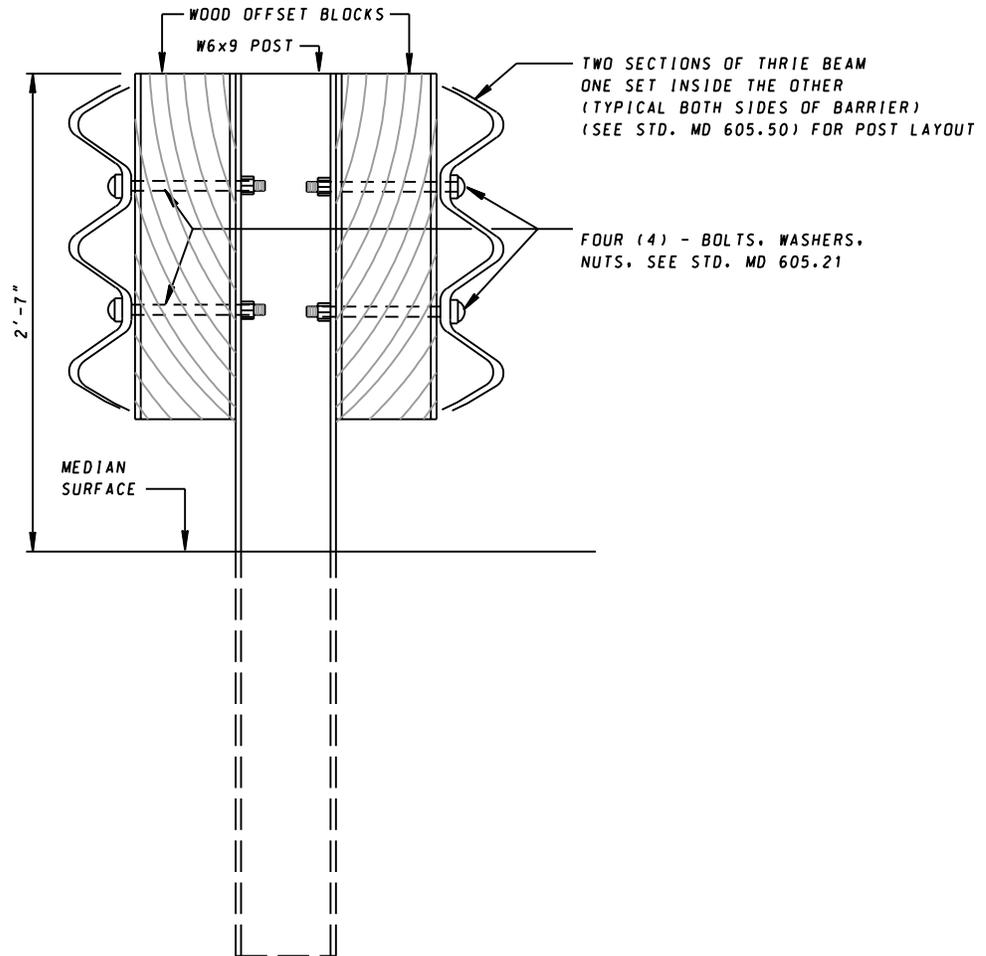
1. POST SHALL BE GALVANIZED IN ACCORDANCE WITH A 123.
2. THRIE BEAM DETAILS AND SPLICE JOINT ARE THE SAME AS STD. MD 605.29.
3. THRIE BEAM RECTANGULAR WASHER SHOWN ON STD. MD 605.41-01.
4. USE WOOD OFFSET BLOCK WITH POST AS SHOWN ON STD. MD 605.29.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-2-99
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER MODIFIED THRIE BEAM
WOOD OFFSET BLOCK SINGLE FACE

STANDARD NO. MD 605.29-01



SECTION THRU BARRIER

NOTE

1. FOR METAL POSTS, WOOD OFFSET BLOCKS, SPLICES, SPLICE BOLTS, THRIE BEAM, AND OTHER DETAILS SEE STANDARD MD 605.29.

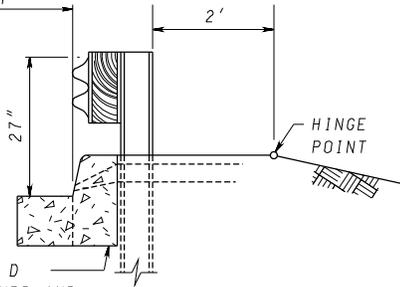
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 6-26-92
	REVISED 10-1-01
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**TRAFFIC BARRIER THRIE BEAM
 DOUBLE FACE**

STANDARD NO. MD 605.30

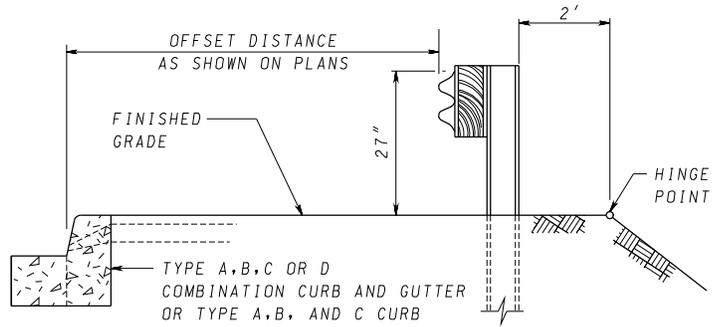
ALIGN FACE OF W BEAM WITH FLOW LINE



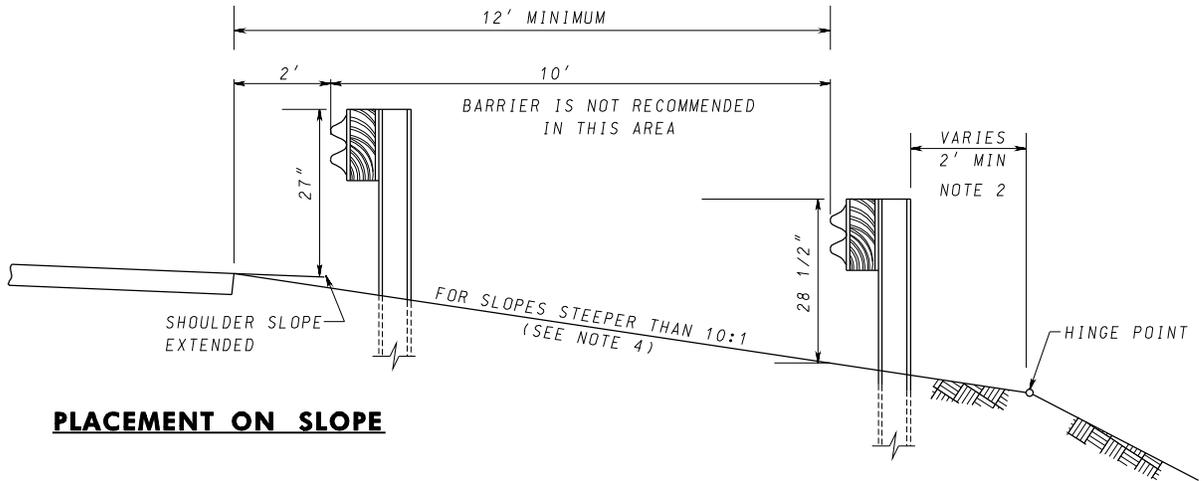
TYPE A, B, C OR D COMBINATION CURB AND GUTTER OR TYPE A, B AND C CURB.

PLACEMENT AT CURBS (WITHOUT SIDEWALKS)

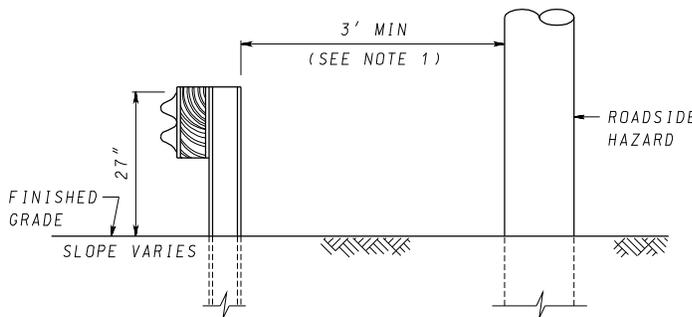
OFFSET DISTANCE AS SHOWN ON PLANS



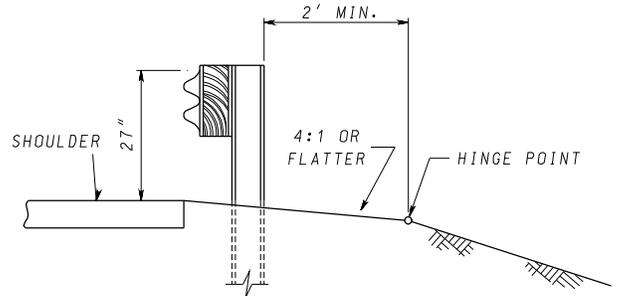
PLACEMENT BEHIND SIDEWALK AREA



PLACEMENT ON SLOPE



MINIMUM OFFSET TO HAZARD



PLACEMENT AT SHOULDER

NOTES

1. THE MINIMUM DIMENSION SHOWN CAN BE REDUCED BY STIFFENING THE TRAFFIC BARRIER SYSTEM.
2. 8'-0" LONG POSTS ARE TO BE USED WHEN THE DISTANCE FROM THE BACK OF THE W BEAM POST TO THE HINGE POINT IS LESS THAN 2'.
3. WHEN THE FACE OF THE TRAFFIC BARRIER IS MORE THAN 2' FROM THE SHOULDER EDGE THE HEIGHT MEASURED FROM THE EXISTING GROUND SHALL BE 28 1/2".
4. WHEN SLOPE IS STEEPER THAN 6:1, THE FACE OF THE BARRIER MUST BE ALIGNED WITH THE EDGE OF SHOULDER.

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-4-84	APPROVAL 8-1-94
	REVISED 11-08-06	REVISED 10-25-06
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W BEAM
PLACEMENT DETAILS

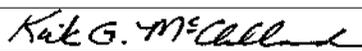
STANDARD NO.

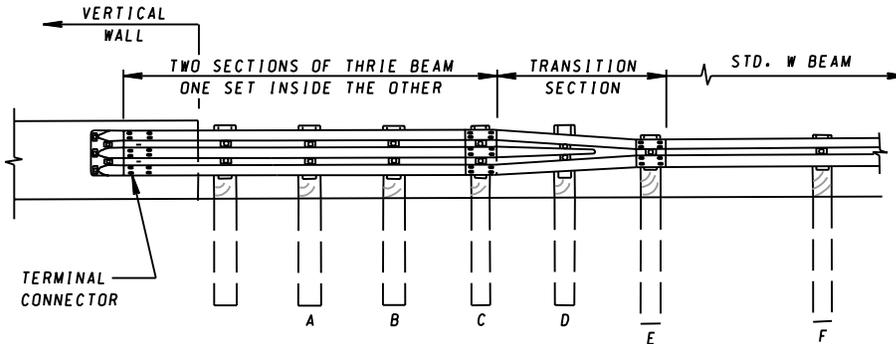
MD 605.31

FLARE RATES	
DESIGN SPEED (MPH)	W-BEAM
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1
30	7:1

NOTES

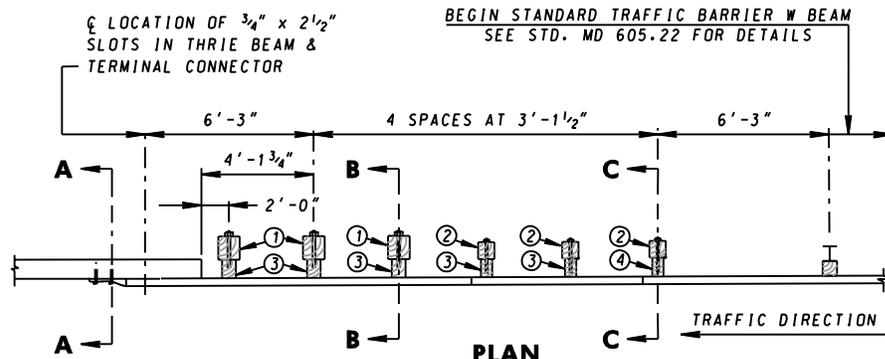
1. THE ABOVE FLARE RATES FOR W BEAM BARRIER SYSTEMS ARE APPLIED WHEN BARRIER TRANSITIONS TOWARD THE TRAVEL WAY. IF THE BARRIER TRANSITIONS AWAY FROM THE TRAVEL WAY, AND THE SLOPE IS 10:1 OR FLATTER, ANY FLARE RATE 2:1 OR FLATTER IS ACCEPTABLE, IF THE SLOPE IS STEEPER THAN 10:1 (BUT NO STEEPER THAN 6:1), A 2:1 FLARE RATE IS USED.

SPECIFICATION	CATEGORY CODE ITEMS	<p align="center">Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TRAFFIC BARRIER W BEAM FLARE RATES</p>	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS APPROVAL 11-08-06 REVISED REVISED REVISED		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 10-25-06 REVISED REVISED REVISED
	STANDARD NO. MD 605.32		

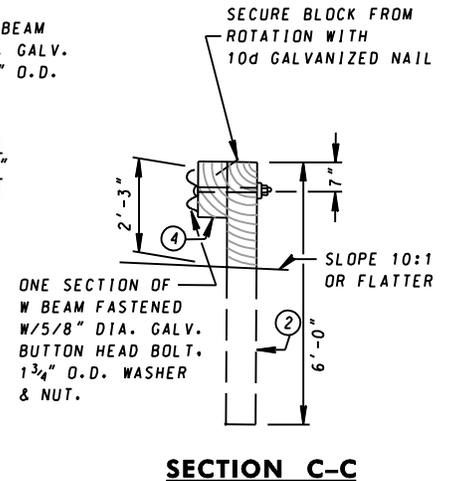
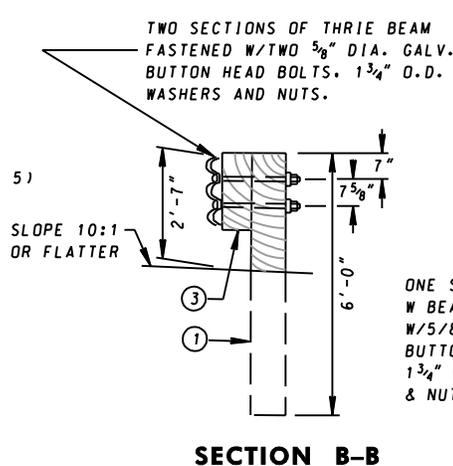
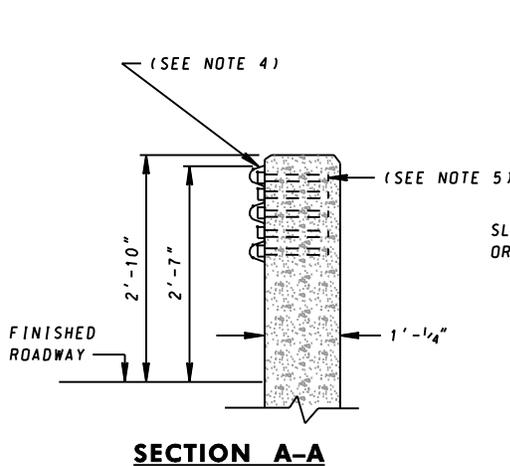


WOOD POST & BLOCK DIMENSIONS	
①	10" X 10" X 6'-0"
②	8" X 8" X 6'-0"
③	6" X 8" X 22 1/2"
④	6" X 8" X 14"

ELEVATION



PLAN



NOTES

1. THRIE BEAM TERMINAL CONNECTOR, THRIE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
3. SEE STD'S. MD 605.29 & MD 605.41-02 FOR DETAILS OF THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, AND RECTANGULAR PLATE WASHERS.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL FIVE (5) 7/8" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.
5. ALTERNATE ANCHORAGE METHOD "CAST IN CONCRETE" SHOWN ON STD. MD 605.44.

SPECIFICATION 605	CATEGORY CODE ITEMS
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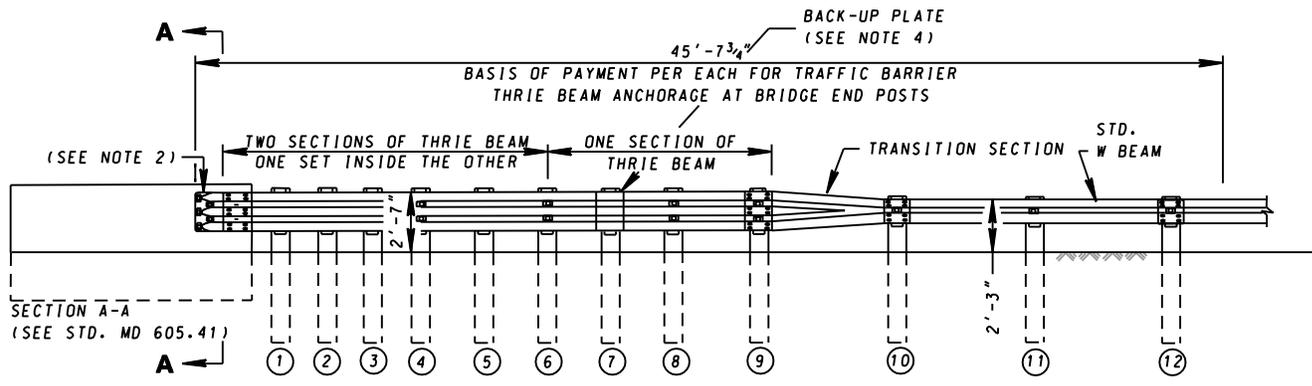
APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT



APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 4-27-89	APPROVAL 5-5-89
REVISED 10-1-01	REVISED 7-2-99
REVISED	REVISED
REVISED	REVISED

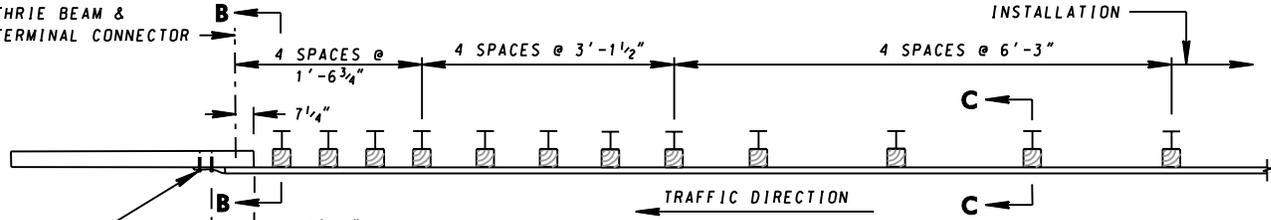
**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
**TRAFFIC BARRIER THRIE BEAM
ANCHORAGE TO VERTICAL FACE
(WOOD POST)**

STANDARD NO. MD 605.41



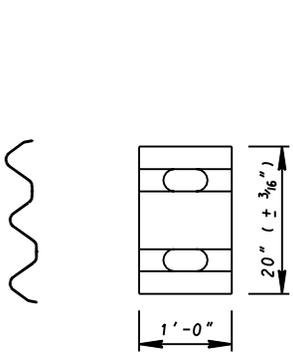
ELEVATION

LOCATION OF 3/4" x 2 1/2" POST BOLT SLOTS IN THRIE BEAM & TERMINAL CONNECTOR

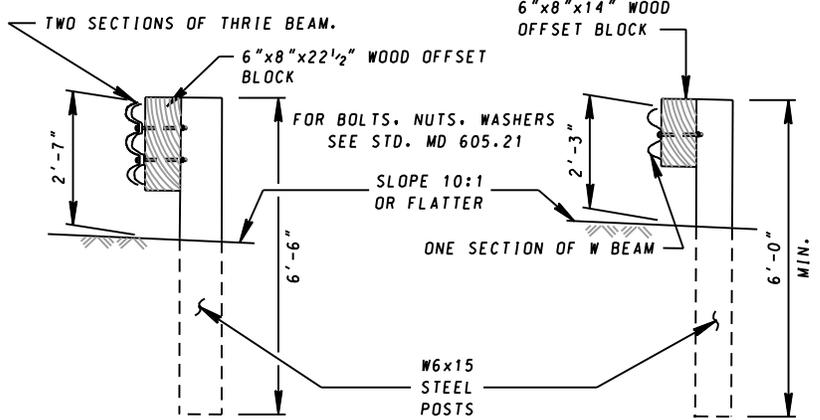


PLAN

(SEE STD. MD 605.44) FOR ALTERNATE ANCHORAGE METHOD "CAST IN CONCRETE."



BACK-UP PLATE



SECTION B-B

SECTION C-C

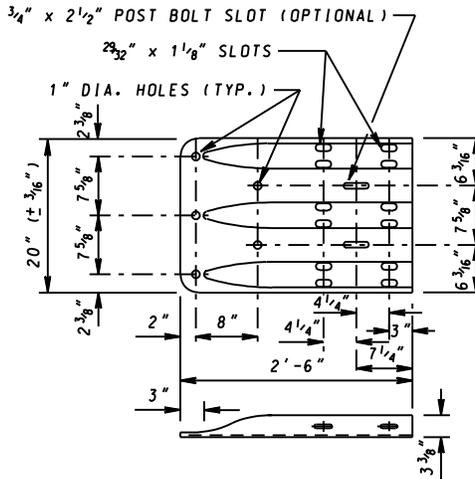
NOTES

1. THE TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POSTS SHALL BE PLACED ON SLOPES 10:1 OR FLATTER.
2. DETAILS OF THE THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, SQUARE PLATE WASHERS, AND RECTANGULAR PLATE WASHERS, ARE SHOWN ON STD. MD 605.41-02.
3. POSTS 1, 2, 3, 5, AND 7 ARE NOT BOLTED TO RAIL.
4. AT POST 7 BACK-UP PLATE BOLTED TO OFFSET BRACKET ONLY.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL FIVE (5) 1/2" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.

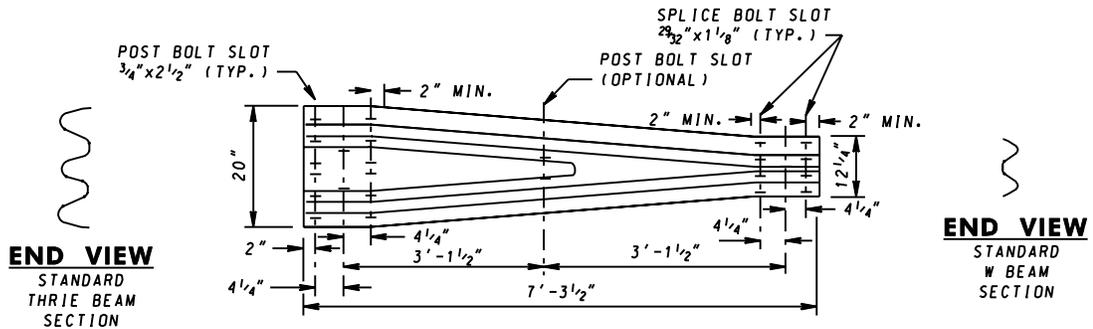
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 10-1-01
	REVISED
	REVISED
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-2-99
	REVISED
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
SPECIAL TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT VERTICAL FACE (STEEL POST)

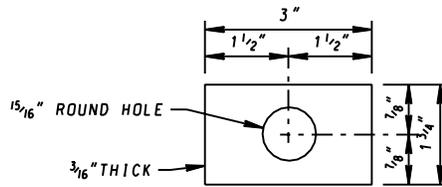
STANDARD NO. MD 605.41-01



THRIE BEAM TERMINAL CONNECTOR



W BEAM - THRIE BEAM TRANSITION SECTION



RECTANGULAR PLATE WASHER

NOTE

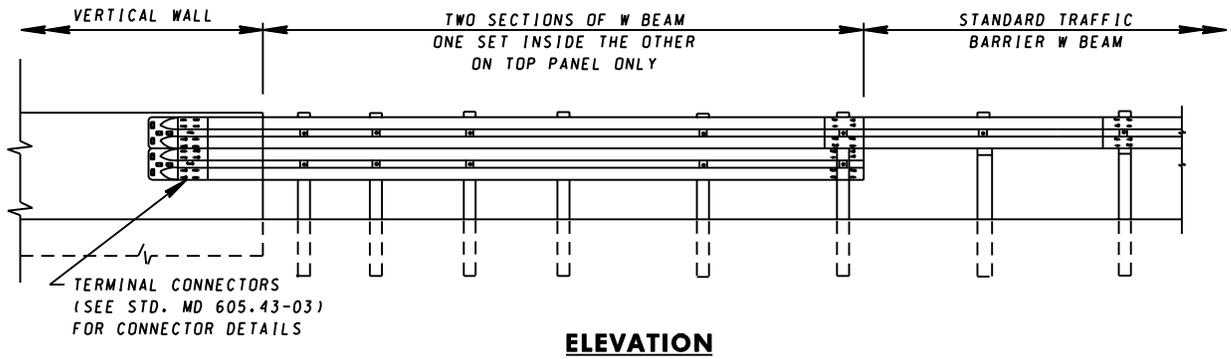
THE RECTANGULAR PLATE WASHER SHALL BE MADE OF STEEL MEETING THE REQUIREMENTS OF ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123. HOLE MAY BE PUNCHED OR DRILLED.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 4-27-89
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 5-5-89	
REVISED 7-2-99	
REVISED	
REVISED	

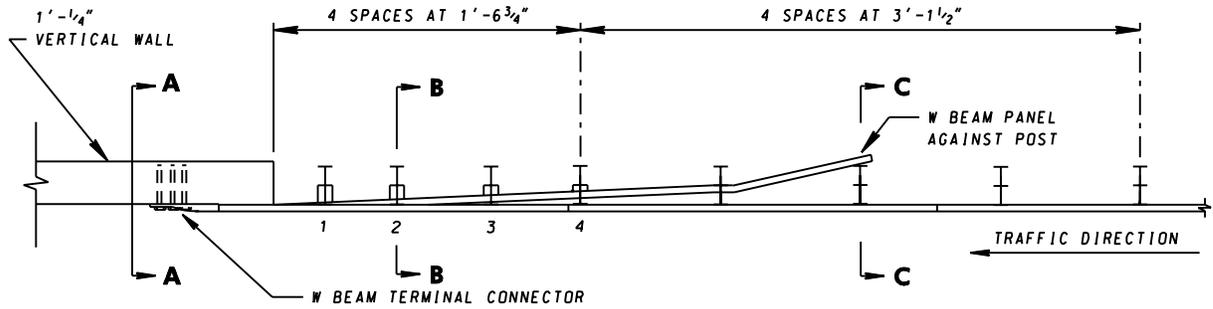
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER THRIE BEAM ANCHORAGE TO VERTICAL FACE

STANDARD NO. MD 605.41-02



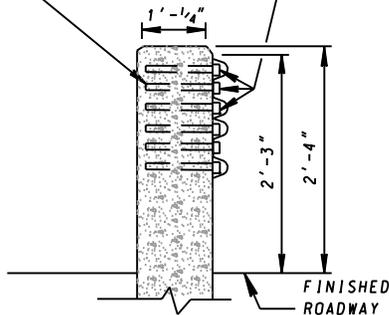
ELEVATION



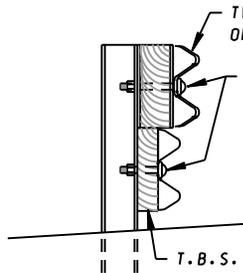
PLAN

(SEE STD. MD 605.44) FOR ALTERNATE ANCHORAGE METHOD "CAST IN CONCRETE"

THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 1/8" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902. (SEE STD. MD 605.41-02 FOR RECTANGULAR PLATE WASHER DETAIL)



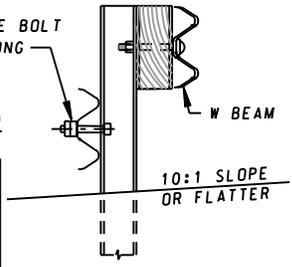
SECTION A-A



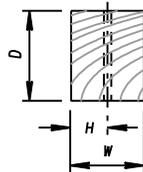
SECTION B-B

WOOD BLOCKOUT SPACER (W.B.S.) DIMENSIONS

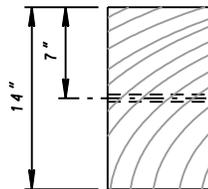
POST	D	W	H
1	2"	4"	3"-4"
2	3"	4"	3"-4"
3	4"	4"	3"-4"
4	5"	4"	3"-4"



SECTION C-C



PLAN



SIDE



FRONT

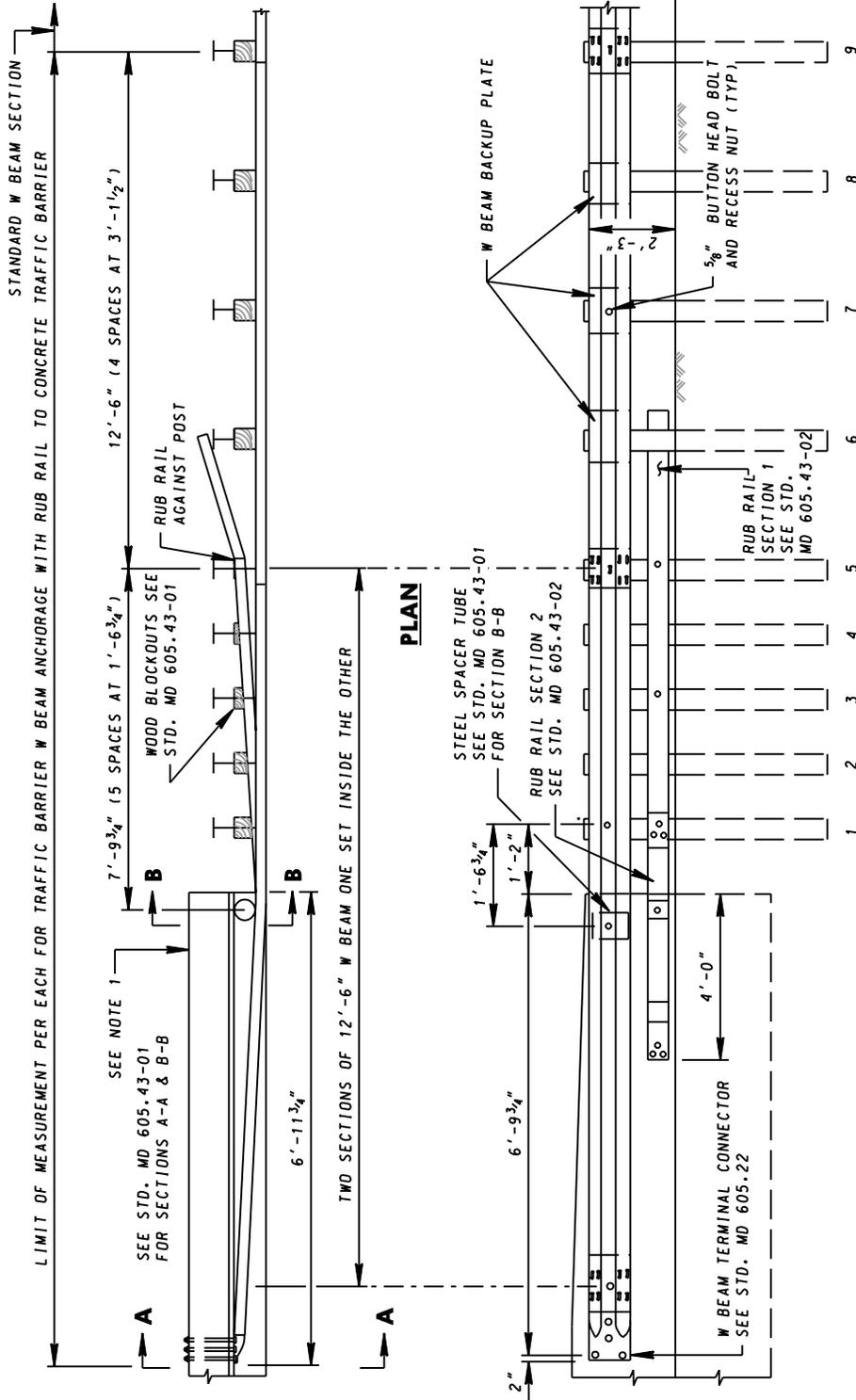
WOOD BLOCKOUT SPACER

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99
	APPROVAL 7-2-99
REVISED 10-1-01	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W BEAM
ANCHORAGE TO VERTICAL FACE

STANDARD NO. MD 605.42



ELEVATION

NOTES

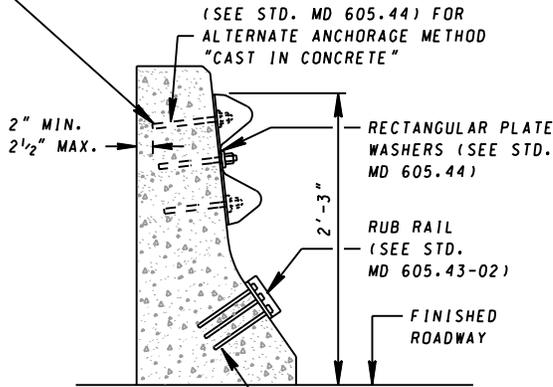
1. ALL METAL POST SHALL BE W6x9. POSTS 1, 2, 3, 4 AND 5 REQUIRE AN ADDITIONAL HOLE IN THE FLANGE TO ATTACH THE LOWER WOOD BLOCKOUTS AND/OR RUB RAIL. FOR WOOD BLOCKOUTS LOCATED ON POSTS 1 THRU 4 SEE DETAILS ON STD. MD 605.43-01.
2. POSTS 6, 7 AND 8 REQUIRE THE W BEAM BACKUP PLATE SHOWN ON STD. 605.43-03. THE W BEAM BACKUP PLATE ON POSTS 6, 7 AND 8 ARE BOLTED DIRECTLY TO THE OFFSET BLOCK WITH 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT. THE W BEAM USING THE OFFSET BLOCK IS BOLTED TO POSTS 1, 5, 7 AND 9 WITH 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 2-9-90	APPROVAL 6-8-90
REVISED 10-1-01	REVISED 7-2-99
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM
ANCHORAGE WITH RUB RAIL TO JERSEY
SHAPE OR F SHAPE
STANDARD NO. MD 605.43

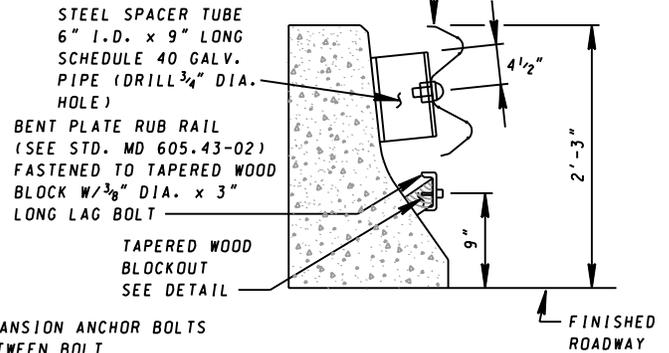


THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) $\frac{1}{8}$ " DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS.



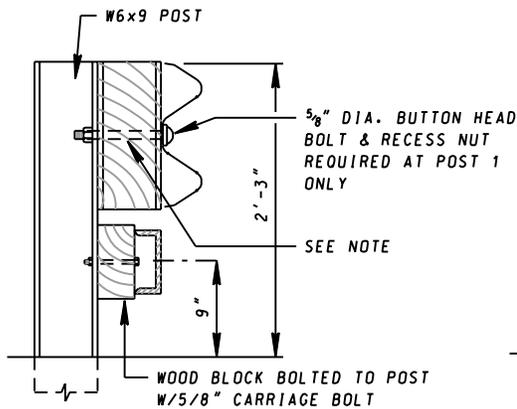
SECTION A-A

TWO SECTIONS OF 12'-6" W BEAM. ONE SET INSIDE THE OTHER, FASTENED TO SPACER TUBE W/ $\frac{1}{8}$ " DIA. BUTTON HEAD BOLT & RECESS NUT AND RECTANGULAR PLATE WASHER (DRILL $\frac{3}{4}$ " DIA. HOLE IN W BEAM)



SECTION B-B

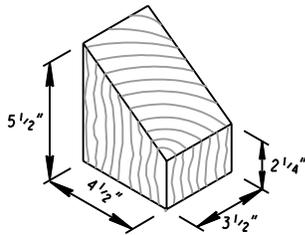
THREE (3) $\frac{5}{8}$ " DIA. EXPANSION ANCHOR BOLTS 6" LONG W/WASHERS BETWEEN BOLT HEADS AND RUB RAIL. DRILL HOLES AS REQUIRED.



TYPICAL POSTS 1, 2 & 4

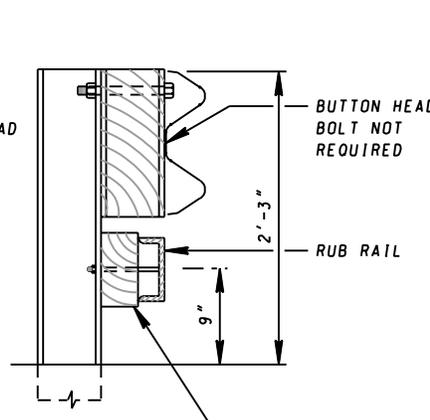
(BUTTON HEAD BOLT NOT REQUIRED AT POSTS 2 & 4)

NOTE: FOR WOOD OFFSET BLOCKS. BOLTS, NUTS, WASHERS SEE STD. NO MD 605.21

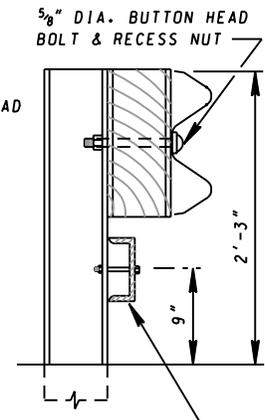


TAPERED WOOD BLOCKOUT

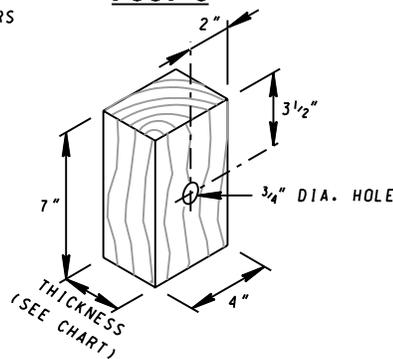
(1 REQUIRED - SEE SECTION B-B)



POST 3



POST 5



WOOD BLOCKOUTS

(4 REQUIRED)

7" x 4" WOOD BLOCKOUTS	
POST	BLOCKOUT THICKNESS
1	4 1/4"
2	3 1/4"
3	2"
4	1"

SPECIFICATION
605

CATEGORY CODE ITEMS

APPROVED

Kirk G. McCall
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT



APPROVAL • SHA REVISIONS
APPROVAL 2-9-90
REVISED 10-1-01
REVISED
REVISED

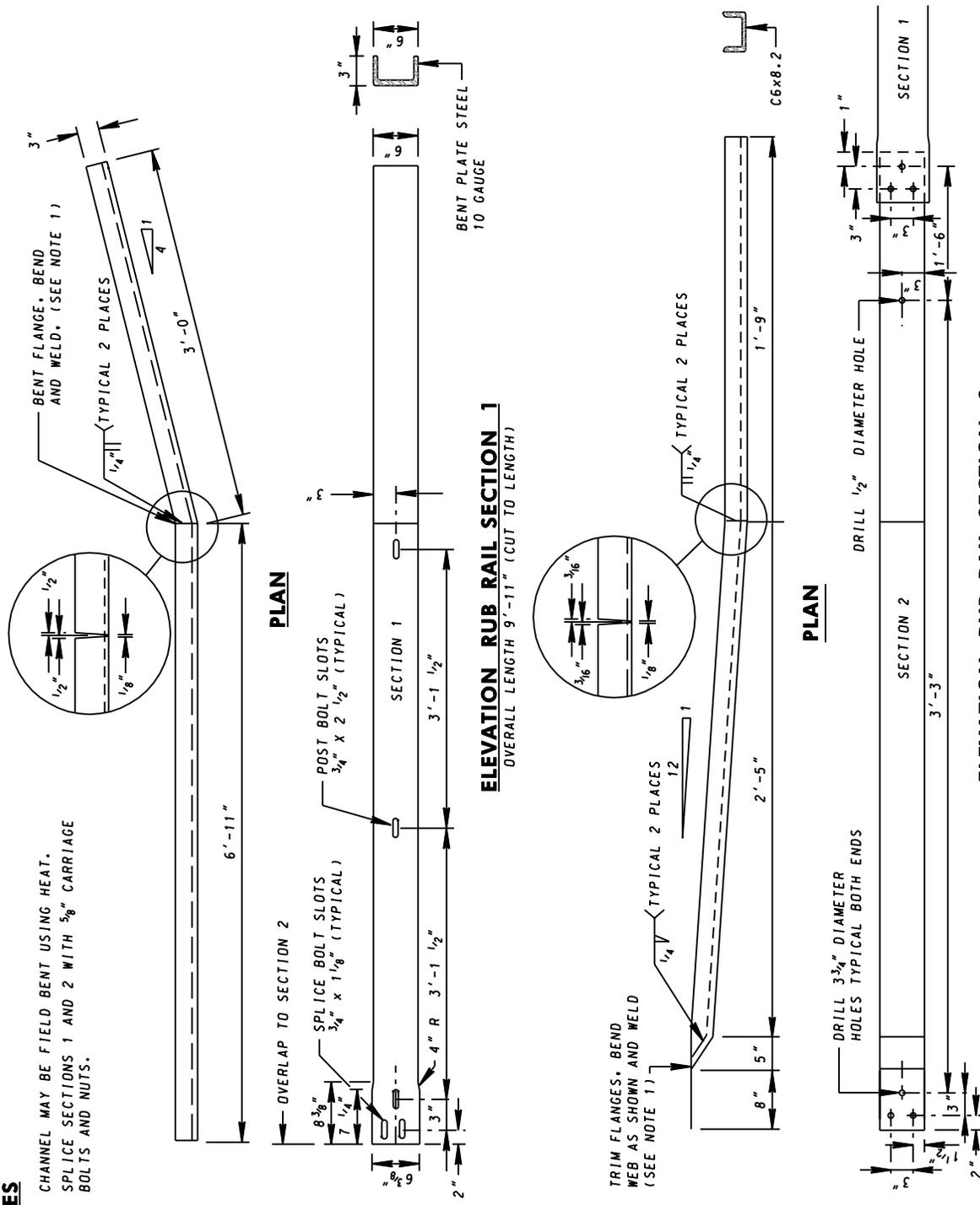
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 6-8-90
REVISED 7-2-99
REVISED
REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM ANCHORAGE
WITH RUB RAIL TO JERSEY
SHAPE OR F SHAPE

STANDARD NO. MD 605.43-01

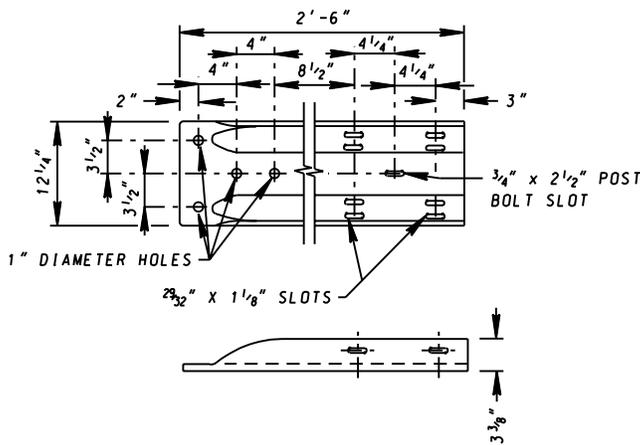
NOTES

1. CHANNEL MAY BE FIELD BENT USING HEAT.
2. SPLICE SECTIONS 1 AND 2 WITH 5/8" CARRIAGE BOLTS AND NUTS.

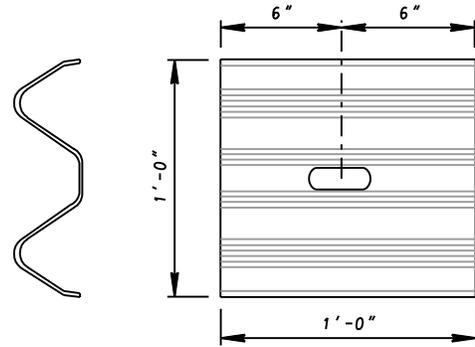


SPECIFICATION 605	CATEGORY CODE ITEMS										
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT											
SHA State Highway Administration	<table border="1"> <tr> <td>APPROVAL • SHA REVISIONS</td> <td>APPROVAL • FEDERAL HIGHWAY ADMINISTRATION</td> </tr> <tr> <td>APPROVAL 2-9-90</td> <td>APPROVAL 6-8-90</td> </tr> <tr> <td>REVISED 10-1-01</td> <td>REVISED 7-2-99</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> </table>	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 2-9-90	APPROVAL 6-8-90	REVISED 10-1-01	REVISED 7-2-99	REVISED	REVISED	REVISED	REVISED
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION										
APPROVAL 2-9-90	APPROVAL 6-8-90										
REVISED 10-1-01	REVISED 7-2-99										
REVISED	REVISED										
REVISED	REVISED										

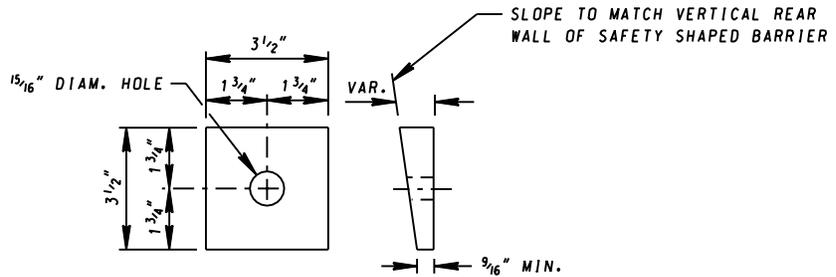
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM ANCHORAGE
WITH RUB RAIL TO JERSEY
SHAPE OR F SHAPE
STANDARD NO. MD 605.43-02



W BEAM TERMINAL CONNECTOR



W BEAM BACKUP PLATE
(USE AT POSTS 6, 7 & 8)



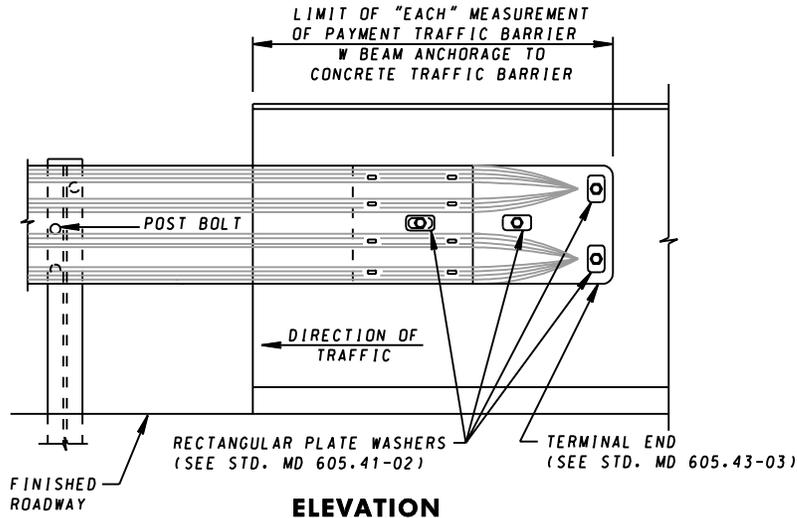
FOR USE WITH SLOPED FACE
OF SAFETY SHAPED BARRIER

SQUARE PLATE WASHER

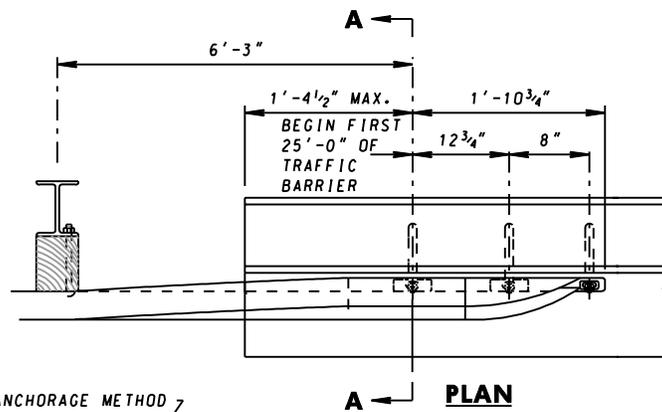
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 2-9-90
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 6-8-90	
REVISED 7-2-99	
REVISED	
REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM ANCHORAGE
WITH RUB RAIL TO JERSEY
SHAPE OR F SHAPE

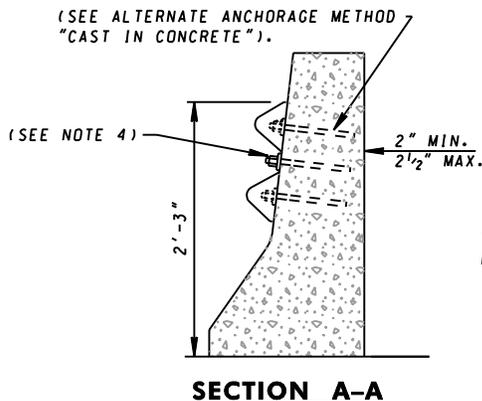
STANDARD NO. MD 605.43-03



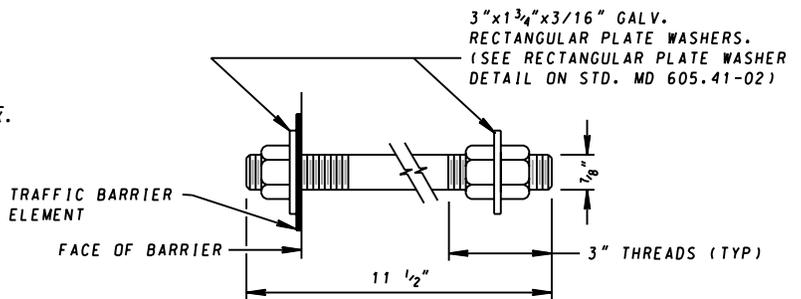
ELEVATION



PLAN



SECTION A-A



ALTERNATE ANCHORAGE STUD

(CAST IN CONCRETE METHOD)

NOTES

1. THIS TYPE OF ANCHORAGE SHALL APPLY TO TRAIL ENDS ON A HIGHWAY WITH DIRECTIONAL ONE WAY TRAFFIC.
2. USE NORMAL POST SPACING, WHERE NECESSARY, AN ADDITIONAL OFFSET BLOCK MAY BE INSTALLED TO AVOID CONFLICT WITH DRAINAGE INLETS.
3. ADDITIONAL OFFSET BLOCKS SHALL NOT EXCEED A MAXIMUM OF TWO PER POST IN ALL CASES.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 7/8" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.

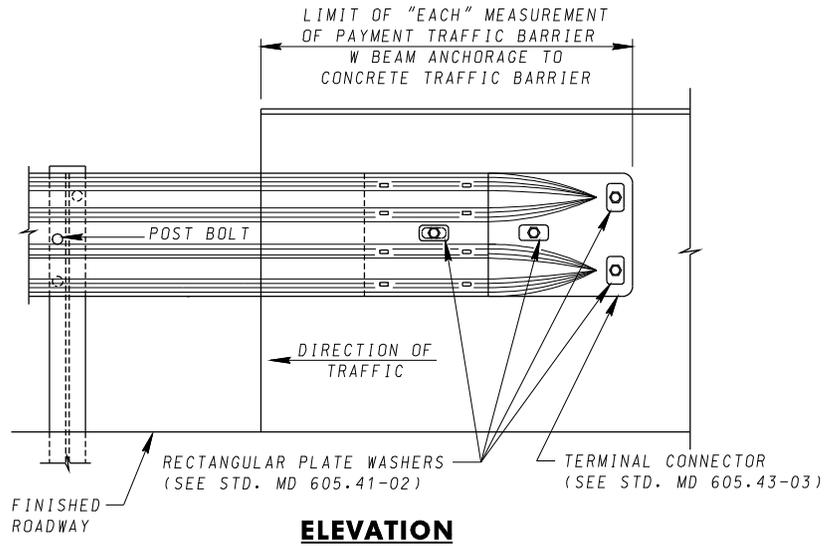
SPECIFICATION 605	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

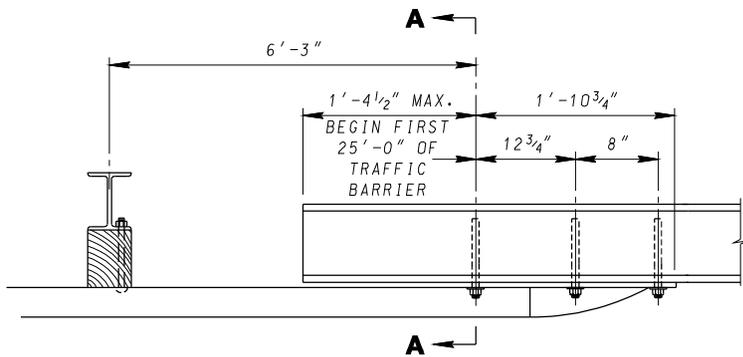
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-4-84	APPROVAL 4-26-83
	REVISED 10-1-01	REVISED 7-2-99
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM ANCHORAGE
TO TRAIL END OF JERSEY SHAPE
OR F SHAPE

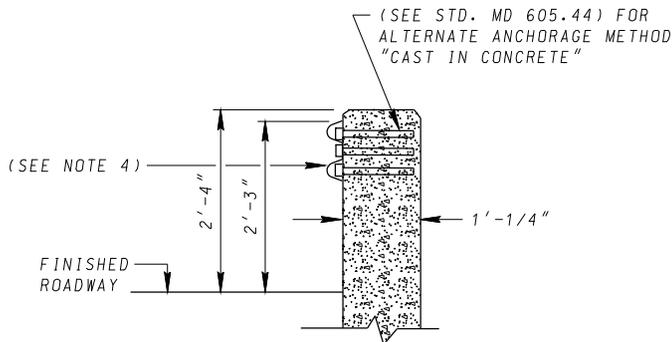
STANDARD NO. MD 605.44



ELEVATION



PLAN



SECTION A-A

NOTES

1. THIS TYPE OF ANCHORAGE SHALL APPLY TO TRAIL ENDS ON A HIGHWAY WITH DIRECTIONAL ONE WAY TRAFFIC.
2. USE NORMAL POST SPACING, WHERE NECESSARY. AN ADDITIONAL OFFSET BLOCK MAY BE INSTALLED TO AVOID CONFLICT WITH DRAINAGE INLETS.
3. ADDITIONAL OFFSET BLOCKS SHALL NOT EXCEED A MAXIMUM OF TWO PER POST IN ALL CASES.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 7/8" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHER. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-10-99
	REVISSED 5-19-08

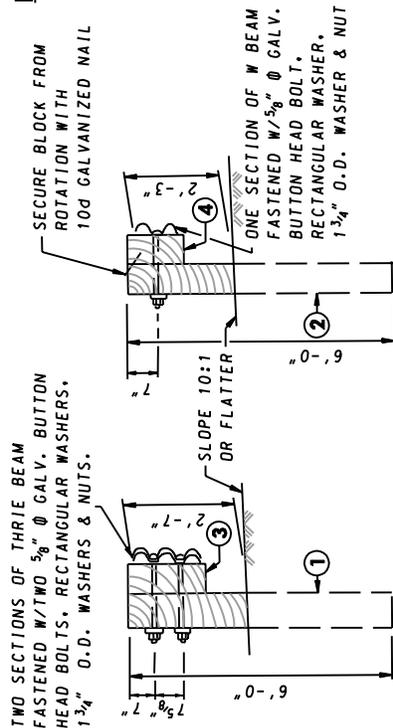
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM ANCHORAGE TO TRAIL END VERTICAL WALL

STANDARD NO.

MD 605.45

NOTES

1. THRIE BEAM TERMINAL CONNECTOR, THRIE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
3. RECTANGULAR WASHERS SHALL BE USED AT THE THRIE BEAM TERMINAL CONNECTOR AND POSTS A THROUGH F.
4. SEE STD. MD 605.51-01 FOR DETAILS OF THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTIONS, SQUARE PLATE AND RECTANGULAR WASHERS.
5. THE 12'-8" CONCRETE SINGLE FACE END IS PAID FOR EACH FOR JERSEY SHAPE TO VERTICAL CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END.

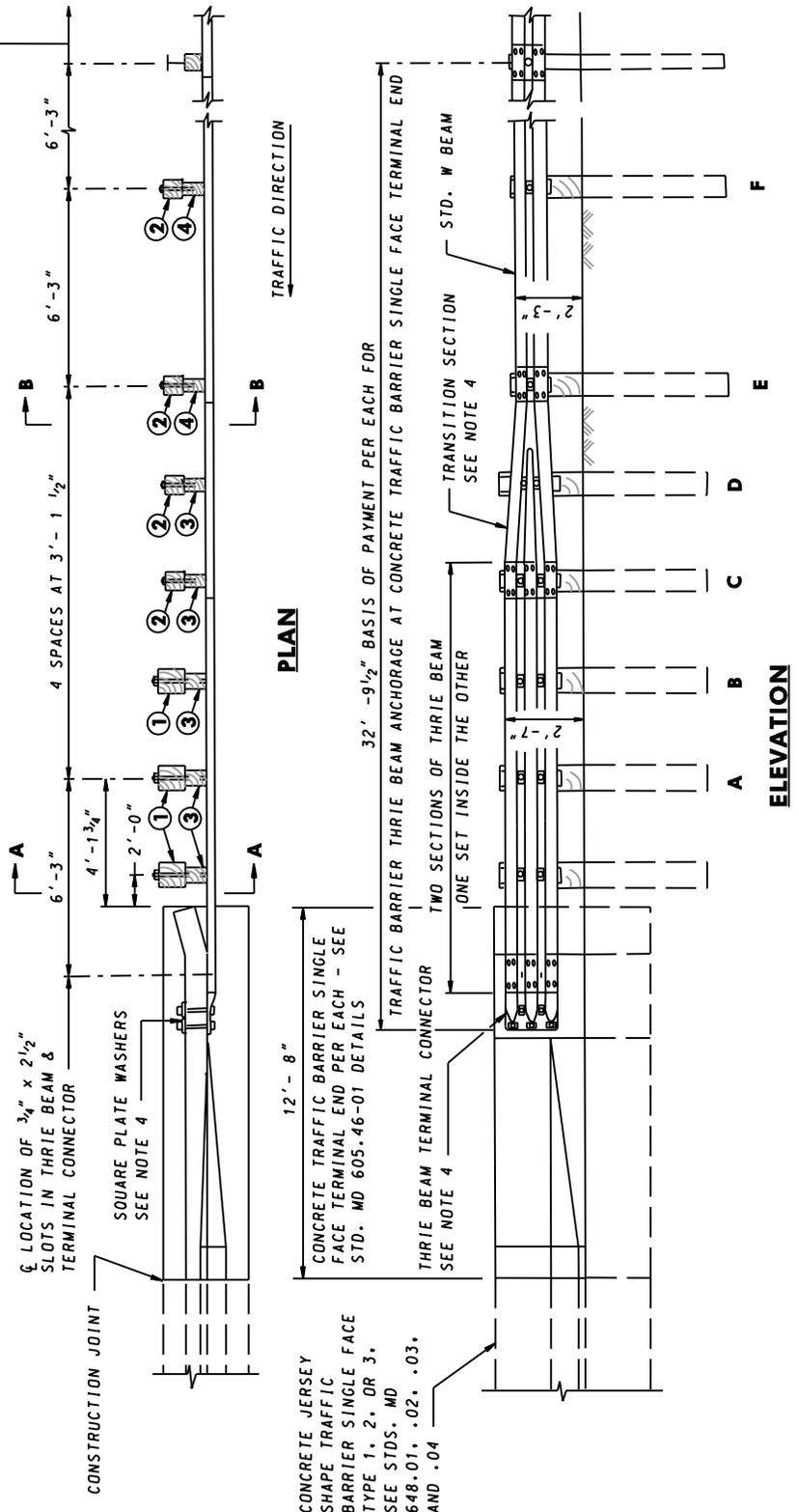


WOOD POST & BLOCK DIMENSIONS	
①	10" X 10" X 6'-0"
②	8" X 8" X 6'-0"
③	6" X 8" X 22 1/2"
④	6" X 8" X 14"

SECTION B-B

SECTION A-A

BEGIN STANDARD TRAFFIC BARRIER W BEAM
SEE STD. MD 605.22 FOR DETAILS
(DO NOT USE RECTANGULAR WASHERS)



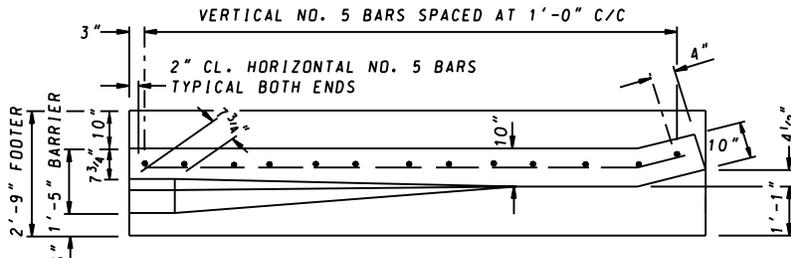
PLAN

ELEVATION

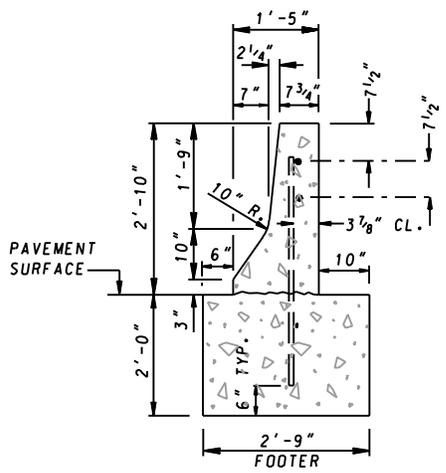
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-26-92
	REVISIONS 2-10-04

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE BEAM ANCHORAGE
AT JERSEY SHAPE CONCRETE TRAFFIC
BARRIER SINGLE FACE TERMINAL END

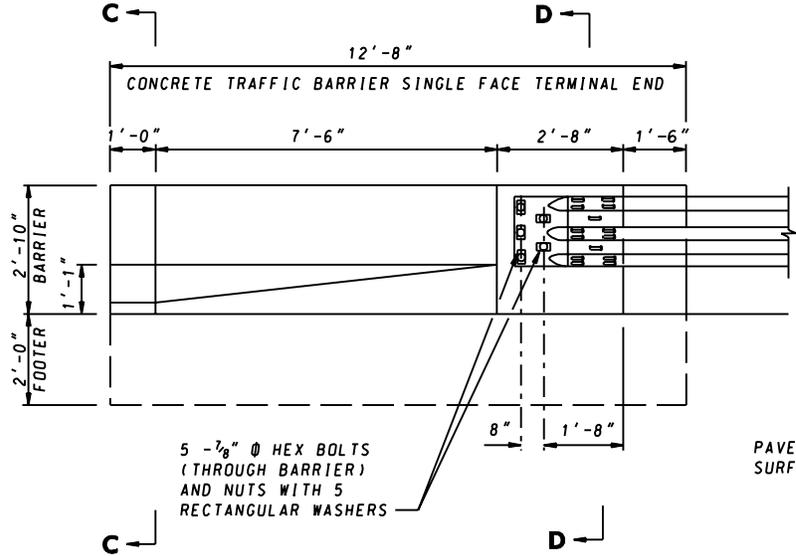
STANDARD NO. MD 605.46



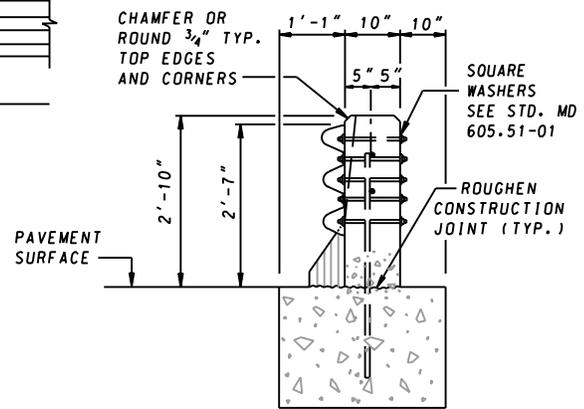
PLAN
(SHOWN WITHOUT THRIE BEAM ANCHORAGE)



SECTION C-C



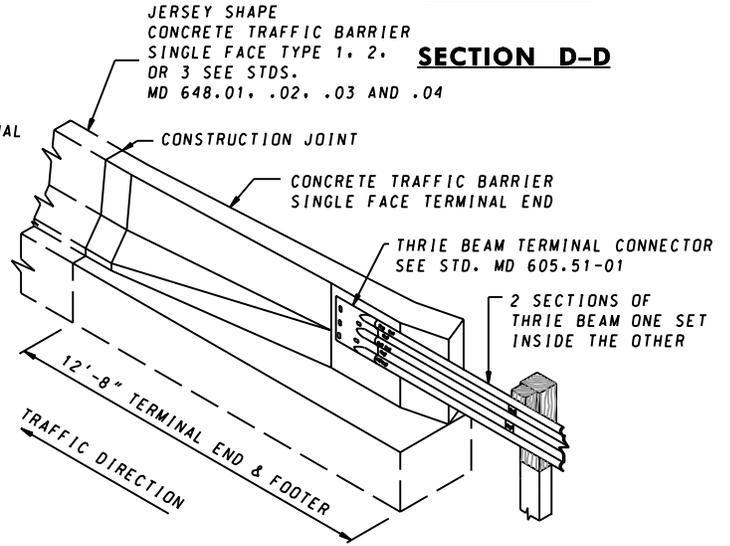
ELEVATION



SECTION D-D

NOTES

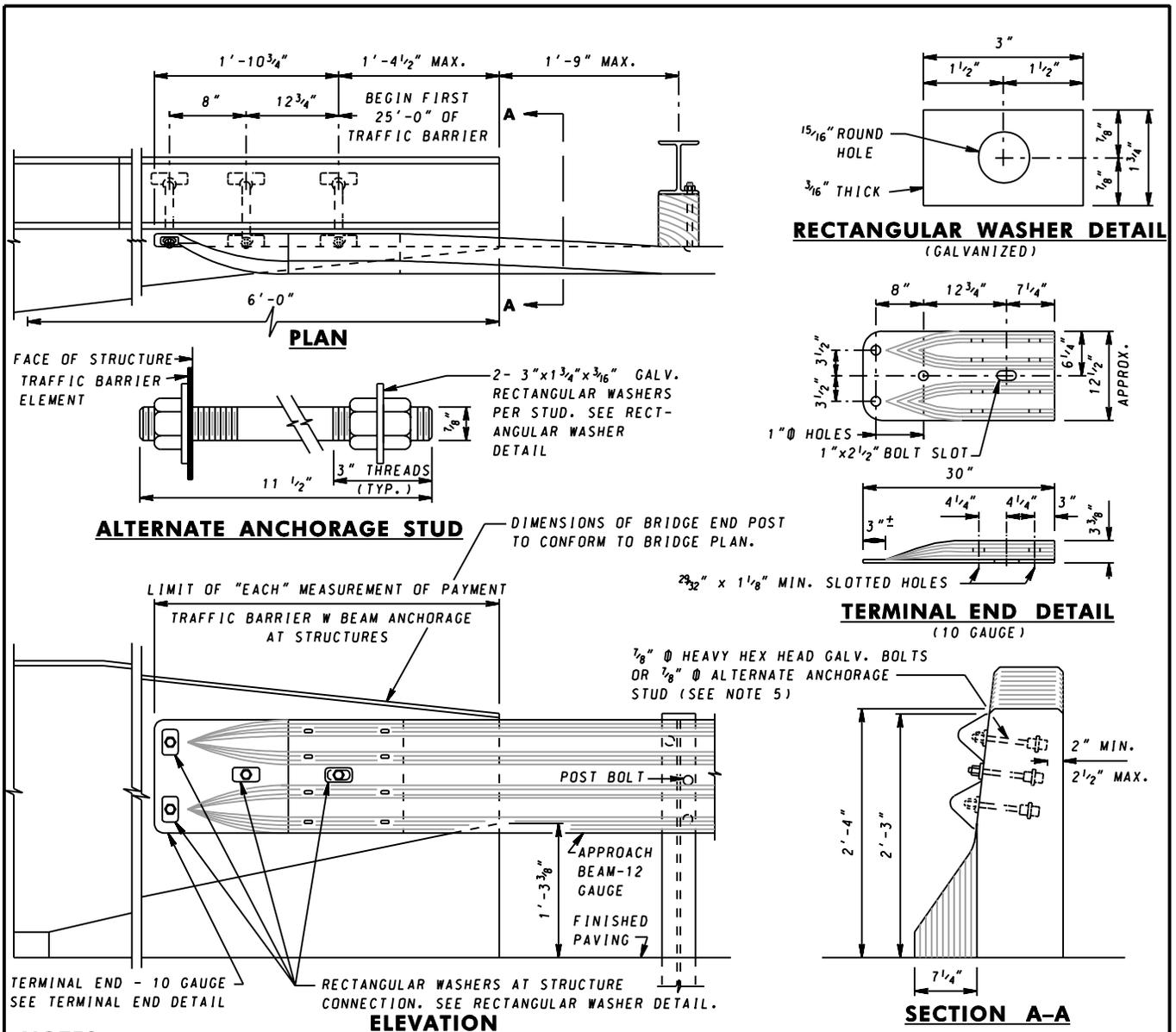
1. THE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END AND THE CONCRETE FOOTER SHALL BE CAST SEPARATELY USING CONCRETE MIX NO.6 (4500 PSI).
2. ALL REINFORCEMENT BARS, INCLUDING END, SHALL BE EPOXY COATED.
3. SEE STANDARD NO 605.46 FOR POST LAYOUT.



ISOMETRIC

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-26-92
	REVISD 2-10-04
	REVISD 3-31-04

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT
JERSEY SHAPE CONCRETE TRAFFIC BARRIER
SINGLE FACE TERMINAL END
STANDARD NO. MD 605.46-01



NOTES

1. APPROACH END: FIRST 25'-0" OF TRAFFIC BARRIER AFFIXED TO BRIDGE STRUCTURE SHALL HAVE THE FIRST POST PLACED AT A MAXIMUM OF 1'-9" FROM THE BRIDGE AND THE NEXT SEVEN POSTS SPACED AT 3'-1 1/2" C/C. WHERE NECESSARY, AN ADDITIONAL OFFSET BRACKET MAY BE INSTALLED AT THE FOURTH AND FIFTH POSTS FROM THE BRIDGE TO AVOID CONFLICT WITH THE DRAINAGE INLETS. THIS TYPE OF "ANCHORAGE AT STRUCTURES" SHALL BE APPLIED TO ALL FOUR CORNERS OF THE BRIDGE STRUCTURE WHEREVER THERE IS TWO-WAY TRAFFIC, UNDIVIDED SECTION, OR NARROW DIVIDED SECTION WHEREBY AN ERRANT VEHICLE MAY REACH THE OPPOSITE CORNER OF THE BRIDGE STRUCTURE. WHEREVER THERE IS A BARRIER-DIVIDED SECTION OR WIDE DIVIDED SECTION WHEREBY AN ERRANT VEHICLE COULD NOT REACH THE OPPOSITE CORNER OF THE BRIDGE STRUCTURE, THIS TYPE OF "ANCHORAGE AT STRUCTURES" SHALL BE APPLIED ONLY AT THE APPROACH END WITH THE TRAILING ENDS TO BE TREATED AS DESIGNATED IN THE FOLLOWING NOTE.
2. TRAILING END: USE NORMAL POST SPACING. WHERE NECESSARY AN ADDITIONAL OFFSET BRACKET MAY BE INSTALLED AT THE SECOND POST TO AVOID CONFLICT WITH DRAINAGE INLETS.
3. ADDITIONAL OFFSET BRACKETS SHALL NOT EXCEED A MAXIMUM OF TWO PER POST IN ALL CASES.
4. COST OF ADDITIONAL POSTS AND OFFSET BRACKETS TO BE INCLUDED IN BID PRICE PER LINEAR FOOT OF TRAFFIC BARRIER WITH BEAM.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 7/8" Ø HEAVY HEX. HEAD GALV. BOLTS WITH GALV. HEX. HEAD NUT AND GALV. RECTANGULAR WASHER CAST IN BRIDGE END POST. ATTACH W BEAM WITH GALV. RECTANGULAR WASHER AND HEX. NUT OR AS ALTERNATE THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) GALV. THREADED STUDS WITH GALV. RECTANGULAR WASHER AND TWO (2) GALV. HEX. NUTS CAST IN BRIDGE END POST. ATTACH W BEAM WITH GALV. RECTANGULAR WASHER AND GALV. HEX. NUT AS SHOWN IN ALTERNATE ANCHORAGE STUD DETAIL. STEEL SHALL CONFIRM TO ASTM-A307 AND IS HOT DIPPED GALV. TO ASTM-A123 AFTER FABRICATION.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 4-26-83
	REVISD 2-10-04
REVISD	REVISD 3-31-04
REVISD	REVISD
REVISD	REVISD

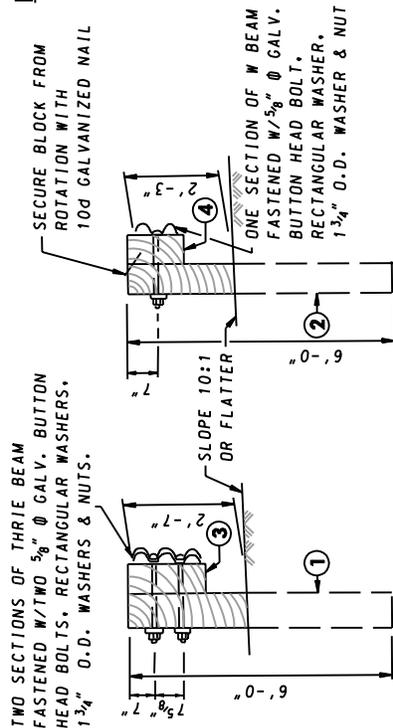
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURES

STANDARD NO. MD 605.47

NOTES

1. THRIE BEAM TERMINAL CONNECTOR, THRIE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
3. RECTANGULAR WASHERS SHALL BE USED AT THE THRIE BEAM TERMINAL CONNECTOR AND POSTS A THROUGH F.
4. SEE STD. MD 605.51-01 FOR DETAILS OF THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTIONS, SQUARE PLATE AND RECTANGULAR WASHERS.
5. THE 12'-8" CONCRETE SINGLE FACE END IS PAID FOR EACH FOR F SHAPE TO VERTICAL CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END.

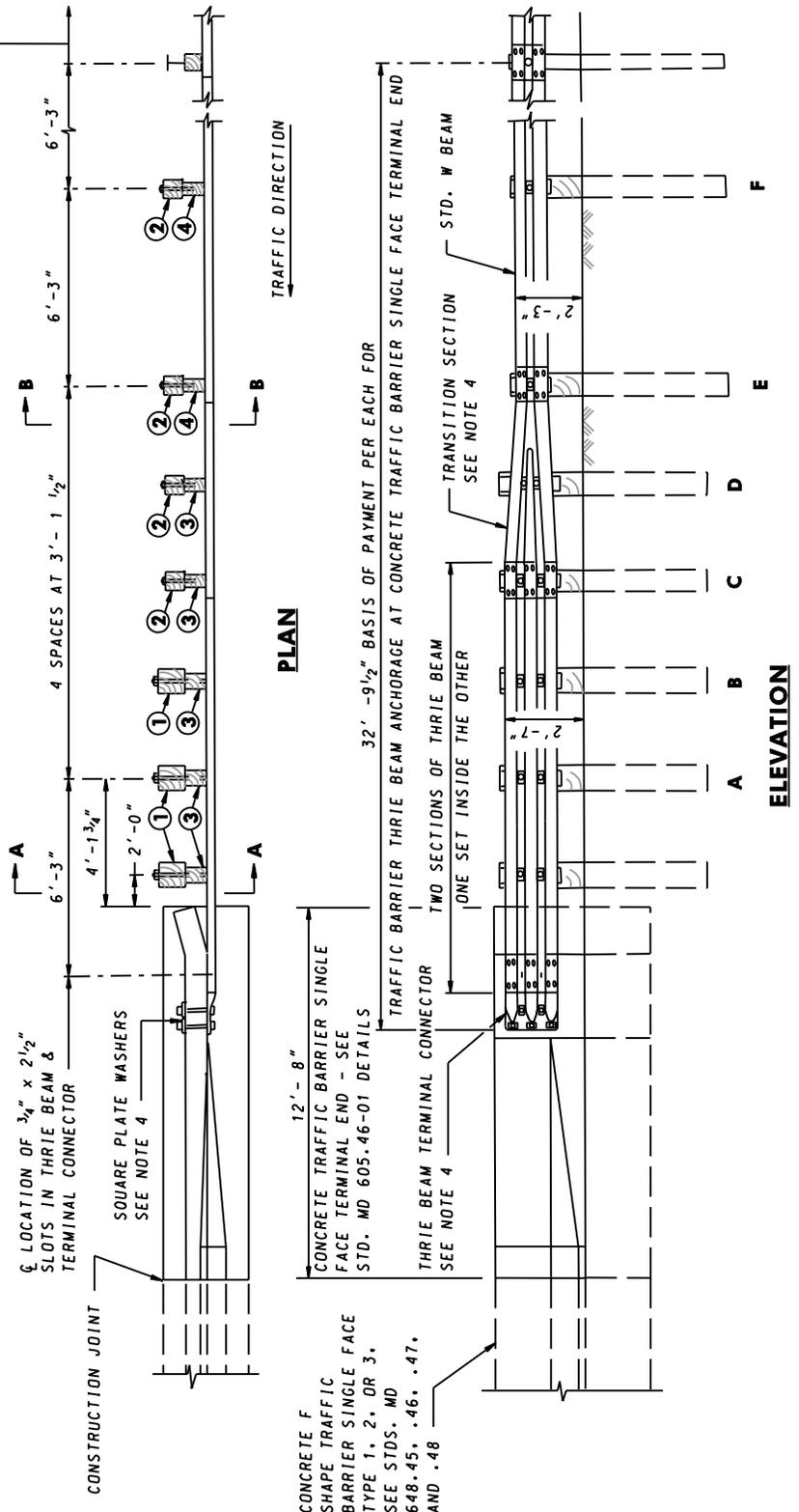


WOOD POST & BLOCK DIMENSIONS	
①	10" X 10" X 6'-0"
②	8" X 8" X 6'-0"
③	6" X 8" X 22 1/2"
④	6" X 8" X 14"

SECTION B-B

SECTION A-A

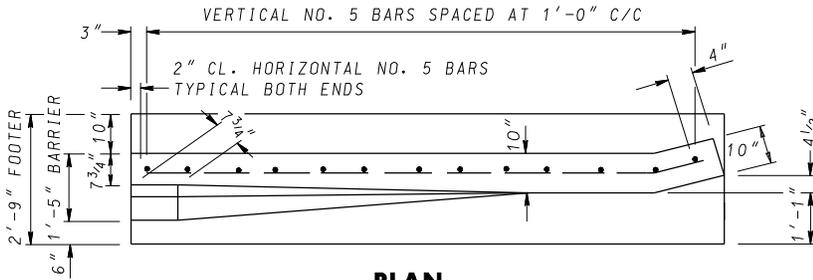
BEGIN STANDARD TRAFFIC BARRIER W BEAM
 SEE STD. MD 605.22 FOR DETAILS
 (DO NOT USE RECTANGULAR WASHERS)



SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS APPROVAL 2-10-04
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 3-31-04
	REVISED
	REVISED

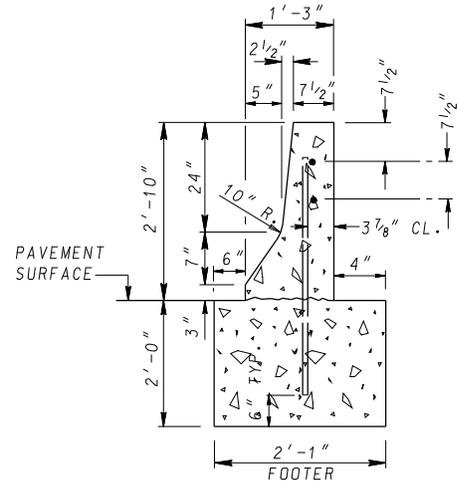
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE BEAM ANCHORAGE
AT F SHAPE CONCRETE TRAFFIC
BARRIER SINGLE FACE TERMINAL END

STANDARD NO. MD 605.49

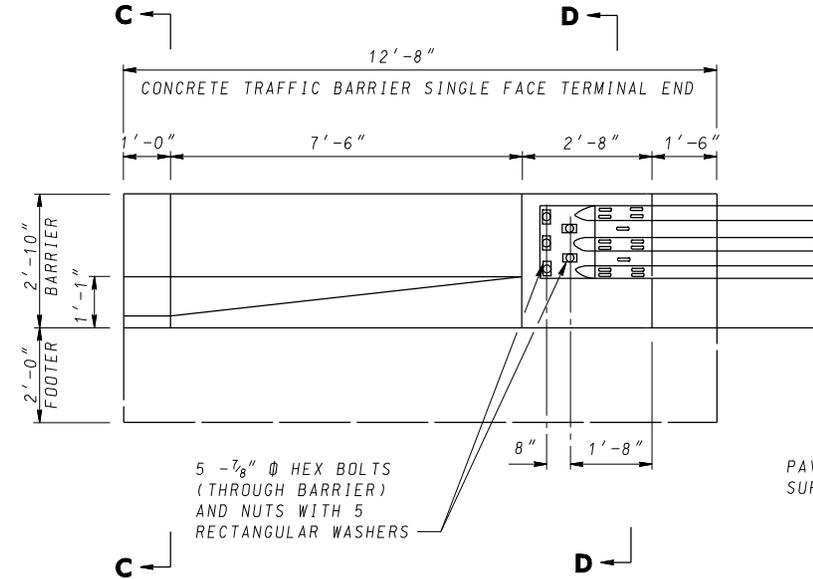


PLAN

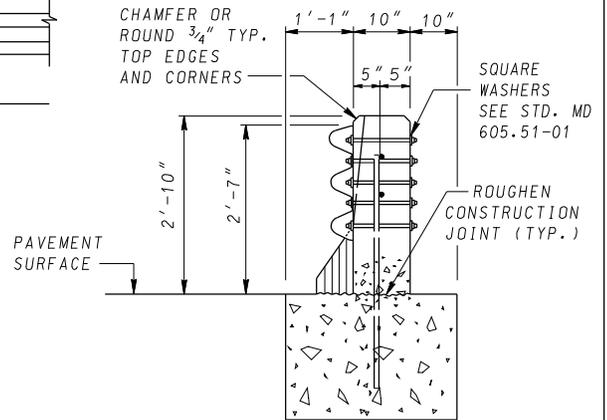
(SHOWN WITHOUT THRIE BEAM ANCHORAGE)



SECTION C-C



ELEVATION

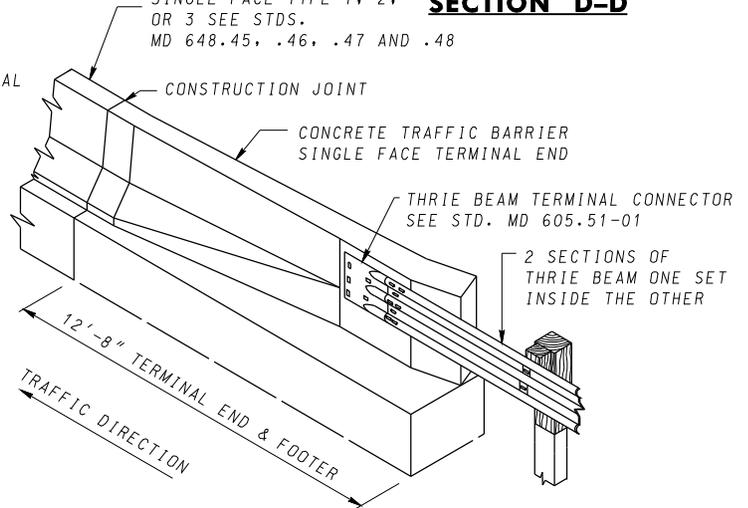


SECTION D-D

NOTES

1. THE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END AND THE CONCRETE FOOTER SHALL BE CAST SEPARATELY USING CONCRETE MIX NO.6 (4500 PSI).
2. ALL REINFORCEMENT BARS, INCLUDING END, SHALL BE EPOXY COATED.
3. SEE STANDARD NO 605.49 FOR POST LAYOUT.
4. FOR PAYMENT SEE NOTE 5 ON MD 605.49.

F SHAPE
CONCRETE TRAFFIC BARRIER
SINGLE FACE TYPE 1, 2,
OR 3 SEE STDS.
MD 648.45, .46, .47 AND .48

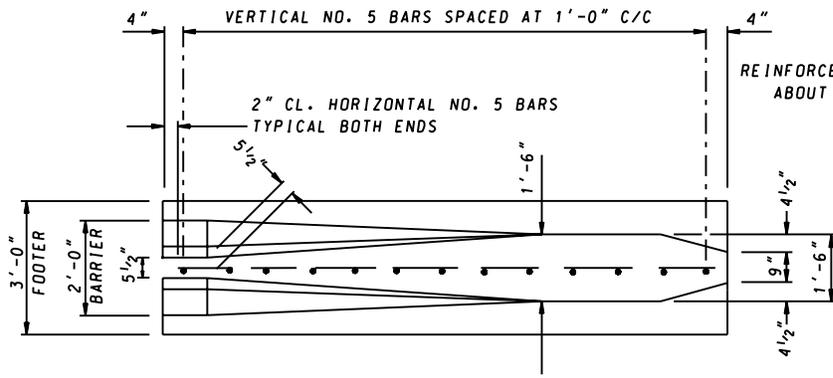


ISOMETRIC

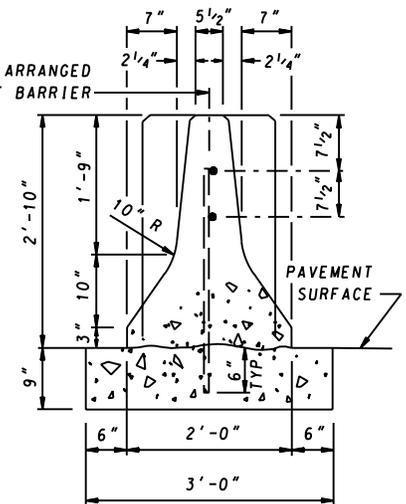
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
REVISED 5-19-08	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT
F SHAPE CONCRETE TRAFFIC BARRIER
SINGLE FACE TERMINAL END

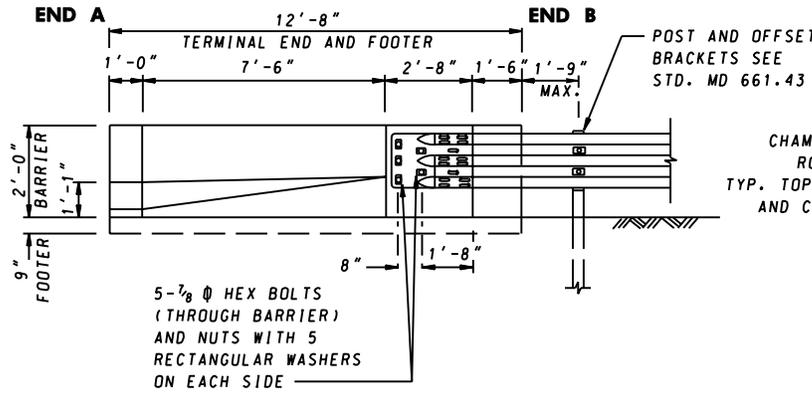
STANDARD NO. MD 605.49-01



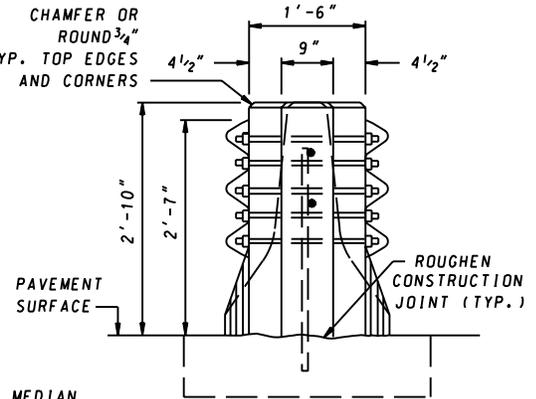
PLAN
(SHOWN WITHOUT THRIE BEAM ANCHORAGE)



VIEW-END A



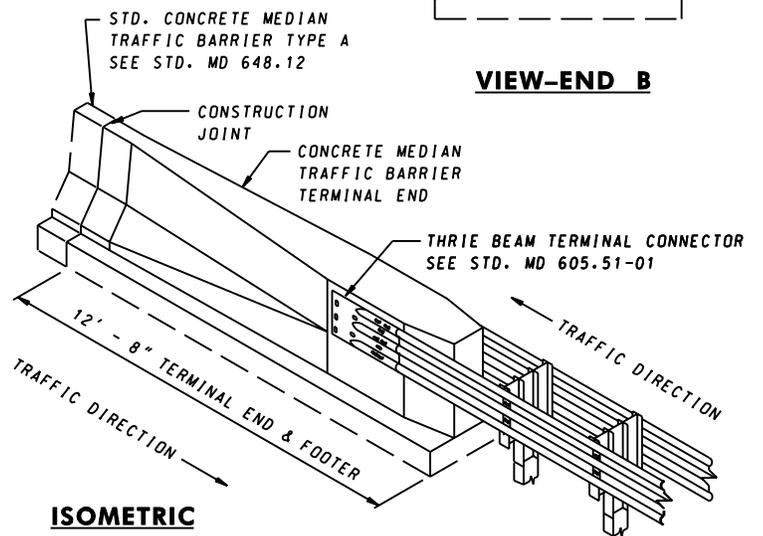
ELEVATION



VIEW-END B

NOTES

1. THE CONCRETE MEDIAN TRAFFIC BARRIER TERMINAL END AND CONCRETE FOOTER SHALL BE CAST SEPARATELY USING CONCRETE MIX NO.6 (4500 PSI).
2. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED.
3. SEE STANDARD MD 605.50 FOR THRIE BEAM AND W BEAM POST LAYOUT.



ISOMETRIC

SPECIFICATION CATEGORY CODE ITEMS

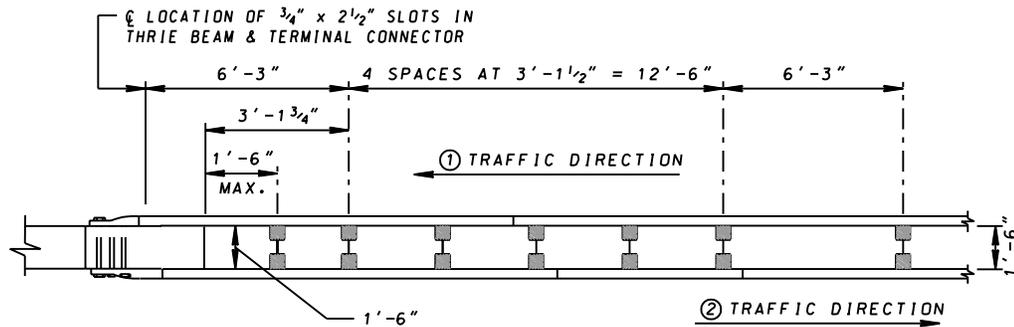
APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT



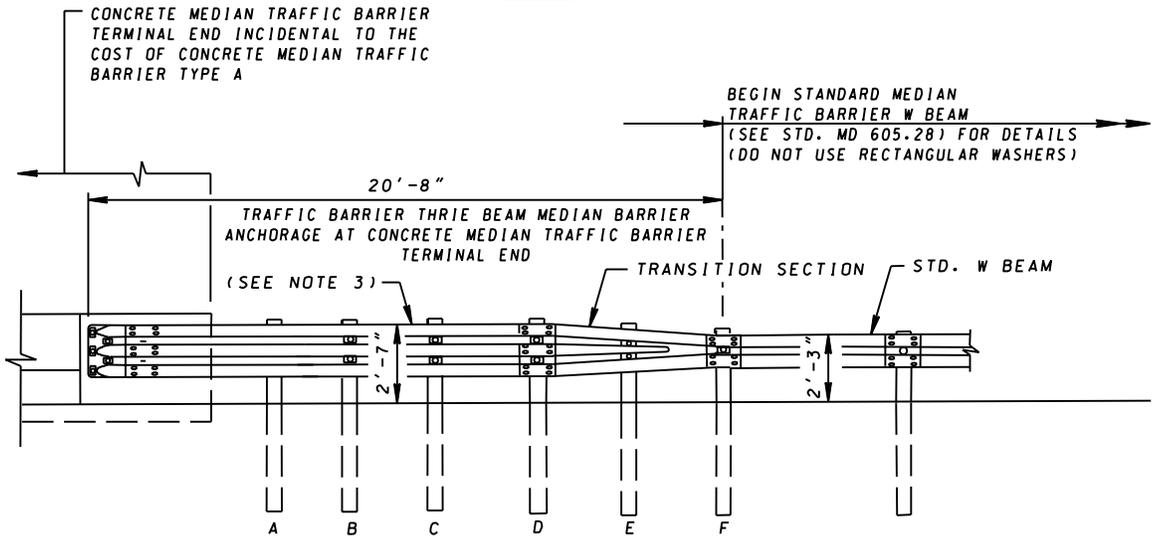
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 6-26-92	APPROVAL 6-26-92
REVISED 9-30-04	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE BEAM MEDIAN BARRIER ANCHORAGE AT JERSEY SHAPE CONCRETE MEDIAN TRAFFIC BARRIER TERMINAL END

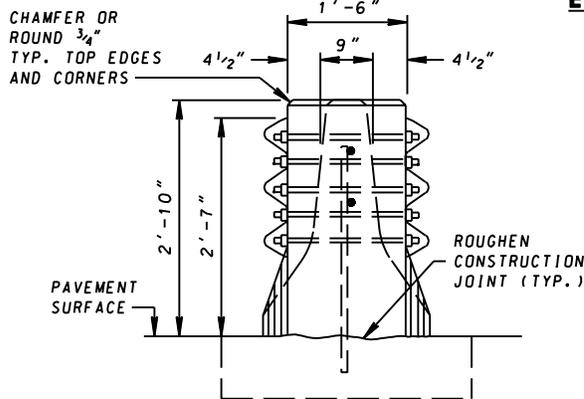
STANDARD NO. MD 605.49-02



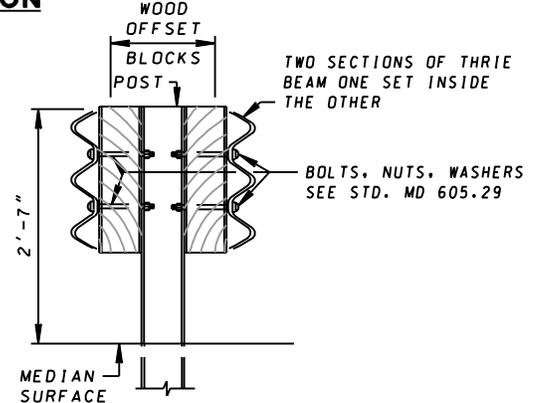
PLAN



ELEVATION



SECTION A-A



ASSEMBLY POSTS A THRU D

NOTES

- METAL POSTS SHALL CONFORM TO ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123.
- SEE STANDARD MD 605.28 FOR DETAILS OF TRAFFIC BARRIER W BEAM MEDIAN BARRIER WHICH SHALL BE USED AT POSTS F AND BEYOND.
- NESTED THRIE BEAM (ONE PANEL SET INSIDE THE OTHER) TO BE INSTALLED ON TRAFFIC DIRECTION ① SIDE FROM TERMINAL CONNECTOR TO POST D. IF TRAFFIC IS EQUAL IN EACH DIRECTION, INCLUDE NESTED THRIE BEAM ON BOTH SIDES OF BARRIER, TRAFFIC DIRECTION ① & ②.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 11-10-99
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-2-99
REVISED	REVISED
REVISED	REVISED

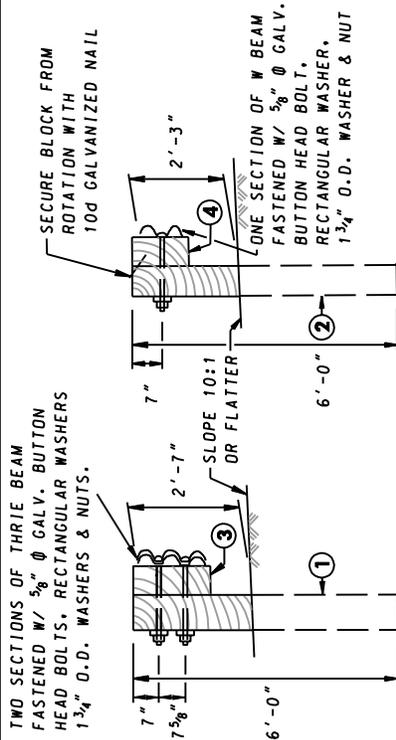
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

MEDIAN BARRIER THRIE BEAM ANCHORAGE TO VERTICAL FACE

STANDARD NO. MD 605.50

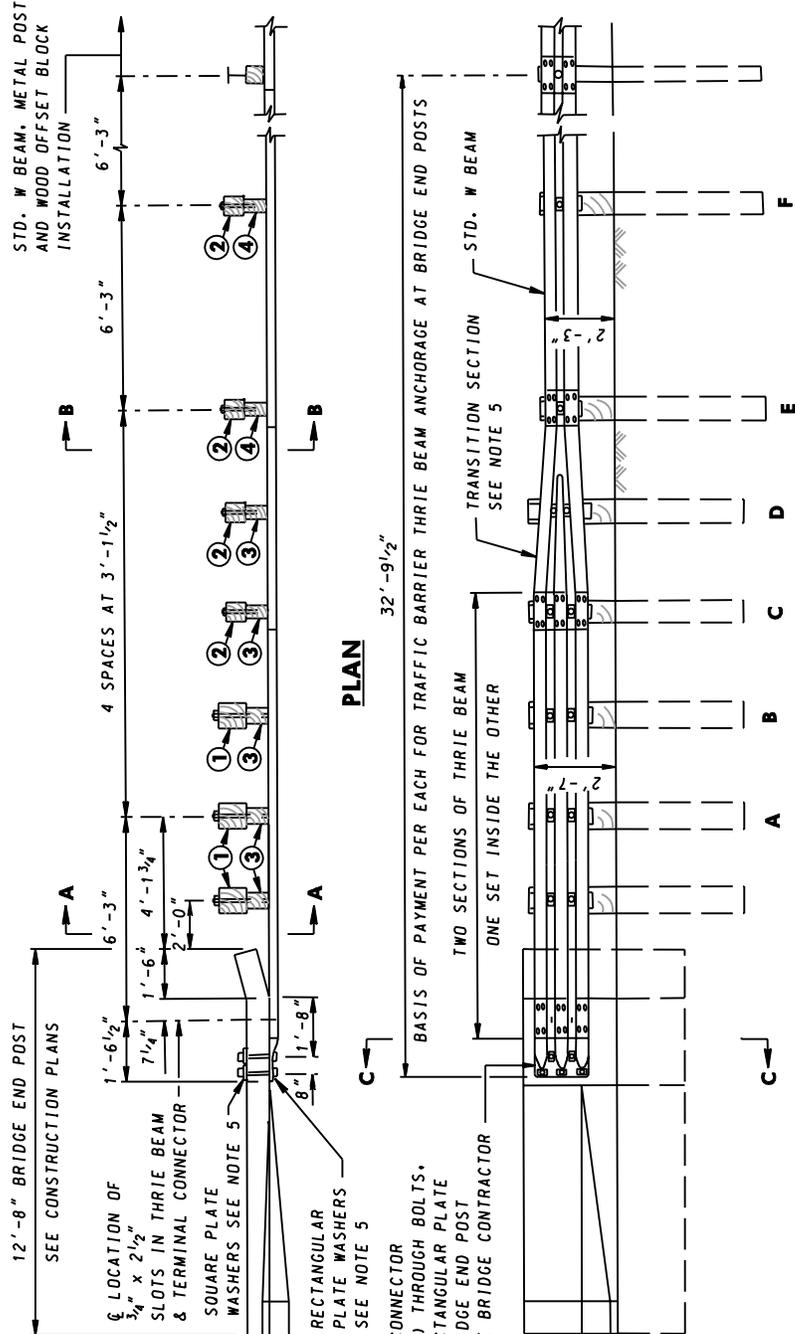
NOTES

1. THE TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POSTS SHALL BE PLACED ON SLOPES 10:1 OR FLATTER.
2. THIS TYPE OF ANCHORAGE SHALL APPLY TO ALL FOUR CORNERS OF THE BRIDGE WHERE APPLICABLE.
3. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
4. RECTANGULAR WASHERS SHALL BE USED AT THE TERMINAL CONNECTOR AND POSTS A THROUGH F.
5. DETAILS OF THE THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, SQUARE PLATE WASHERS, RECTANGULAR PLATE WASHERS AND SECTION C-C ARE SHOWN ON STD. MD 605.41



SECTION B-B

SECTION A-A



WOOD POST & BLOCK DIMENSIONS
① 10" x 10" x 6' - 0"
② 8" x 8" x 6' - 0"
③ 6" x 8" x 22 1/2"
④ 6" x 8" x 14"

THRIE BEAM TERMINAL CONNECTOR WITH 5-7/8" H.S. (GALV) THROUGH BOLTS, NUTS AND SQUARE & RECTANGULAR PLATE WASHERS. HOLES IN BRIDGE END POST SHALL BE CORED BY THE BRIDGE CONTRACTOR

SPECIFICATION
605

CATEGORY CODE ITEMS

APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

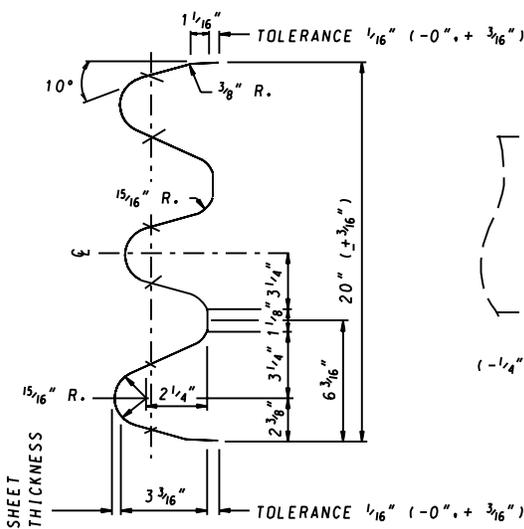


APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 4-27-89	APPROVAL 5-5-89
REVISED 2-10-04	REVISED 3-31-04
REVISED	REVISED
REVISED	REVISED

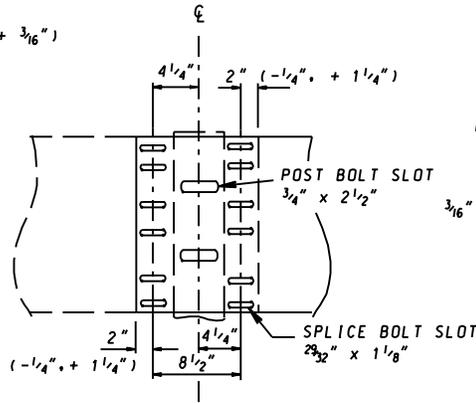
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POST

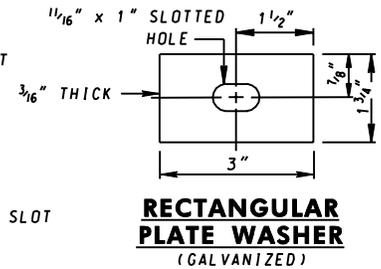
STANDARD NO. MD 605.51



THRIE BEAM

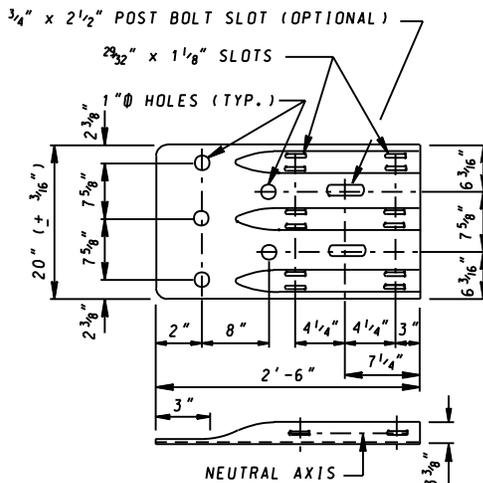


THRIE BEAM SPLICE

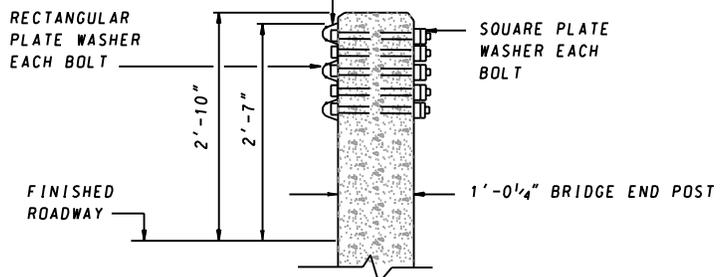


RECTANGULAR PLATE WASHER (GALVANIZED)

THRIE BEAM TERMINAL CONNECTOR WITH 5-7/8" H.S. (GALV) THROUGH BOLTS, NUTS AND SQUARE & RECTANGULAR PLATE WASHERS. HOLES IN BRIDGE END POST SHALL BE CORED OR FORMED BY THE BRIDGE CONTRACTOR

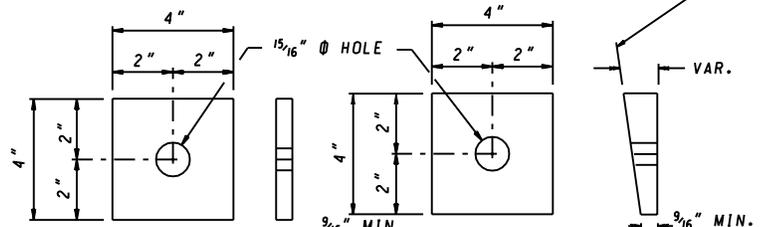


THRIE BEAM TERMINAL CONNECTOR



SECTION C-C

SLOPE SAME AS BRIDGE END POST



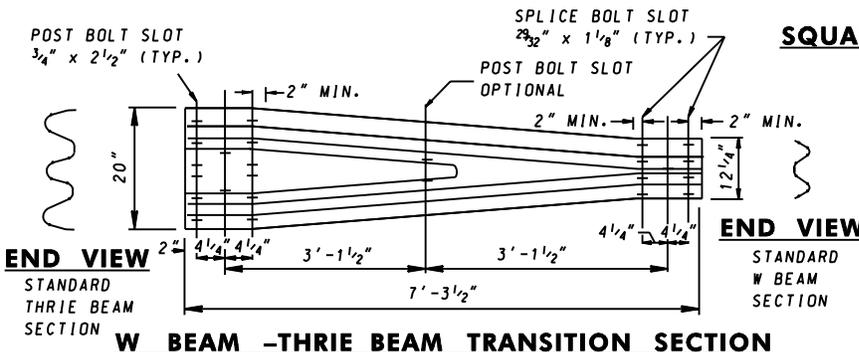
FOR USE WITH BRIDGE END POST WITH VERTICAL REAR FACE

FOR USE WITH BRIDGE END POSTS WITH SLOPED REAR FACE

SQUARE PLATE WASHERS

NOTE

THE SQUARE AND RECTANGULAR PLATE WASHERS SHALL BE MADE OF STEEL MEETING THE REQUIREMENTS OF ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123. HOLES MAY BE PUNCHED OR DRILLED. WHEN INSTALLED, THE TOP EDGE OF THE SQUARE PLATE WASHERS SHALL BE PARALLEL WITH THE TOP EDGE OF THE BRIDGE END POST.



END VIEW STANDARD THRIE BEAM SECTION

END VIEW STANDARD W BEAM SECTION

W BEAM - THRIE BEAM TRANSITION SECTION

SPECIFICATION 605	CATEGORY CODE ITEMS
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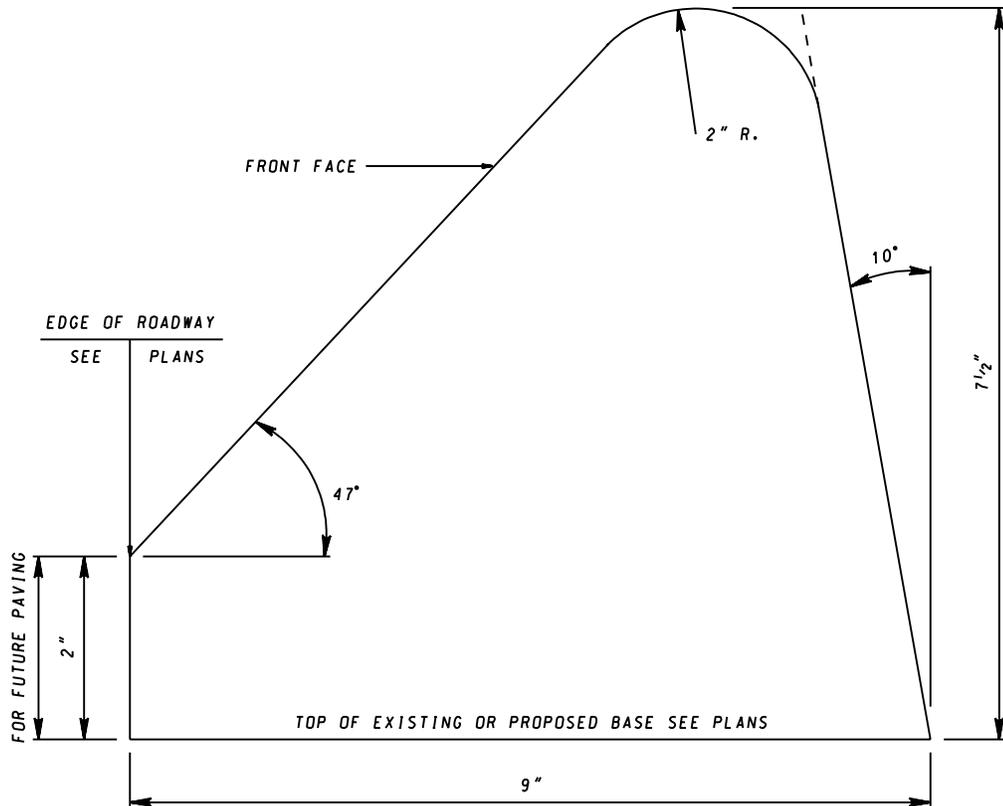
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
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	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 4-27-89	APPROVAL 5-5-89
	REVISED 2-10-04	REVISED 3-31-04
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POST DETAILS

STANDARD NO. MD 605.51-01



SPECIFICATION 602 CATEGORY CODE ITEMS

APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

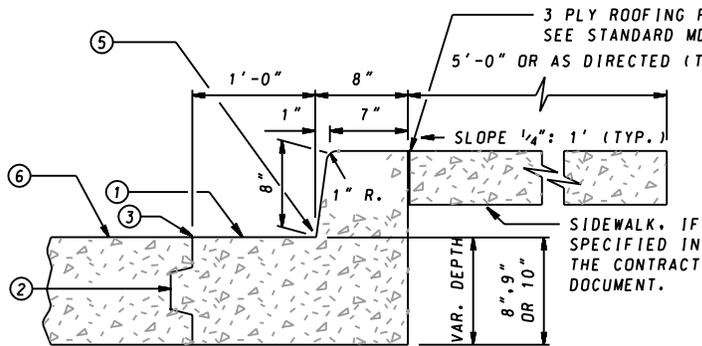


APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 3-3-59	APPROVAL 7-14-60
REVISED 10-1-01	REVISED
REVISED	REVISED
REVISED	REVISED

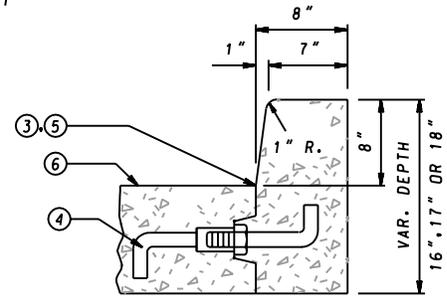
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD HOT MIX ASPHALT CURB

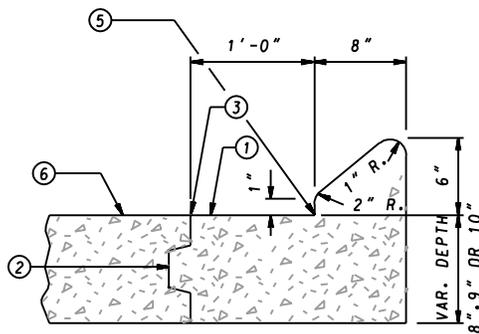
STANDARD NO. MD 615.01



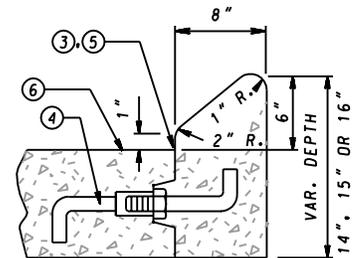
TYPE 'A'
COMBINATION CURB & GUTTER
DESIGN SPEED 30-40 MPH



TYPE 'A'
CURB



TYPE 'B'
COMBINATION CURB & GUTTER
DESIGN SPEED 50 MPH



TYPE 'B'
CURB

- ① SLOPE GUTTER PAN 1/2" PER FOOT TOWARD FLOW LINE ON ALL ROADWAYS INCLUDING SUPERELEVATED SECTIONS, EXCEPT INTERCHANGE RAMP.
- ② PROVIDE KEY AND LONGITUDINAL TIE BAR AS REQUIRED; SEE NOTE A
- ③ ROADWAY PAVEMENT CONSTRUCTION JOINT
- ④ LONGITUDINAL TIE DEVICE "J" BAR MODIFIED
- ⑤ FLOW LINE
- ⑥ ROADWAY PAVEMENT SLOPE

NOTES

- A. RIGID PAVEMENT ROADWAY ADJACENT TO COMBINATION CURB AND GUTTER AND CLOSED SECTION ROADWAY USING RIGID PAVEMENT WITH COMBINATION CURB AND GUTTER SHALL BE KEYED AND TIED AT THE ROADWAY PAVEMENT CONSTRUCTION JOINT. REFER TO STANDARD MD 572.61 FOR METHOD OF KEYWAY AND LONGITUDINAL TIE DEVICES. SPACING OF THE TIE BARS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. RIGID PAVEMENT AND CURB SHALL BE CONSTRUCTED AS INDICATED. TIE DEVICES AND KEYS ARE NOT REQUIRED WHEN USING FLEXIBLE PAVEMENT FOR ROADWAY.
- B. MAXIMUM JOINT SPACING FOR CONCRETE CURB AND COMBINATION CURB & GUTTER IS 10'. SEE SPECIFICATION FOR LOCATIONS AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED.
- C. TYPE A OR B COMBINATION CURB AND GUTTER SHALL BE USED FOR ALL APPLICABLE NEW CONSTRUCTION AND IN THOSE AREAS WHERE THE COMBINATION CURB AND GUTTER IS TO BE REPLACED IN KIND.
- D. TYPE A OR B CURB SHALL BE USED FOR THE REPLACEMENT OF LIKE KIND OF CURB ONLY. NOT TO BE USED FOR NEW CONSTRUCTION EXCEPT WHERE INDICATED ON APPROPRIATE INLET STANDARDS.

SPECIFICATION 602	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

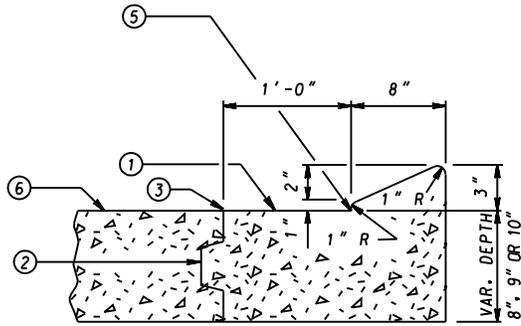


APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 2-10-04	APPROVAL 3-31-04
REVISED	REVISED
REVISED	REVISED
REVISED	REVISED

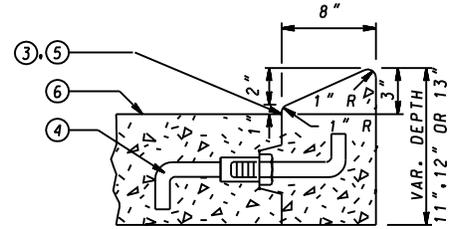
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**STANDARD TYPES A & B CONCRETE CURB AND
COMBINATION CONCRETE CURB & GUTTER**

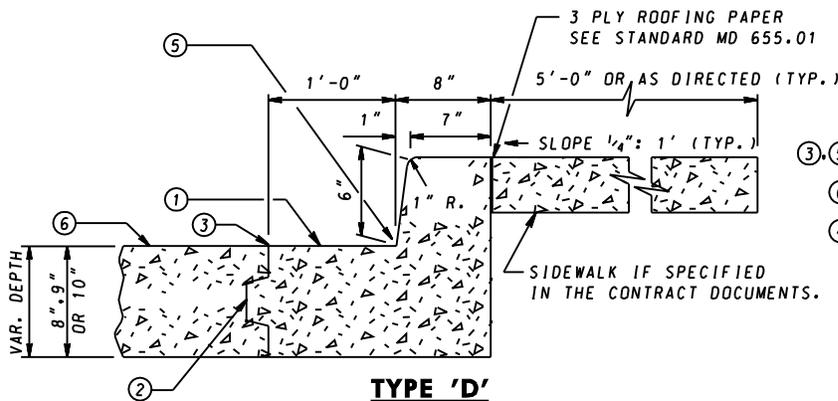
STANDARD NO. MD 620.02



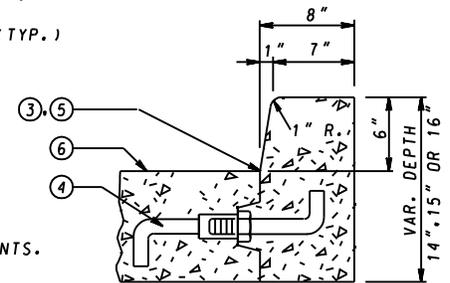
TYPE 'C'
COMBINATION CURB & GUTTER
TO BE USED FOR DESIGN SPEED 60 MPH



TYPE 'C'
CURB



TYPE 'D'
COMBINATION CURB & GUTTER TO BE USED
ADJACENT TO PARKING LOCATIONS DESIGNED
FOR PERSONS WITH
DISABILITIES



TYPE 'D'
CURB

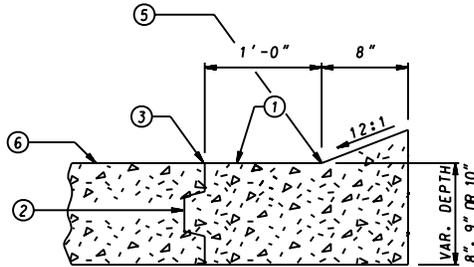
- ① SLOPE GUTTER PAN $\frac{1}{2}$ " PER FOOT TOWARD FLOW LINE ON ALL ROADWAYS INCLUDING SUPERELEVATED SECTIONS, EXCEPT INTERCHANGE RAMPS.
- ② PROVIDE KEY AND LONGITUDINAL TIE BAR AS REQUIRED; SEE NOTE A
- ③ ROADWAY PAVEMENT CONSTRUCTION JOINT
- ④ LONGITUDINAL TIE DEVICE "J" BAR MODIFIED
- ⑤ FLOW LINE
- ⑥ ROADWAY PAVEMENT SLOPE

NOTES

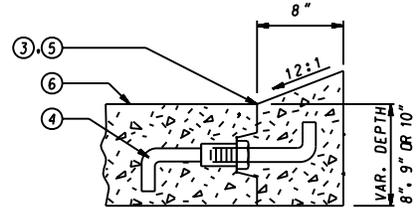
- A. RIGID PAVEMENT ROADWAY ADJACENT TO COMBINATION CURB AND GUTTER AND CLOSED SECTION ROADWAY USING RIGID PAVEMENT WITH COMBINATION CURB AND GUTTER SHALL BE KEYED AND TIED AT THE ROADWAY PAVEMENT CONSTRUCTION JOINT. REFER TO STANDARD MD 572.61 FOR METHOD OF KEYWAY AND LONGITUDINAL TIE DEVICES. SPACING OF THE TIE BARS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. RIGID PAVEMENT AND CURB SHALL BE CONSTRUCTED AS INDICATED. TIE DEVICES AND KEYS ARE NOT REQUIRED WHEN USING FLEXIBLE PAVEMENT FOR ROADWAY.
- B. MAXIMUM JOINT SPACING FOR CONCRETE CURB AND COMBINATION CURB & GUTTER IS 10'. SEE SPECIFICATION FOR LOCATIONS AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED.
- C. TYPE C OR D COMBINATION CURB AND GUTTER SHALL BE USED FOR ALL APPLICABLE NEW CONSTRUCTION AND IN THOSE AREAS WHERE THE COMBINATION CURB AND GUTTER IS TO BE REPLACED IN KIND.
- D. TYPE C OR D CURB SHALL BE USED FOR THE REPLACEMENT OF LIKE KIND OF CURB ONLY. NOT TO BE USED FOR NEW CONSTRUCTION EXCEPT WHERE INDICATED ON APPROPRIATE INLET STANDARDS.

SPECIFICATION 602	CATEGORY CODE ITEMS	
APPROVED	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04	APPROVAL 3-31-04
	REVISED 4-17-07	REVISED
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD TYPES C AND D
CONCRETE CURB AND COMBINATION
CONCRETE CURB & GUTTER
STANDARD NO. MD 620.02-01



**DEPRESSED CURB FOR COMBINATION
CONCRETE CURB & GUTTER
FOR SIDEWALK RAMPS**



**DEPRESSED
CONCRETE CURB
FOR SIDEWALK RAMPS**

- ① SLOPE GUTTER PAN $\frac{1}{2}$ " PER FOOT TOWARD FLOW LINE ON ALL ROADWAYS INCLUDING SUPERELEVATED SECTIONS, EXCEPT INTERCHANGE RAMPS.
- ② PROVIDE KEY AND LONGITUDINAL TIE BAR AS REQUIRED; SEE NOTE A
- ③ ROADWAY PAVEMENT CONSTRUCTION JOINT
- ④ LONGITUDINAL TIE DEVICE "J" BAR MODIFIED
- ⑤ FLOW LINE
- ⑥ ROADWAY PAVEMENT SLOPE

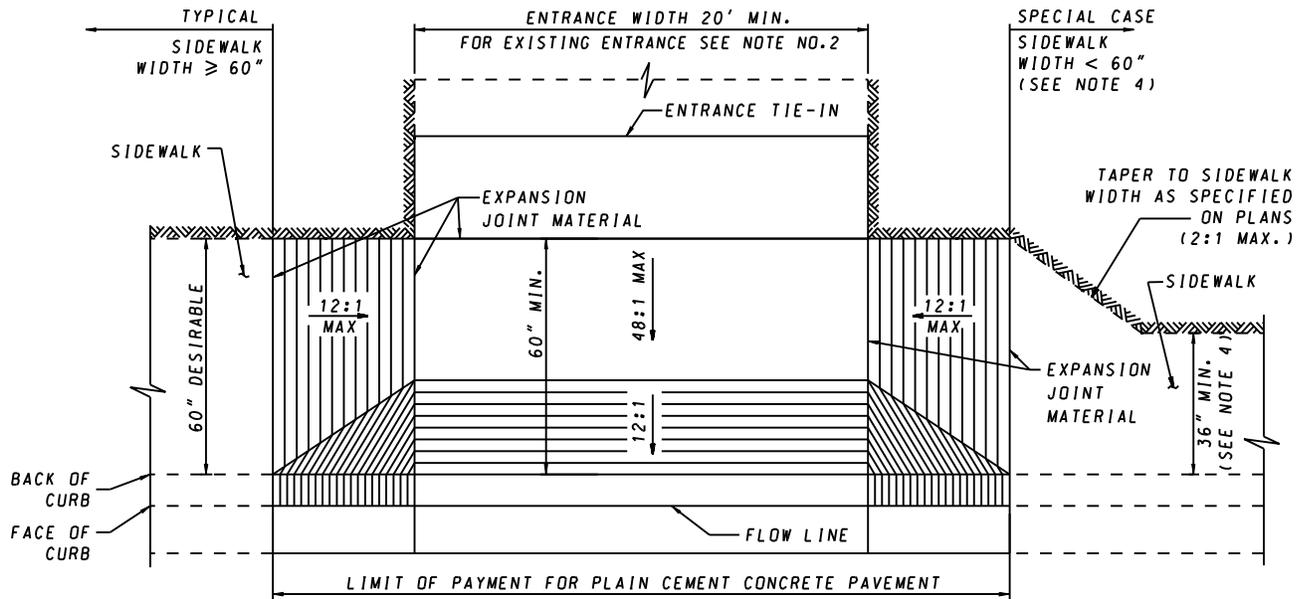
NOTES

- A. RIGID PAVEMENT ROADWAY ADJACENT TO COMBINATION CURB AND GUTTER AND CLOSED SECTION ROADWAY USING RIGID PAVEMENT WITH COMBINATION CURB AND GUTTER SHALL BE KEYED AND TIED AT THE ROADWAY PAVEMENT CONSTRUCTION JOINT. REFER TO STANDARD MD 572.61 FOR METHOD OF KEYWAY AND LONGITUDINAL TIE DEVICES. SPACING OF THE TIE BARS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. RIGID PAVEMENT AND CURB SHALL BE CONSTRUCTED AS INDICATED. TIE DEVICES AND KEYS ARE NOT REQUIRED WHEN USING FLEXIBLE PAVEMENT FOR ROADWAY.
- B. MAXIMUM JOINT SPACING FOR CONCRETE CURB AND COMBINATION CURB & GUTTER IS 10'. SEE SPECIFICATION FOR LOCATIONS AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED.
- C. PAYMENT FOR DEPRESSING THE CURB WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR THE ITEM CONCRETE CURB OR COMBINATION CONCRETE CURB AND GUTTER, AS SPECIFIED IN THE CONTRACT DOCUMENTS.

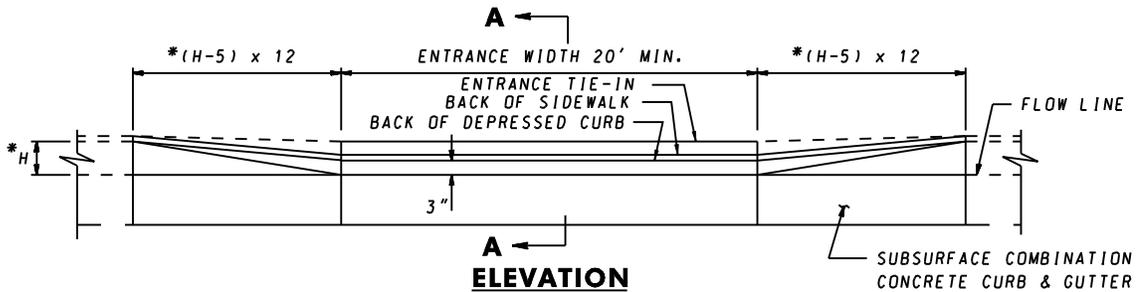
SPECIFICATION 602	CATEGORY CODE ITEMS	
APPROVED	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04	APPROVAL 3-31-04
	REVISED 4-17-07	REVISED
	REVISED	REVISED
	REVISED	REVISED

**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
**DEPRESSED CURB FOR COMBINATION
CURB AND GUTTER AND DEPRESSED
CURB FOR SIDEWALK RAMPS**

STANDARD NO. MD 620.03

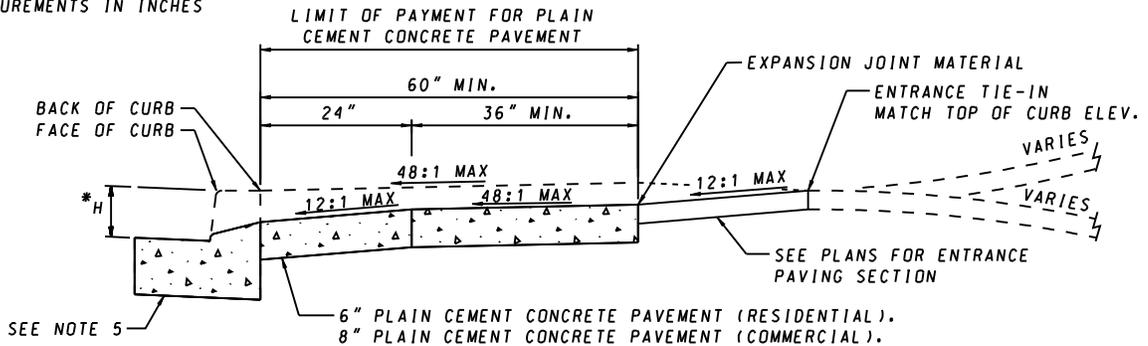


PLAN



ELEVATION

* - H = HEIGHT OF CURB
ALL MEASUREMENTS IN INCHES



SECTION A-A

NOTES

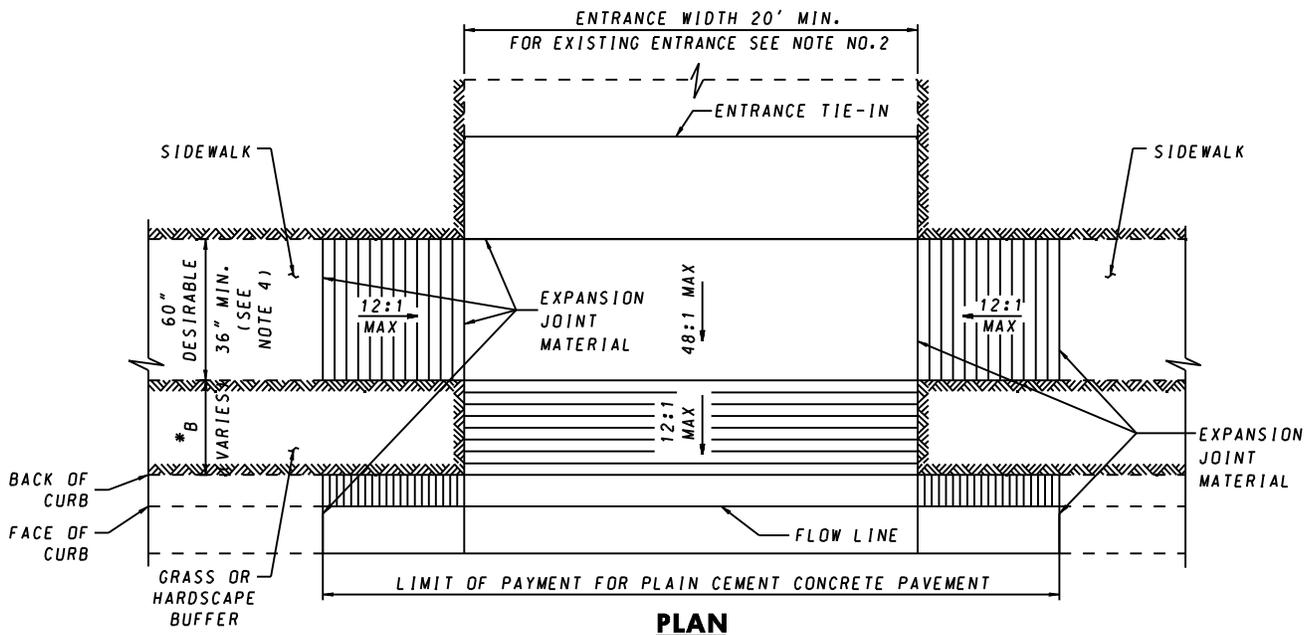
- FOR USE IN AREAS WHERE THERE IS SIDEWALK ADJACENT TO THE BACK OF CURB OR WHERE IT IS EXPECTED THAT SIDEWALK WILL BE ADDED IN THE FUTURE.
- WHEN AN EXISTING ENTRANCE IS LESS THAN 20' IN WIDTH A UNIFORM TAPER SHALL BE CONSTRUCTED TO TIE INTO THE EXISTING ENTRANCE AS DIRECTED BY THE ENGINEER.
- EXPANSION JOINT MATERIAL TO BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
- WHERE 60" SIDEWALK CAN NOT BE PROVIDED, 36" MIN. MAY BE USED AS LONG AS PASSING ZONES ARE PROVIDED IN ACCORDANCE WITH STD. MD-655.02.
- TYPE A AND B CURB AND THE CURB FOR TYPE A, B, AND D COMBINATION CURB AND GUTTER SHALL BE DEPRESSED AS SHOWN ON STD. 620.02-01 TYPE C. PAYMENT FOR DEPRESSING THE CURB SHALL BE AS SPECIFIED ON STD. 620.03 NOTE C.

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
	REVISOR 4-17-07
REVISOR	REVISOR
REVISOR	REVISOR

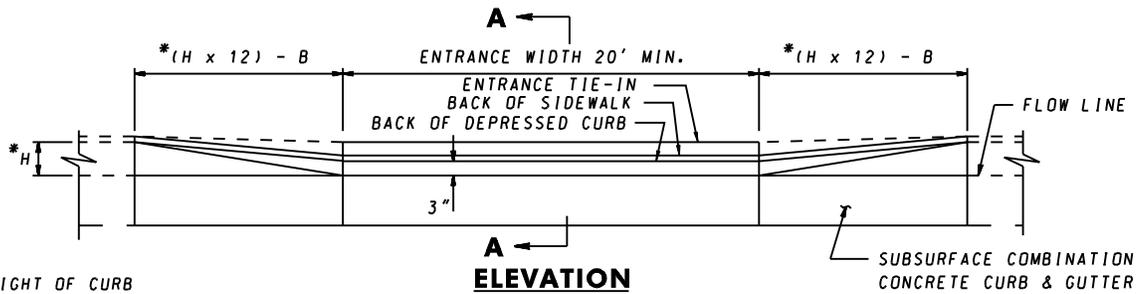
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD ENTRANCE CONSTRUCTION
RESIDENTIAL & COMMERCIAL
METHOD NO.1

STANDARD NO.

MD 630.01

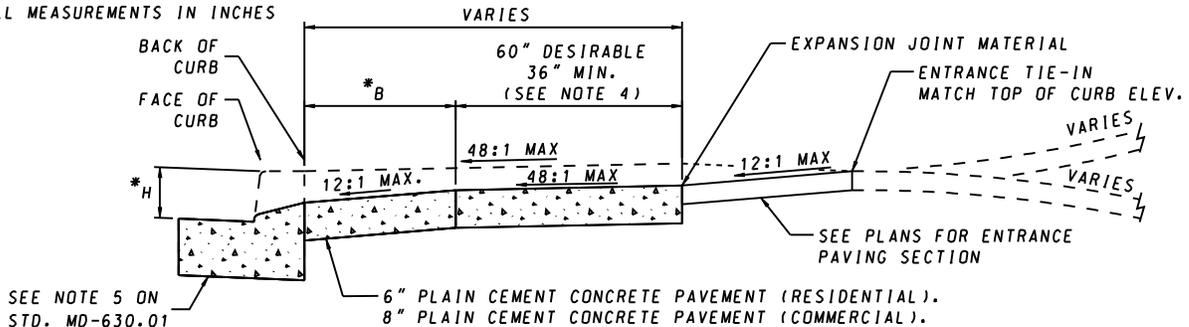


PLAN



ELEVATION

* - H = HEIGHT OF CURB
 B = BUFFER WIDTH
 ALL MEASUREMENTS IN INCHES



SECTION A-A

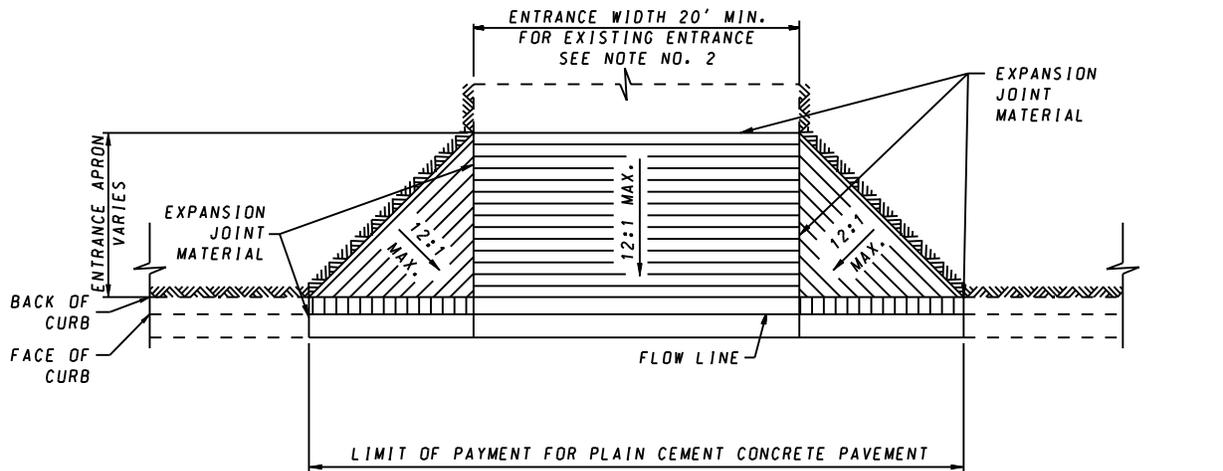
NOTES

1. FOR USE IN AREAS WHERE THERE IS SIDEWALK SEPARATED FROM THE BACK OF CURB BY 24" OR MORE, OR WHERE IT IS EXPECTED THAT SIDEWALK WILL BE ADDED IN THE FUTURE.
2. WHEN AN EXISTING ENTRANCE IS LESS THAN 20' IN WIDTH A UNIFORM TAPER SHALL BE CONSTRUCTED TO TIE INTO THE EXISTING ENTRANCE AS DIRECTED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL TO BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
4. WHERE 60" SIDEWALK CAN NOT BE PROVIDED, 36" MIN. MAY BE USED AS LONG AS PASSING ZONES ARE PROVIDED IN ACCORDANCE WITH STD. MD-655.02.

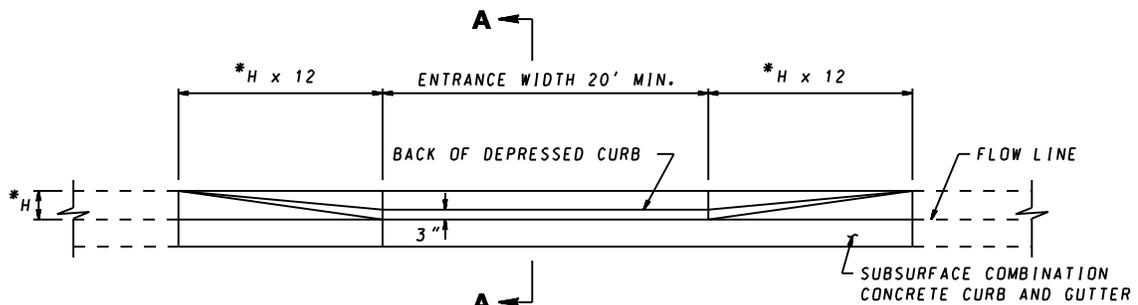
SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
	REVISIED 4-17-07
REVISIED	REVISIED
REVISIED	REVISIED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD ENTRANCE CONSTRUCTION
RESIDENTIAL & COMMERCIAL
METHOD NO.2

STANDARD NO. MD 630.02

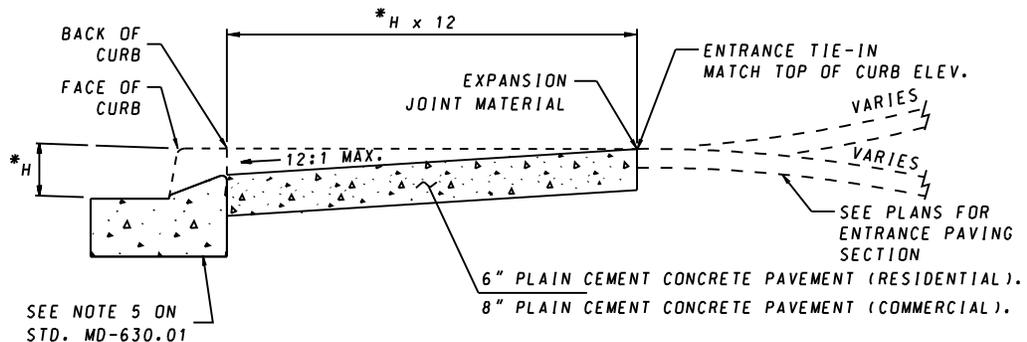


PLAN



A ELEVATION

* - H = HEIGHT OF CURB
ALL MEASUREMENTS IN INCHES



SECTION A-A

NOTES

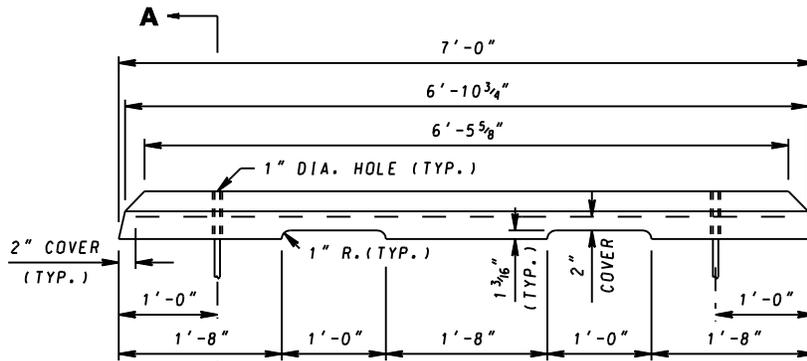
1. FOR USE ONLY WHERE ENTRANCE DOES NOT CROSS SIDEWALK.
2. WHEN AN EXISTING ENTRANCE IS LESS THAN 20' IN WIDTH A UNIFORM TAPER SHALL BE CONSTRUCTED TO TIE INTO THE EXISTING ENTRANCE AS DIRECTED BY THE ENGINEER
3. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
	REVISIONS 4-17-07
REVISIONS	REVISIONS
REVISIONS	REVISIONS

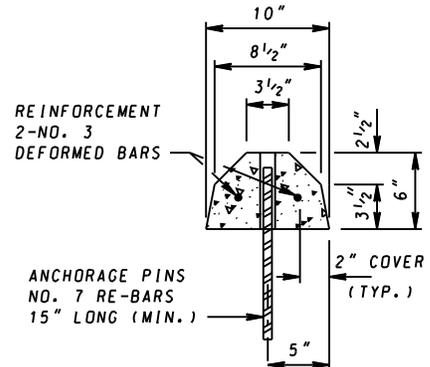
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD ENTRANCE CONSTRUCTION
RESIDENTIAL & COMMERCIAL
METHOD NO.3

STANDARD NO.

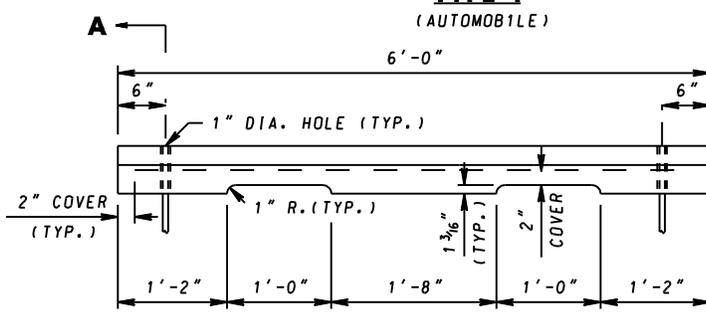
MD 630.03



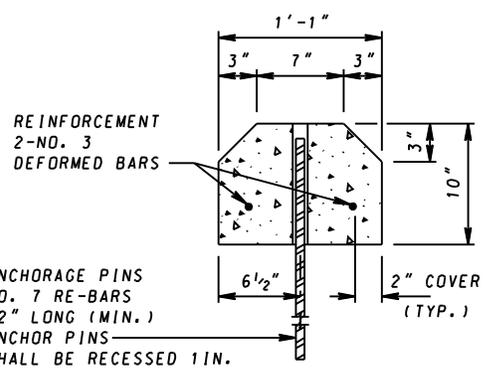
**ELEVATION
TYPE I
(AUTOMOBILE)**



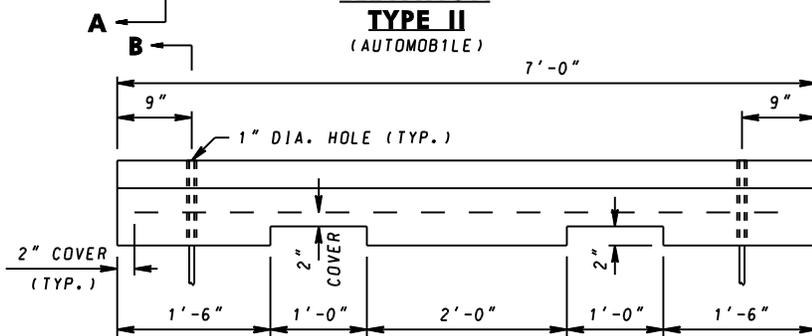
**SECTION A-A
(TYPICAL-TYPE I & II)**



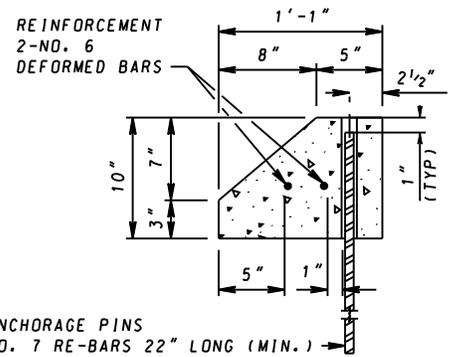
**ELEVATION
TYPE II
(AUTOMOBILE)**



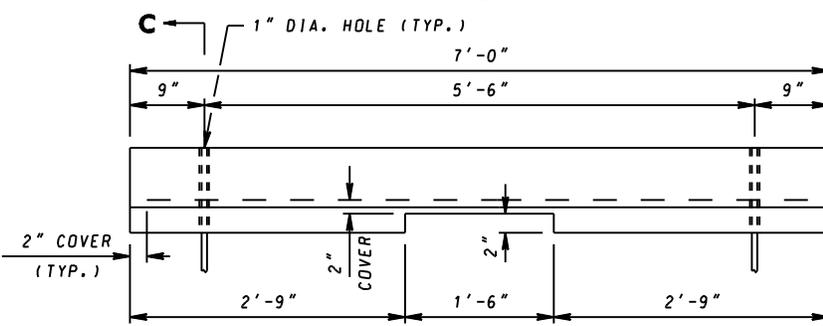
SECTION B-B



**ELEVATION
TYPE III-A
(TRUCK)**



SECTION C-C



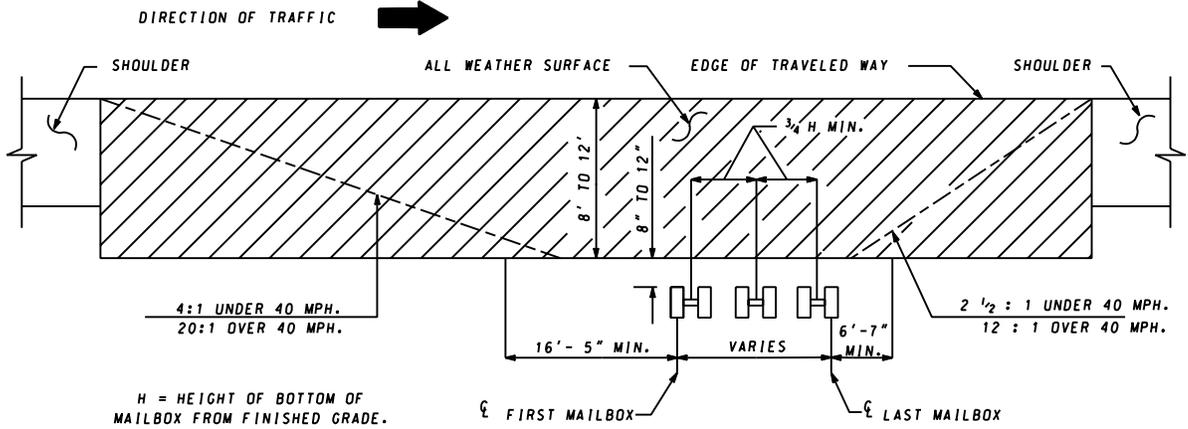
**ELEVATION
TYPE III-B
(TRUCK)**

NOTE

1. PRECAST CONCRETE WHEEL STOPS SHALL BE LOCATED AS SHOWN ON THE PLANS, THEN SECURED IN PLACE WITH TWO (2) NO. 7 REINFORCEMENT BARS PER WHEEL STOP.
2. COST OF THE REINFORCEMENT BARS WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER EACH FOR THE WHEEL STOPS.

SPECIFICATION 608	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 10-26-82
	APPROVAL 5-17-83
	APPROVAL 6-20-07
APPROVAL 8-1-84	
REVISIONS	REVISIONS
REVISIONS	REVISIONS

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
PRECAST CONCRETE WHEEL STOPS
STANDARD NO. MD 634.04

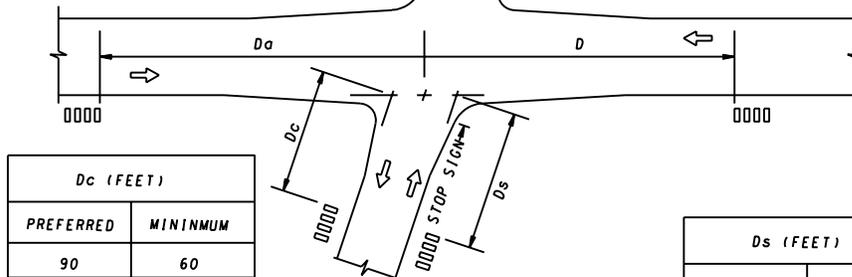


H = HEIGHT OF BOTTOM OF MAILBOX FROM FINISHED GRADE. (3'-4" MIN. - 4'-0" MAX)

MAILBOX TURNOUTS

THROUGH ROAD SPEED M.P.H.	D _a (FEET)	
	nV _c V _m ≤ 4000	nV _c V _m > 4000
40	70	200
≥ 55	70	200

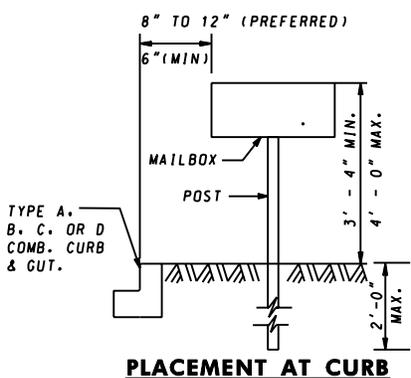
THROUGH ROAD SPEED M.P.H.	D (FEET)		
	V _c ≤ 50 1.5n - .5	50 < V _c ≤ 400 1.5n - .5	V _c > 400 1.5n - .5
40	70	100	100
55	150	150	200



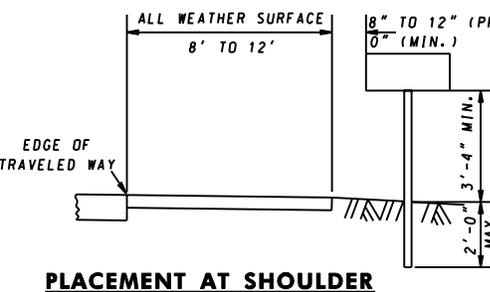
D _c (FEET)	
PREFERRED	MINIMUM
90	60

D _s (FEET)	
PREFERRED	MINIMUM
150	90

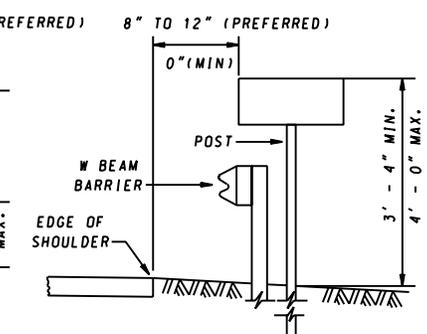
V_c = AVERAGE DAILY TRAFFIC ON CROSS ROADS
V_m = AVERAGE DAILY TRAFFIC ON THROUGH ROAD
n = NUMBER OF MAILBOXES AT MAIL STOP



PLACEMENT AT CURB



PLACEMENT AT SHOULDER



PLACEMENT BEHIND TRAFFIC BARRIER W BEAM

SPECIFICATION	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

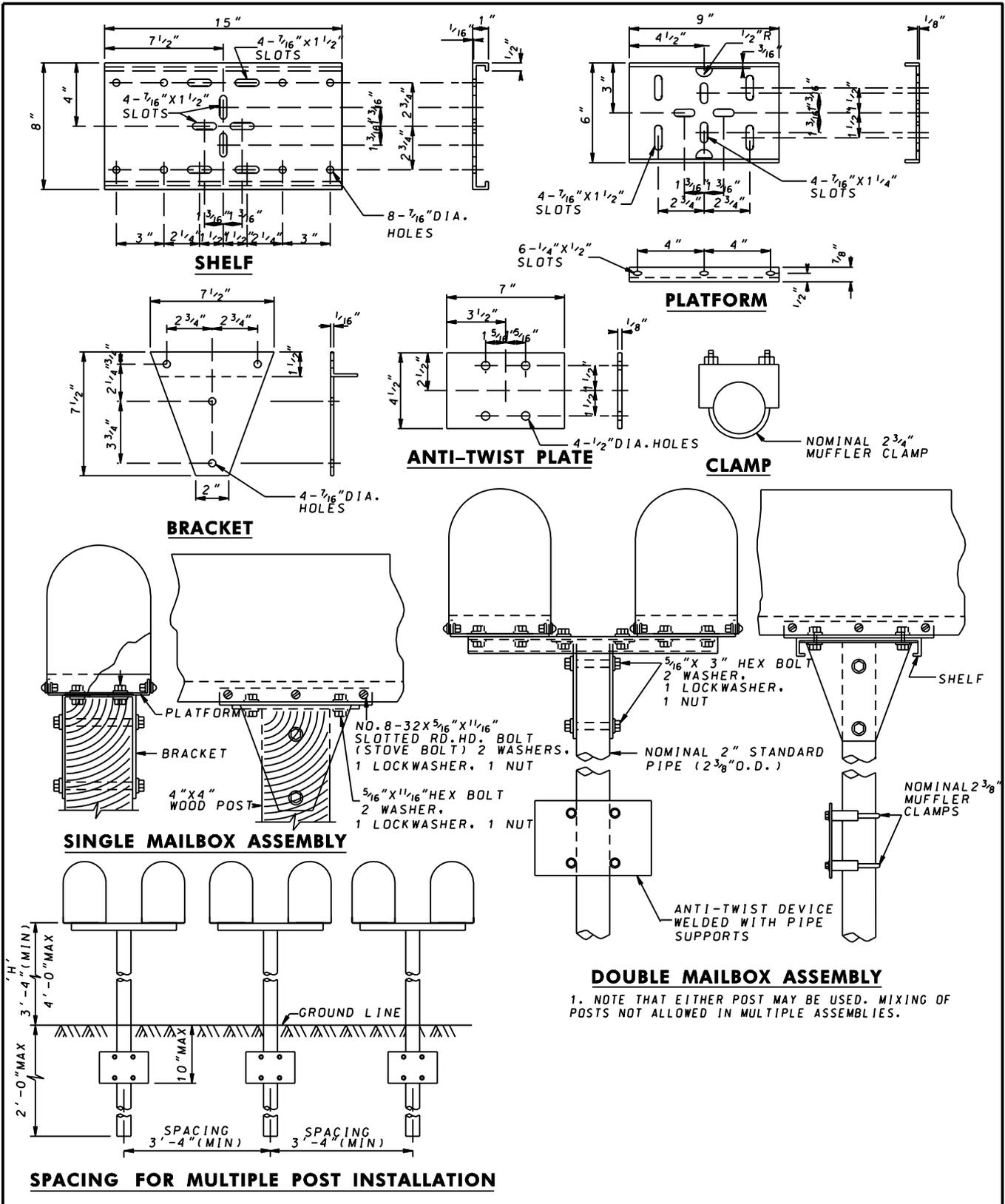


APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 2-10-04	APPROVAL 3-31-04
REVISED	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

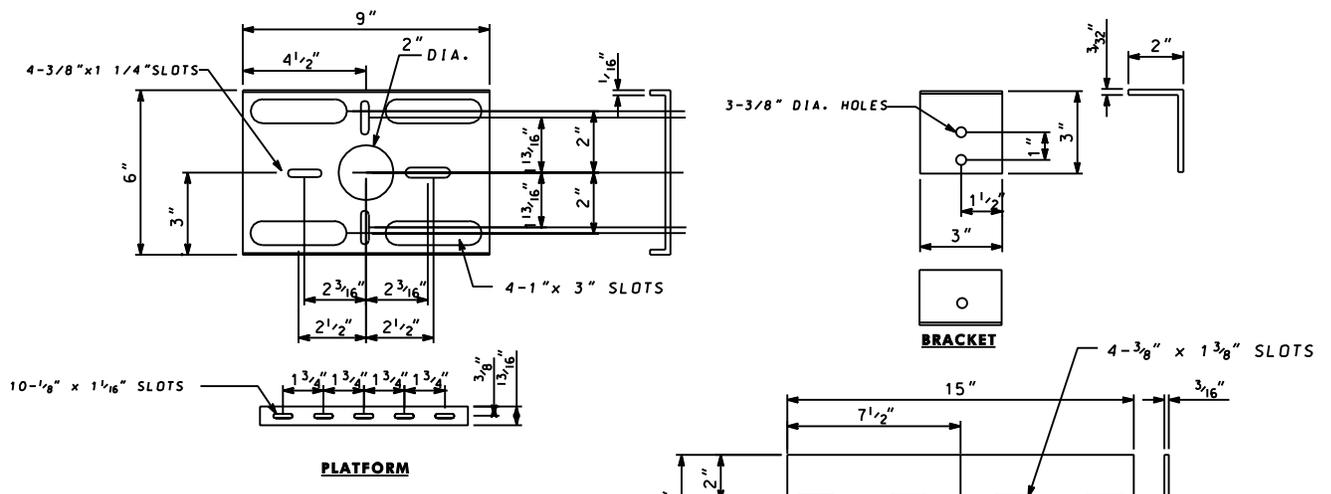
MAILBOX PLACEMENT DETAILS

STANDARD NO. MD 635.01



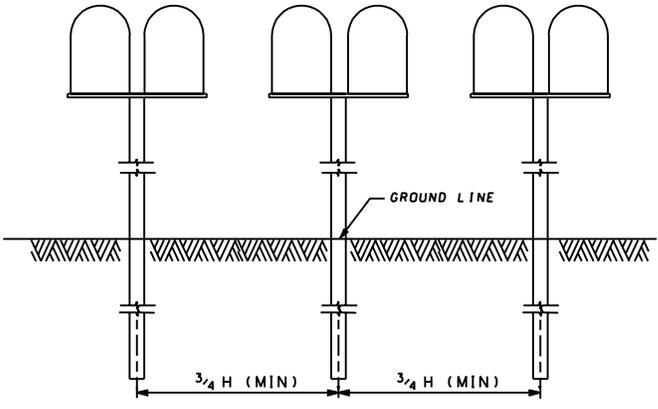
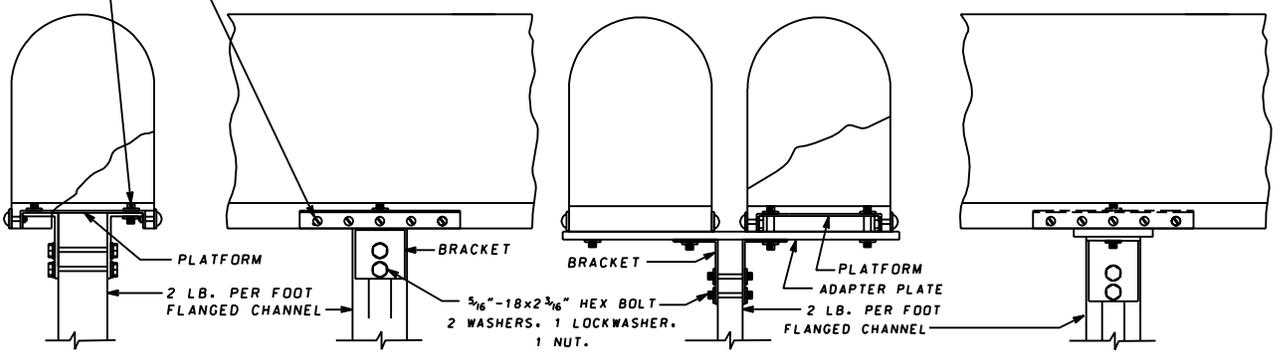
SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04	APPROVAL 3-31-04
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
SINGLE AND DOUBLE MAILBOX ASSEMBLIES TYPE A
STANDARD NO. MD 635.02



5/16" - 18 1/16" HEX BOLT
 2 WASHERS, 1 LOCKWASHER, 1 NUT.

NO. 8 - 32 3/16" x 1 1/16" SLOTTED ROUND
 HEAD BOLT (STOVE BOLT) 2 WASHERS,
 1 LOCKWASHER, 1 NUT



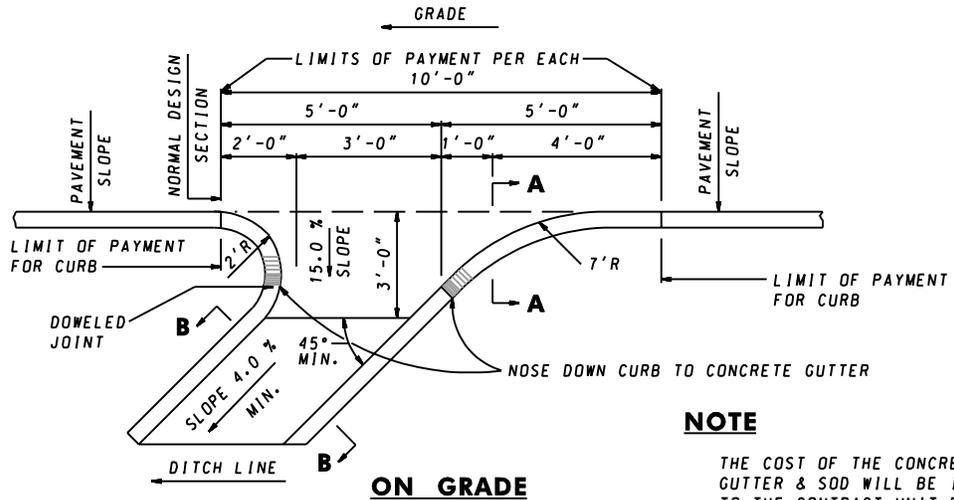
SPACING FOR MULTIPLE POST INSTALLATIONS

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
REVISED	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

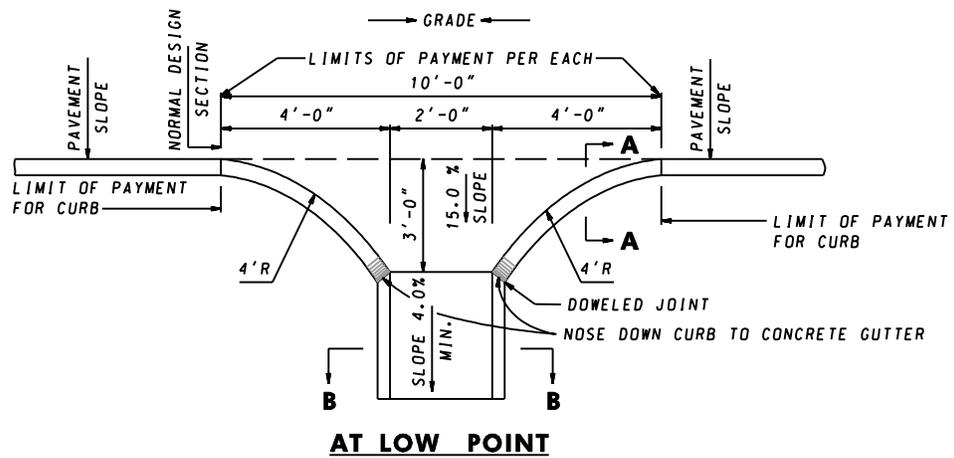
SINGLE AND DOUBLE MAILBOX ASSEMBLIES TYPE B

STANDARD NO. MD 635.03

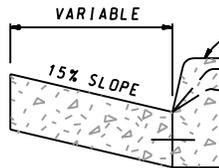


NOTE

THE COST OF THE CONCRETE GUTTER & SOD WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH STANDARD CURB OPENING

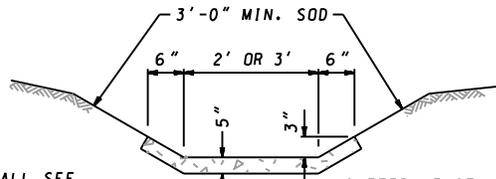


THICKNESS AS DESIGNED OR SAME AS MAIN LINE PAVEMENT.



TYPE A, B, OR C CURB FOR DETAILS SEE STANDARD MD 620.02 AND 620.02-01

SECTION A-A



GUTTER LENGTH MAY BE VARIED AS DIRECTED

SECTION B-B

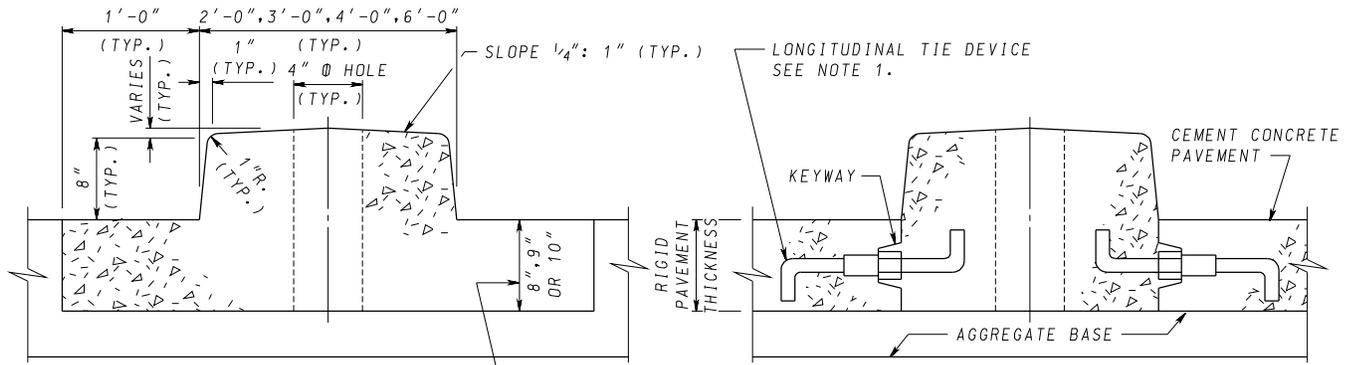
NOTE

FOR DETAILS OF JOINTS & TOE WALL SEE LONGITUDINAL TIE DEVICES STANDARD MD 572.61 AND 389.02, RESPECTIVELY.

SPECIFICATION 602	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 10-17-63
	APPROVAL 6-9-64
REVISD 10-1-01	REVISD 8-1-84
REVISD	REVISD
REVISD	REVISD

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD CURB OPENING DETAILS
FOR CONCRETE CURB

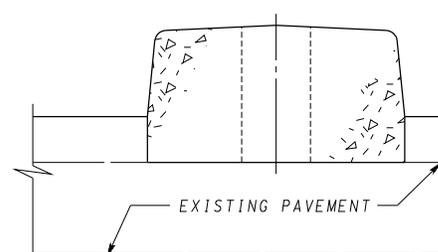
STANDARD NO. MD 640.01



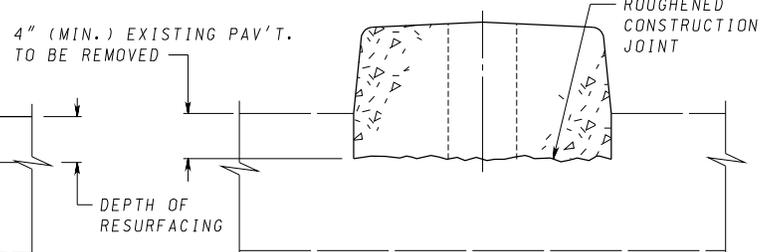
SECTION A-A
TYPE A-1
PLACED WITH HOT MIX ASPHALT PAVEMENT

DEPTH OF GUTTER PAN TO MATCH LAMINATIONS OF PROPOSED PAVING SECTION AS CLOSELY AS POSSIBLE

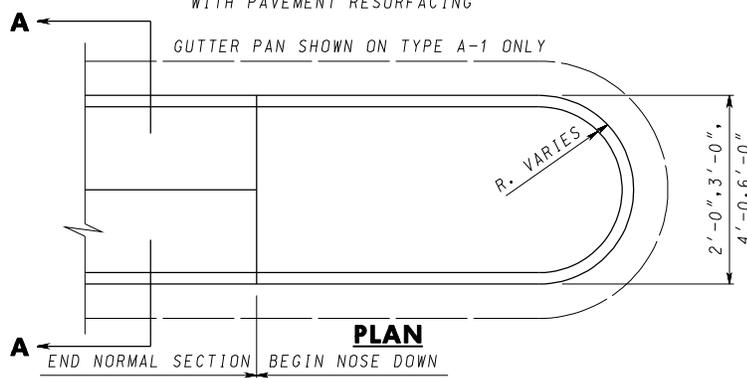
SECTION A-A
TYPE A-2
PLACED WITH CEMENT CONCRETE PAVEMENT



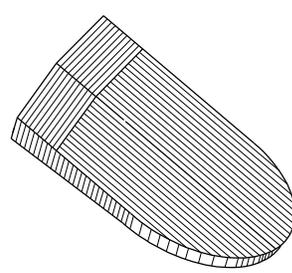
SECTION A-A
TYPE A-3
PLACED IN COMBINATION WITH PAVEMENT RESURFACING



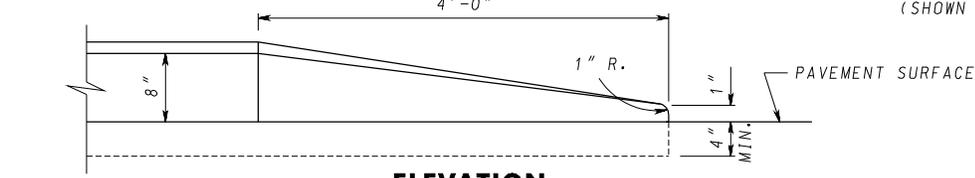
SECTION A-A
TYPE A-4
PLACED ON EXISTING PAVEMENT



PLAN



ISOMETRIC-NOSE DOWN
(SHOWN WITHOUT GUTTER PAN)



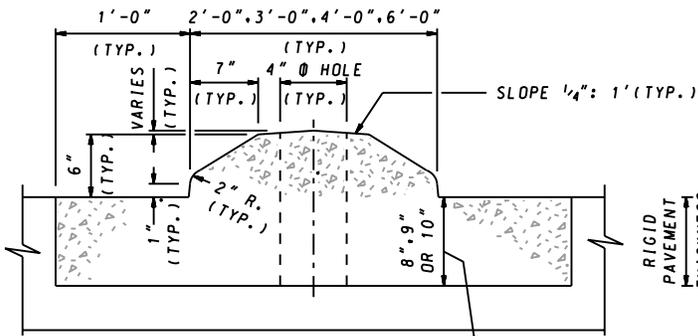
ELEVATION

NOTES NOSE DOWN AT APPROACH END OF MEDIAN

1. UNLESS OTHERWISE SPECIFIED LONGITUDINAL TIE BAR DEVICE, TYPE 'A' OR TYPE 'B', PLACED AT MIDDLE OF KEYWAY & SPACED ACCORDING TO SPECIFICATIONS FOR CONCRETE PAVEMENT SHALL BE USED AT CONSTRUCTION JOINT BETWEEN MONOLITHIC CONCRETE MEDIAN (OR GUTTER PAN) AND CONCRETE PAVEMENT. SEE STANDARD MD 572.61.
2. JOINT SPACING WILL BE A MAXIMUM OF 10'-0" APART. SEE SPECIFICATIONS FOR LOCATION AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED. CONCRETE PAVEMENT, JOINTS SHALL MATCH PAVEMENT JOINTS.
3. ALLOW 4" Ø HOLES IN MEDIAN FOR SIGNS. SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

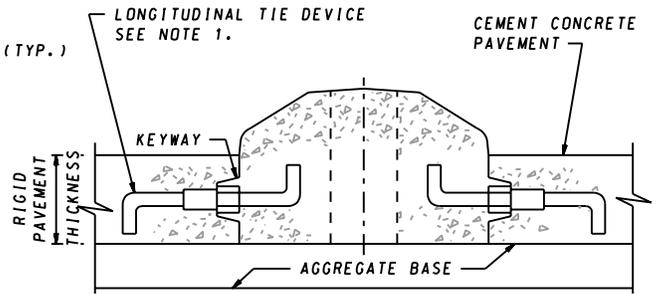
SPECIFICATION 602	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i>	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-15-83
	REVISED 11-08-06
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 4-1-83
REVISED 10-25-06	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD MONOLITHIC CONCRETE MEDIAN
TYPE 'A'
STANDARD NO. MD 645.01

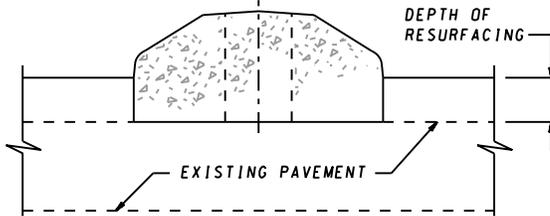


SECTION A-A
TYPE B-1
PLACED WITH HOT MIX ASPHALT PAVEMENT

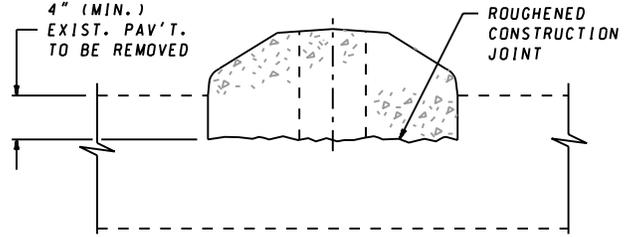
DEPTH OF GUTTER PAN TO MATCH LAMINATIONS OF PROPOSED PAVING SECTION AS CLOSELY AS POSSIBLE



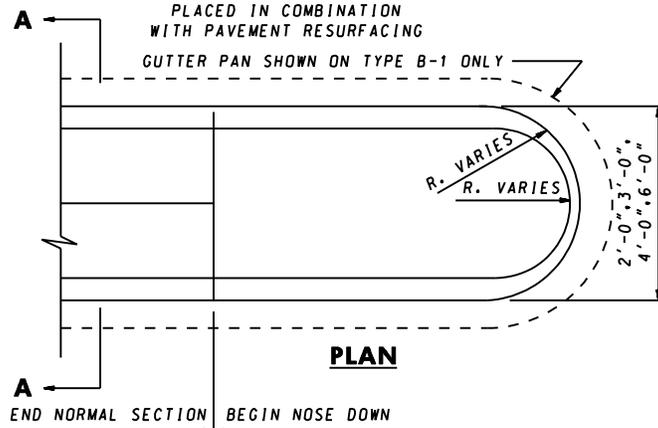
SECTION A-A
TYPE B-2
PLACED WITH CEMENT CONCRETE PAVEMENT



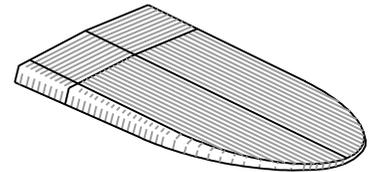
SECTION A-A
TYPE B-3
PLACED IN COMBINATION WITH PAVEMENT RESURFACING



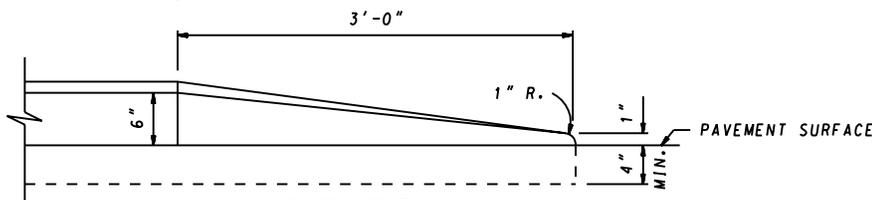
SECTION A-A
TYPE B-4
PLACED ON EXISTING PAVEMENT



PLAN



ISOMETRIC - NOSE DOWN
(SHOWN WITHOUT GUTTER PAN)



ELEVATION

NOTES NOSE DOWN AT APPROACH END OF MEDIAN

1. UNLESS OTHERWISE SPECIFIED, LONGITUDINAL TIE BAR DEVICE, TYPE 'A' OR TYPE 'B', PLACED AT MIDDLE OF KEYWAY & SPACED ACCORDING TO SPECIFICATIONS FOR CONCRETE PAVEMENT SHALL BE USED AT CONSTRUCTION JOINT BETWEEN MONOLITHIC CONCRETE MEDIAN (OR GUTTER PAN) AND CONCRETE PAVEMENT. SEE STANDARD MD 572.61.
2. JOINT SPACING WILL BE A MAXIMUM OF 10'-0" APART. SEE SPECIFICATION FOR LOCATION AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED. CONCRETE PAVEMENT, JOINTS SHALL MATCH PAVEMENT JOINTS.
3. ALLOW 4" Ø HOLES IN MEDIAN FOR SINGS, SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

SPECIFICATION CATEGORY CODE ITEMS

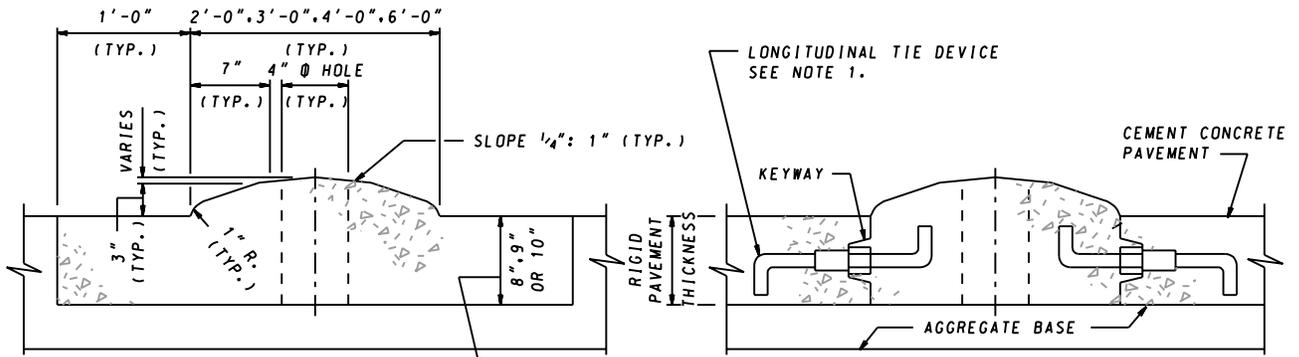
APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT



APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 3-15-83	APPROVAL 4-1-83
REVISED 10-1-01	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD MONOLITHIC CONCRETE MEDIAN
TYPE 'B'

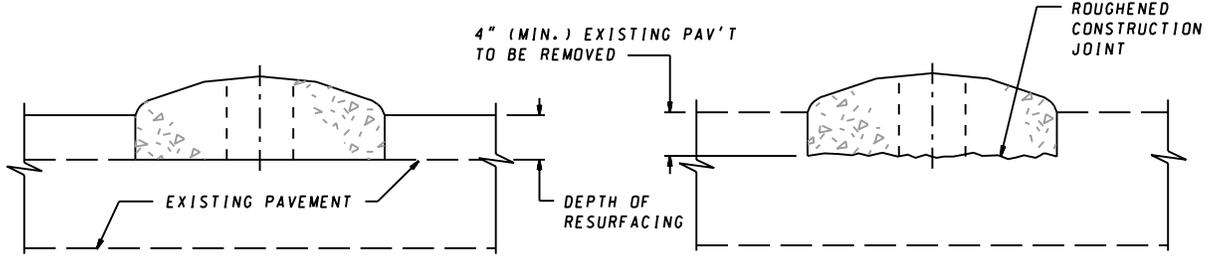
STANDARD NO. MD 645.02



SECTION A-A
TYPE C-1
PLACED WITH HOT MIX ASPHALT PAVEMENT

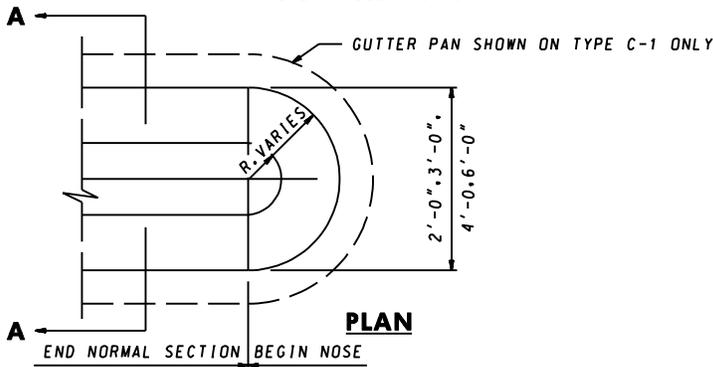
DEPTH OF GUTTER PAN TO MATCH LAMINATION OF PROPOSED PAVING SECTION AS CLOSELY AS POSSIBLE

SECTION A-A
TYPE C-2
PLACED WITH CEMENT CONCRETE PAVEMENT

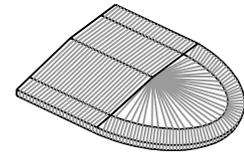


SECTION A-A
TYPE C-3
PLACED IN COMBINATION WITH PAVEMENT RESURFACING

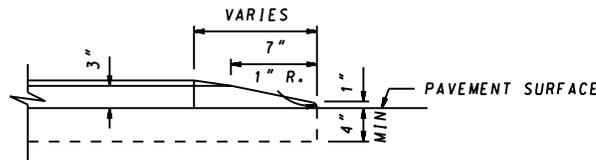
SECTION A-A
TYPE C-4
PLACED ON EXISTING PAVEMENT



PLAN



ISOMETRIC-NOSE DOWN
(SHOWN WITHOUT GUTTER PAN)



ELEVATION

NOSE DOWN AT APPROACH END OF MEDIAN

NOTES

1. UNLESS OTHERWISE SPECIFIED, LONGITUDINAL TIE BAR DEVICE, TYPE 'A' OR TYPE 'B', PLACED AT MIDDLE OF KEYWAY & SPACED ACCORDING TO SPECIFICATIONS FOR CONCRETE PAVEMENT SHALL BE USED AT CONSTRUCTION JOINT BETWEEN MONOLITHIC CONCRETE MEDIAN (OR GUTTER PAN) AND CONCRETE PAVEMENT. SEE STANDARD MD 572.61.
2. JOINT SPACING WILL BE A MAXIMUM OF 10'-0" APART. SEE SPECIFICATIONS FOR LOCATION AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED. CONCRETE PAVEMENT, JOINTS SHALL MATCH PAVEMENT JOINTS.
3. ALLOW 4" Ø HOLES IN MEDIAN FOR SIGNS, SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

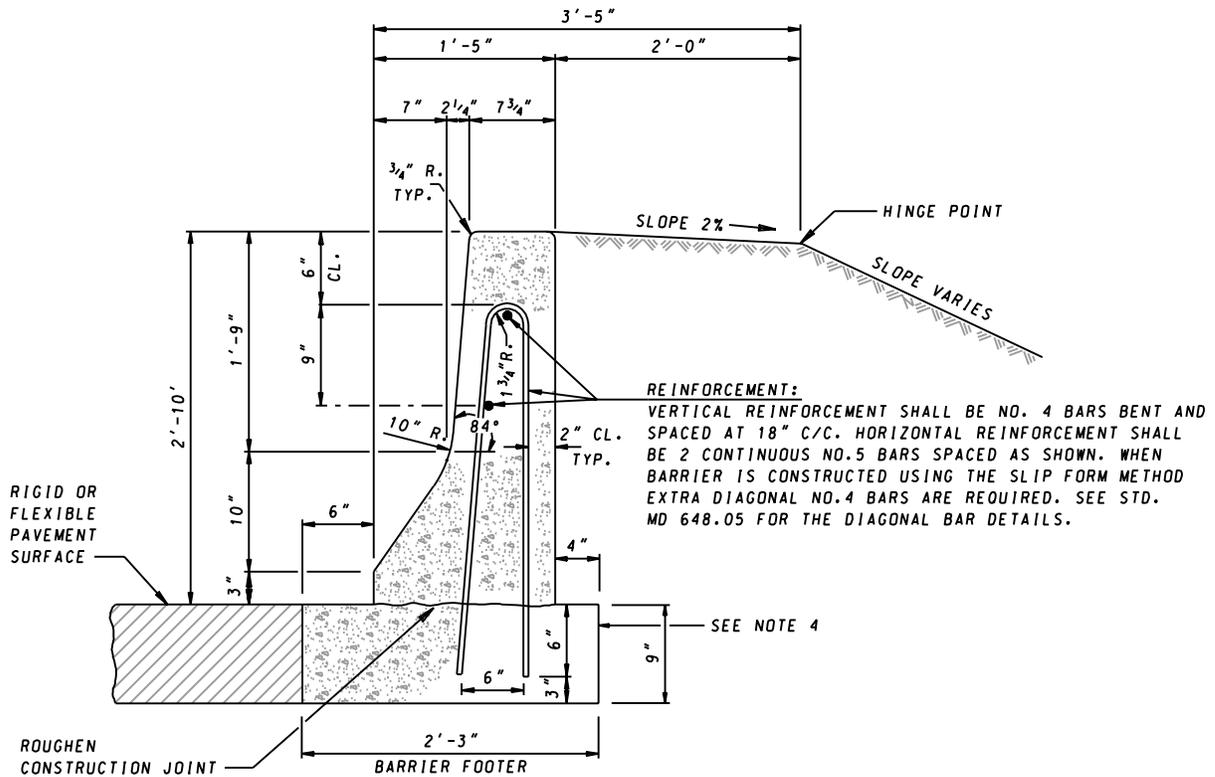
SPECIFICATION	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-15-83	APPROVAL 4-1-83
	REVISED 10-1-01	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
STANDARD MONOLITHIC CONCRETE MEDIAN
TYPE 'C'

STANDARD NO. MD 645.03



TYPICAL SECTION

THIS BARRIER TO BE USED WITH EARTH BACKING AT THE TOP OF FILL SLOPES.
 (SEE STD. MD 648.02 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 FREE STANDING AT TOP OF FILL SLOPES)
 (SEE STD. MD 648.03 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS RETAINING WALL)

NOTES

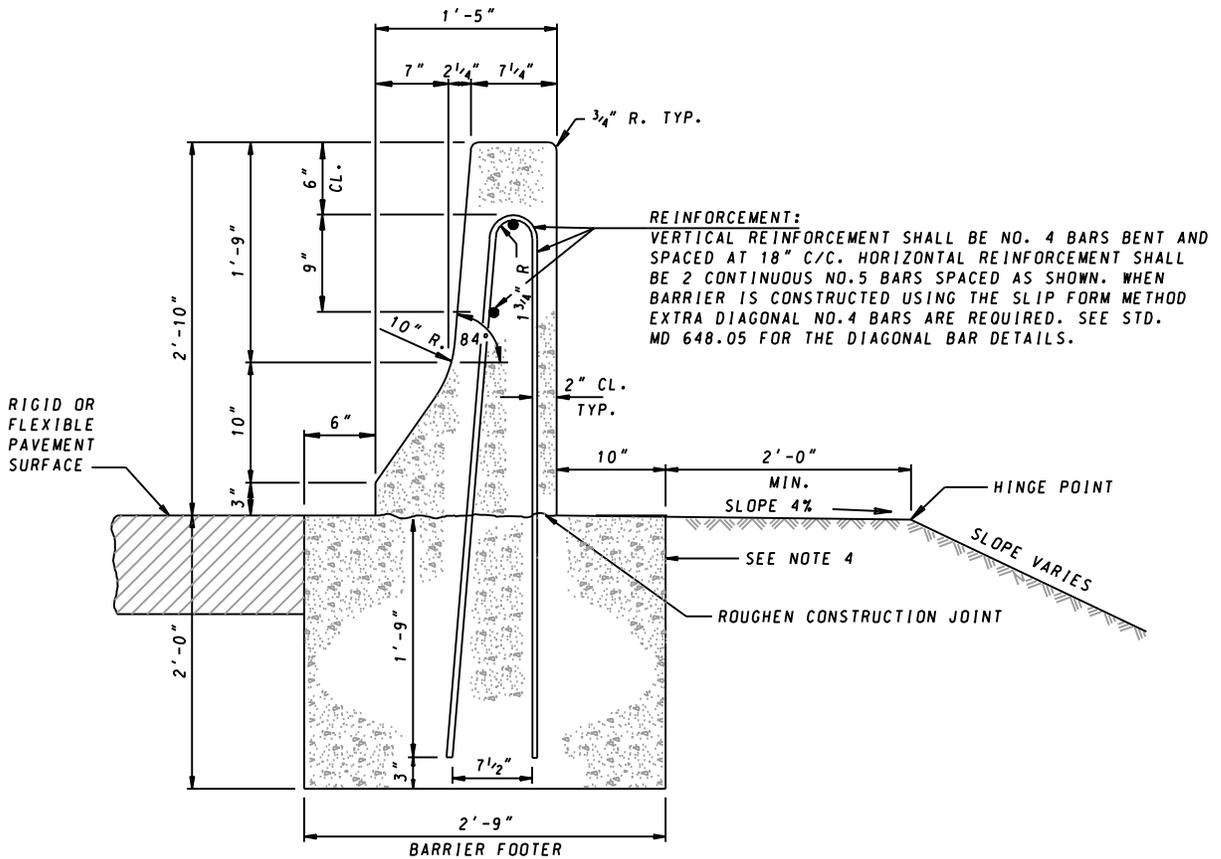
1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE THE FOOTER AND THE BARRIER SHALL BE CAST SEPARATELY.
2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) CONTINUOUSLY PLACED.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.
4. THE VERTICAL WALL FOR THE FOOTER ADJACENT TO THE PAVEMENT SHALL BE FORMED TO PROVIDE A NEAT VERTICAL FACE FOR THE PAVEMENT. THE FOOTER REAR VERTICAL WALL MAY BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH WALL. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE EXCAVATION AND CONCRETE FOR THE FOOTER (FORMED OR NON-FORMED) AND ALL REINFORCEMENT SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1. FILL MATERIAL IN BACK OF THE BARRIER IS INCLUDED IN THE EMBANKMENT QUANTITY.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.06 FOR LOCATION.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE TRAFFIC BARRIER
SINGLE FACE TYPE 1
(WITH EARTH BACKING IN FILL)

STANDARD NO. MD 648.01



TYPICAL SECTION

THIS BARRIER IS TO BE USED WHEN THE BARRIER IS FREE STANDING (NO BACKING) AT THE TOP OF FILL SLOPES. (SEE STD. MD 648.01 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES) (SEE STD. MD 648.03 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS A RETAINING WALL)

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE THE FOOTER AND THE BARRIER SHALL BE CAST SEPARATELY.
2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) CONTINUOUSLY PLACED.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.
4. THE VERTICAL WALL FOR THE FOOTER ADJACENT TO THE PAVEMENT SHALL BE FORMED TO PROVIDE A NEAT VERTICAL FACE FOR THE PAVEMENT. THE FOOTER REAR VERTICAL WALL MAY BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH WALL. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF THE CONSTRUCTION METHOD.
6. COST OF THE EXCAVATION AND CONCRETE FOR THE FOOTER (FORMED OR NON-FORMED) AND ALL REINFORCEMENT SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.06 FOR PROPOSED LOCATION.

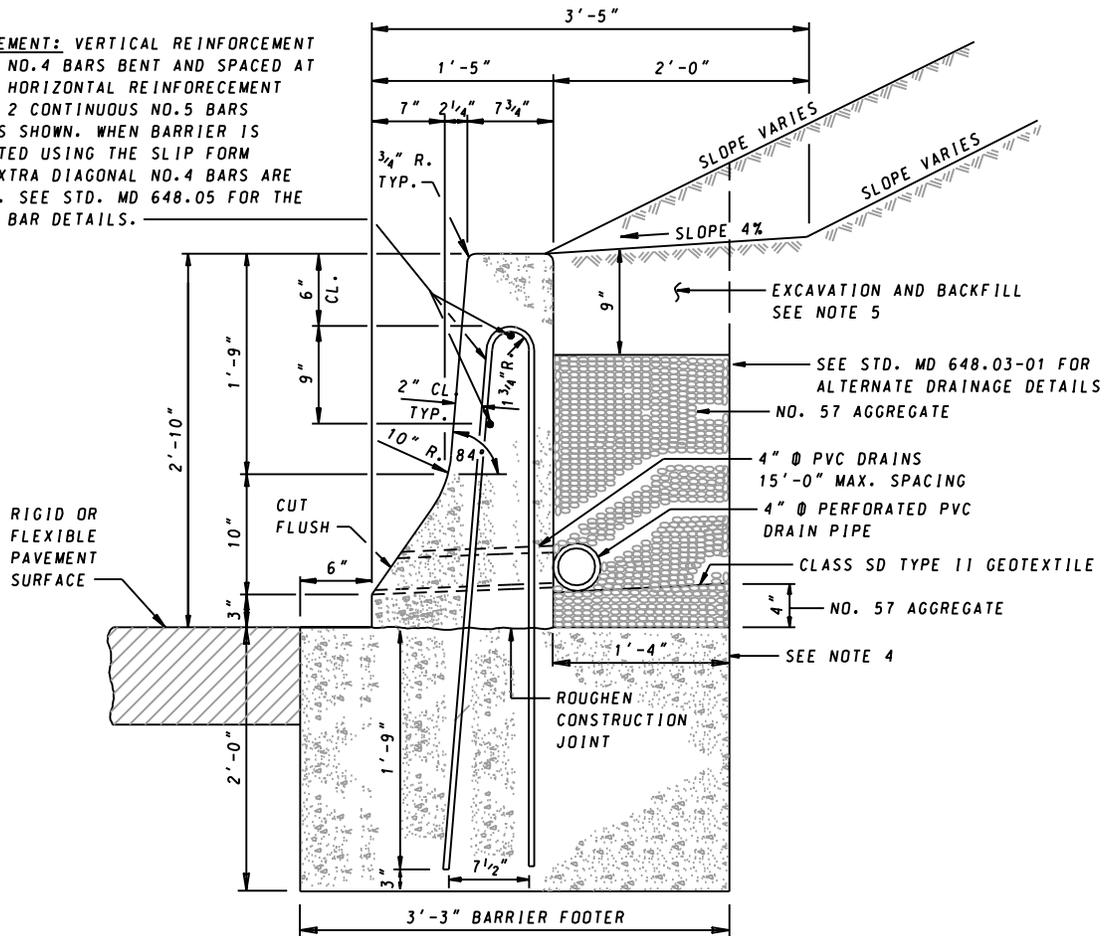
JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 2 (FREE STANDING IN FILL)

STANDARD NO. MD 648.02

REINFORCEMENT: VERTICAL REINFORCEMENT SHALL BE NO.4 BARS BENT AND SPACED AT 18" C/C. HORIZONTAL REINFORCEMENT SHALL BE 2 CONTINUOUS NO.5 BARS SPACED AS SHOWN. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD EXTRA DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.05 FOR THE DIAGONAL BAR DETAILS.



TYPICAL SECTION

THIS BARRIER IS TO BE USED WHEN THE BARRIER IS FUNCTIONING AS A RETAINING WALL AT THE BOTTOM OF THE CUT OR THE TOE OF FILL SLOPES. (SEE STD. MD 648.01 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES) (SEE STD. MD 648.02 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 FREE STANDING AT TOP OF FILL SLOPES)

NOTES

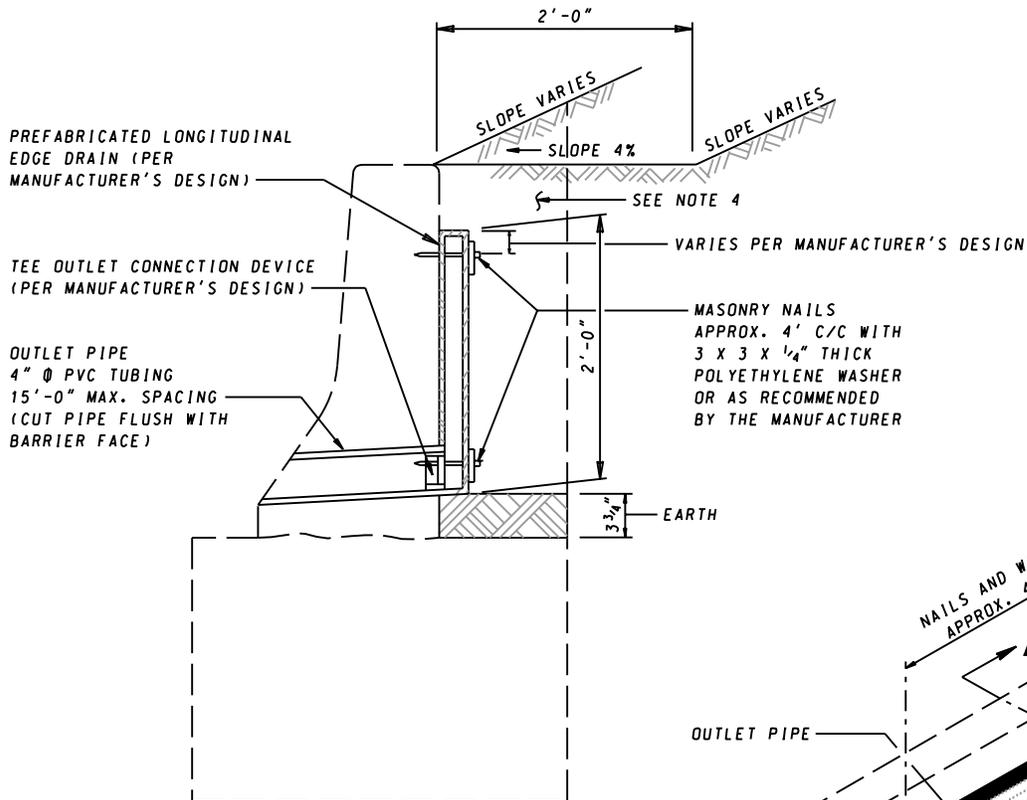
1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE THE FOOTER AND THE BARRIER SHALL BE CAST SEPARATELY.
2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) CONTINUOUSLY PLACED.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.
4. THE VERTICAL WALL FOR THE FOOTER ADJACENT TO THE PAVEMENT SHALL BE FORMED TO PROVIDE A NEAT VERTICAL FACE FOR THE PAVEMENT. THE FOOTER REAR VERTICAL WALL MAY BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH WALL. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.
5. LIMITS OF EXCAVATION: WHEN THE BARRIER IS AT THE BOTTOM OF A CUT SLOPE THE EXCAVATION LIMITS SHALL BE THE LINES INDICATING THE BARRIER FOOTER AND A VERTICAL LINE EXTENDING FROM THE HEEL OF THE FOOTER TO ITS INTERSECTION WITH THE CUT SLOPE. WHEN THE BARRIER IS AT THE TOE OF A FILL SLOPE THE EXCAVATION LIMITS SHALL BE THE LINES INDICATING THE BARRIER FOOTER.
6. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF THE CONSTRUCTION METHOD.
7. COST OF THE CONCRETE FOOTER (FORMED OR NON-FORMED), REINFORCEMENT, DRAINAGE APPURTENACES, EXCAVATION, GEOTEXTILE, AND BACKFILLING USING BORROW EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
9. CONDUIT: IF REQUIRED REFER TO STD. MD 648.06 FOR PROPOSED LOCATION.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

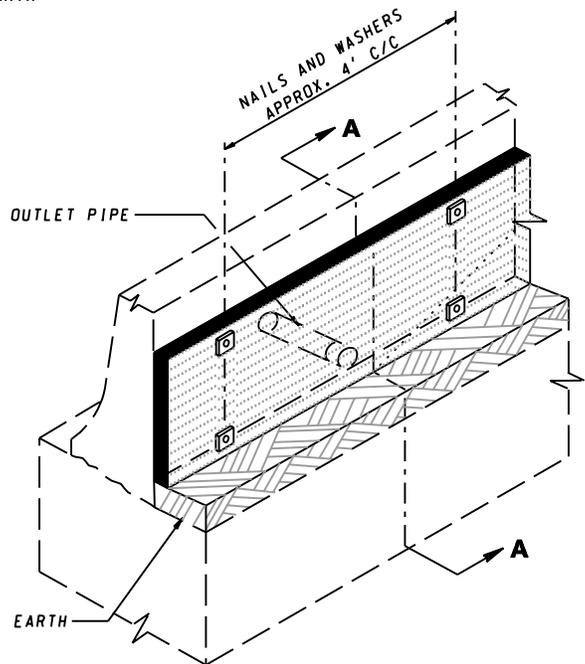
SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISION 2-10-04
	REVISION
	REVISION
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 7-31-90	
REVISION 3-31-04	
REVISION	
REVISION	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL)

STANDARD NO. MD 648.03



SECTION A-A
(THROUGH CENTER OF OUTLET PIPE)



ISOMETRIC

NOTES

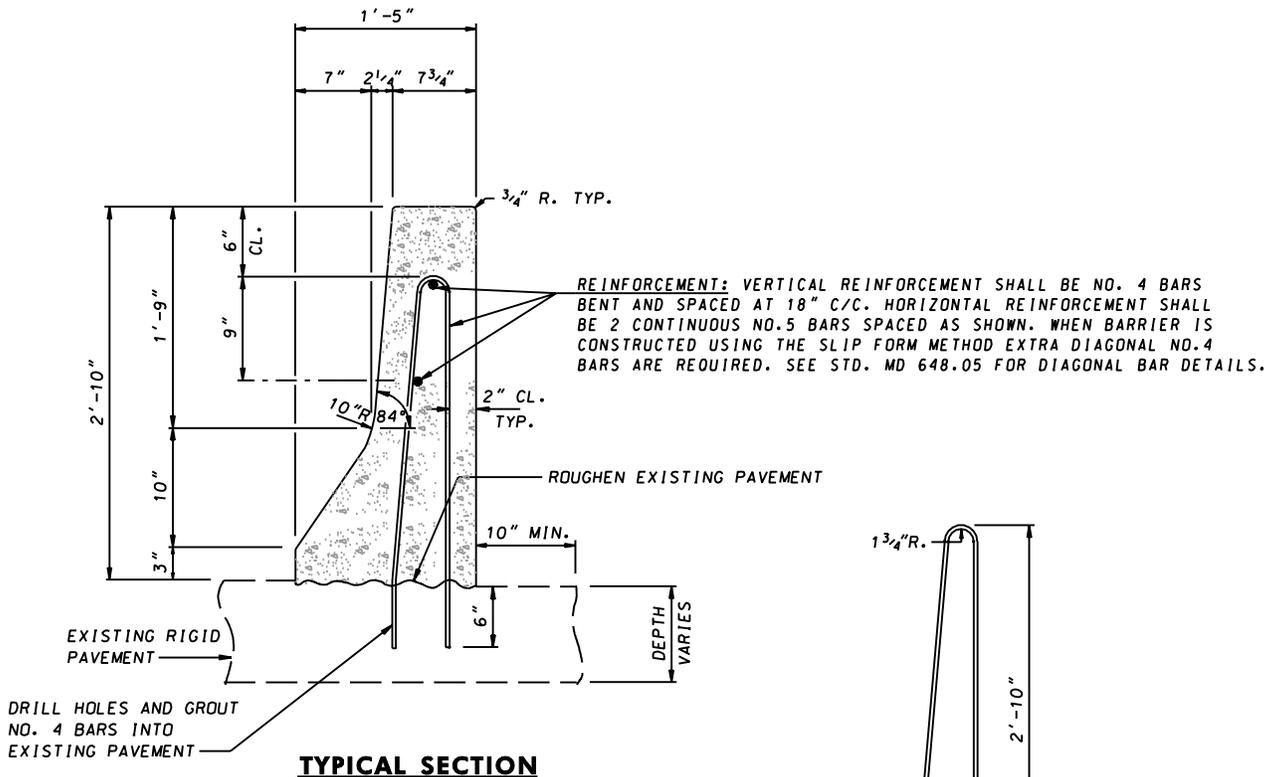
1. THE PREFABRICATED LONGITUDINAL EDGE DRAIN MAY BE USED AS AN ALTERNATE DRAINAGE SYSTEM IN LIEU OF THE DRAINAGE SHOWN ON STD. MD 648.03 CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL).
2. COST OF THE PREFABRICATED LONGITUDINAL EDGE DRAIN IS INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3.
3. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
4. FOR LIMITS OF EXCAVATION REFER TO STD. MD 648.03 NOTE 5.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS		
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
SHA State Highway Administration	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
	APPROVAL 7-16-90	APPROVAL 7-31-90	
	REVISED 10-1-01	REVISED 3-28-01	
	REVISED	REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
PREFABRICATED LONGITUDINAL EDGE DRAIN
FOR CONCRETE JERSEY SHAPE TRAFFIC
BARRIER SINGLE FACE TYPE 3

STANDARD NO. MD 648.03-01



NOTES

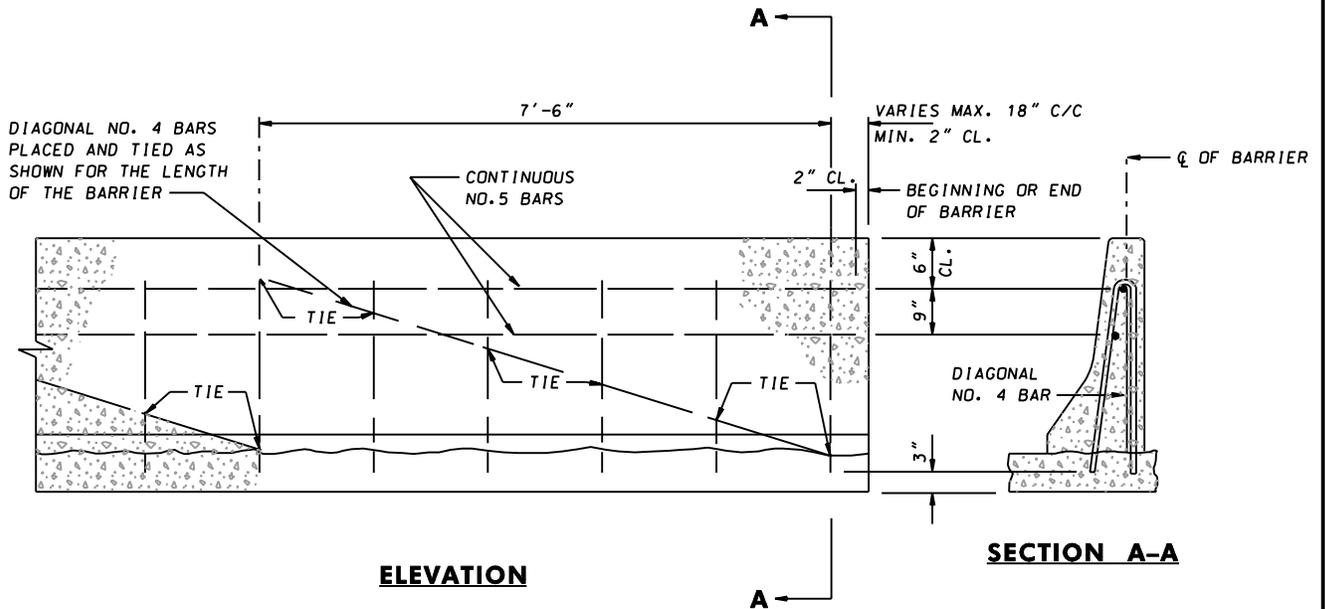
1. THE BARRIER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE BARRIER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL GRADE 40.
4. SPACING OF CONSTRUCTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
5. COST OF LABOR, ALL REINFORCEMENT, DRILLED HOLES, GROUT, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT.
6. TO BE USED AS FREE STANDING BARRIER ONLY (NO BACKING).
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.06 FOR LOCATION.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-30-90
	REVISED 3-28-01
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE TRAFFIC BARRIER
SINGLE FACE CONSTRUCTED ON EXISTING
CONCRETE PAVEMENT

STANDARD NO. MD 648.04



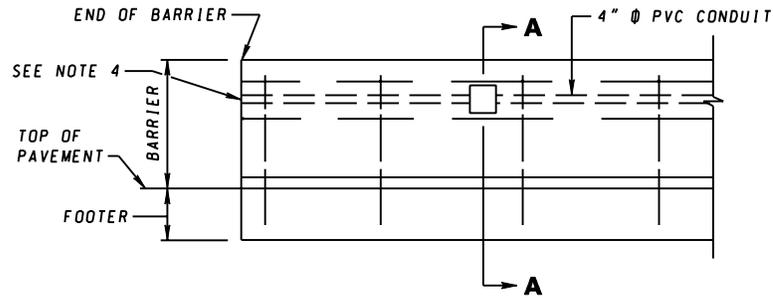
DIAGONAL BAR DETAILS

NOTES

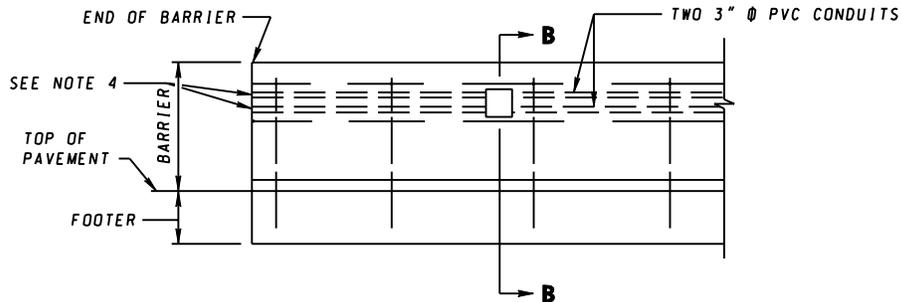
1. APPLICABLE TO SLIP FORM CONSTRUCTION METHOD ONLY.
2. FOR BARRIER TYPES 1, 2, 3 AND BARRIERS CONSTRUCTED ON EXISTING RIGID PAVEMENT.
3. DIAGONAL NO. 4 BARS SHALL BE GRADE 40.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

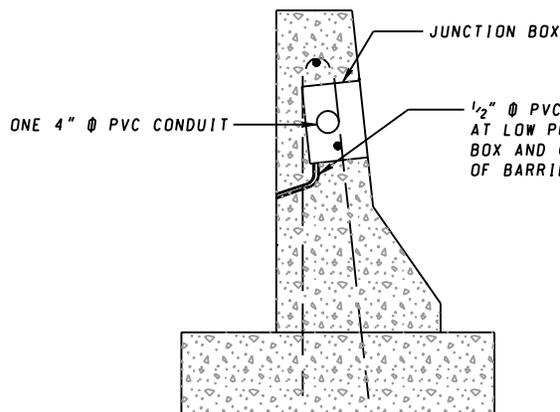
SPECIFICATION 604	CATEGORY CODE ITEMS	<p>Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES DIAGONAL BAR LOCATION FOR CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE STANDARD NO. MD 648.05</p>	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-16-90		APPROVAL 7-31-90
	REVISED 10-1-01	REVISED 3-28-01	
	REVISED	REVISED	
	REVISED	REVISED	



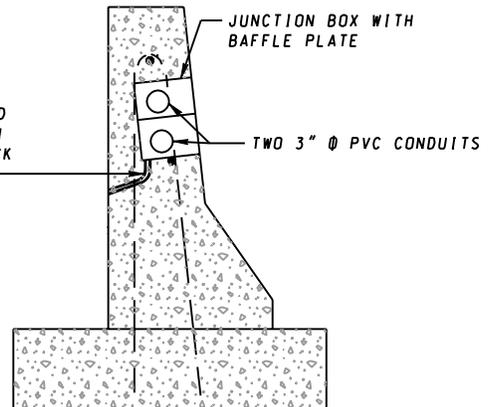
ELEVATION
(SINGLE CONDUIT)



ELEVATION
(DOUBLE CONDUIT)



SECTION A-A
SINGLE CONDUIT



SECTION B-B
DOUBLE CONDUIT

NOTES

1. THE JUNCTION BOXES SHALL BE LOCATED EVERY 750 FEET OR AS DIRECTED BY THE ENGINEER.
2. THE COST OF THE CONDUITS, JUNCTION BOXS, AND ALL APPURTENANCES SHALL BE INCLUDED IN THE COST OF THE BARRIER UNLESS OTHERWISE SPECIFIED.
3. IN INSTANCES WHERE THE BARRIER CONNECTS TO A BRIDGE PARAPET CONTAINING CONDUIT SHALL ALIGN.
4. CAP CONDUIT, COVER WITH 1" CONCRETE AND MARK FOR FUTURE REFERENCE, OR PROVIDE END TREATMENT AS DIRECTED BY THE ENGINEER OR AS SHOWN ON THE PLANS.
5. REFER TO SECTION 805 FOR CONDUIT, ETC.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

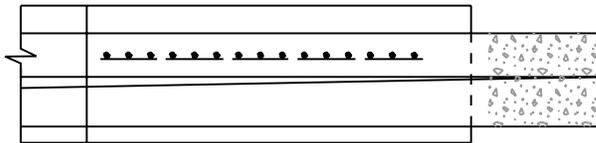
SPECIFICATION 604	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

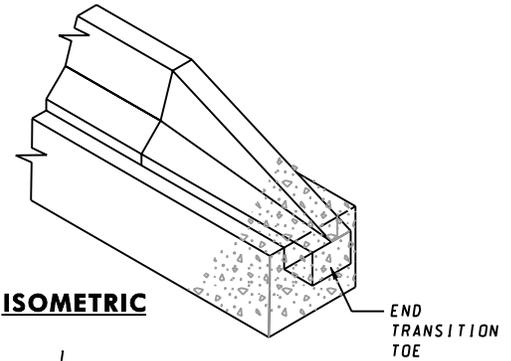
SHA State Highway Administration	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-16-90	APPROVAL 7-31-90
	REVISED 10-1-01	REVISED 3-28-01
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONDUIT AND JUNCTION BOX LOCATION
FOR CONCRETE JERSEY SHAPE TRAFFIC
BARRIER SINGLE FACE - ALL TYPES

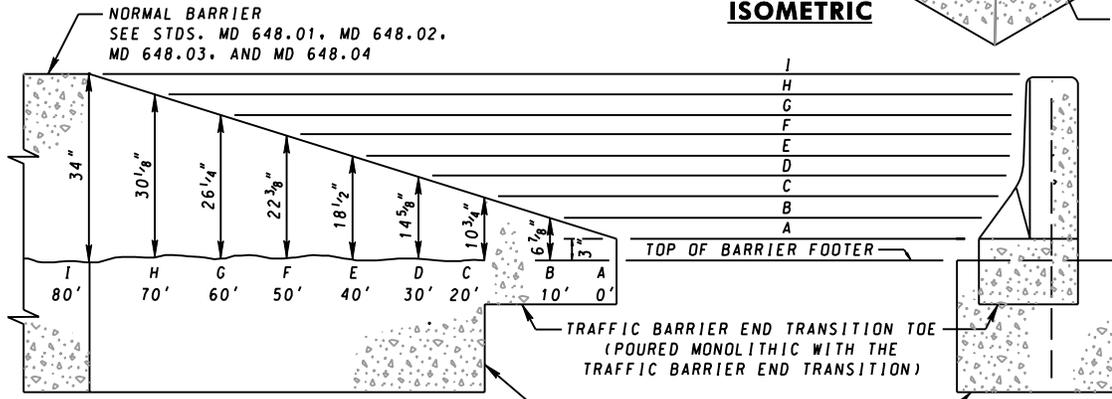
STANDARD NO. MD 648.06



PLAN

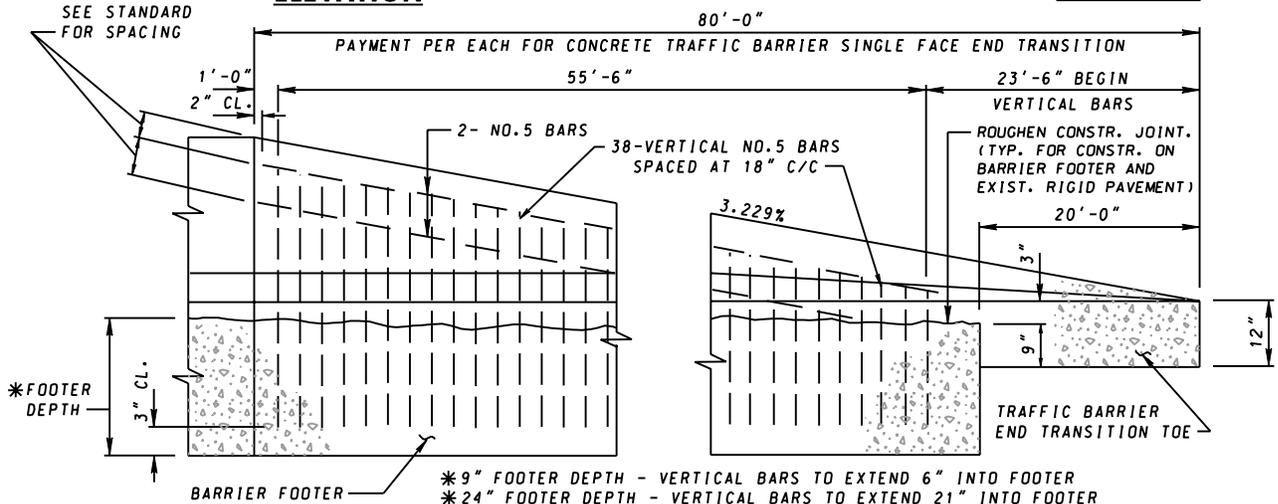


ISOMETRIC



ELEVATION

END VIEW



REINFORCEMENT STEEL DETAIL

NOTES

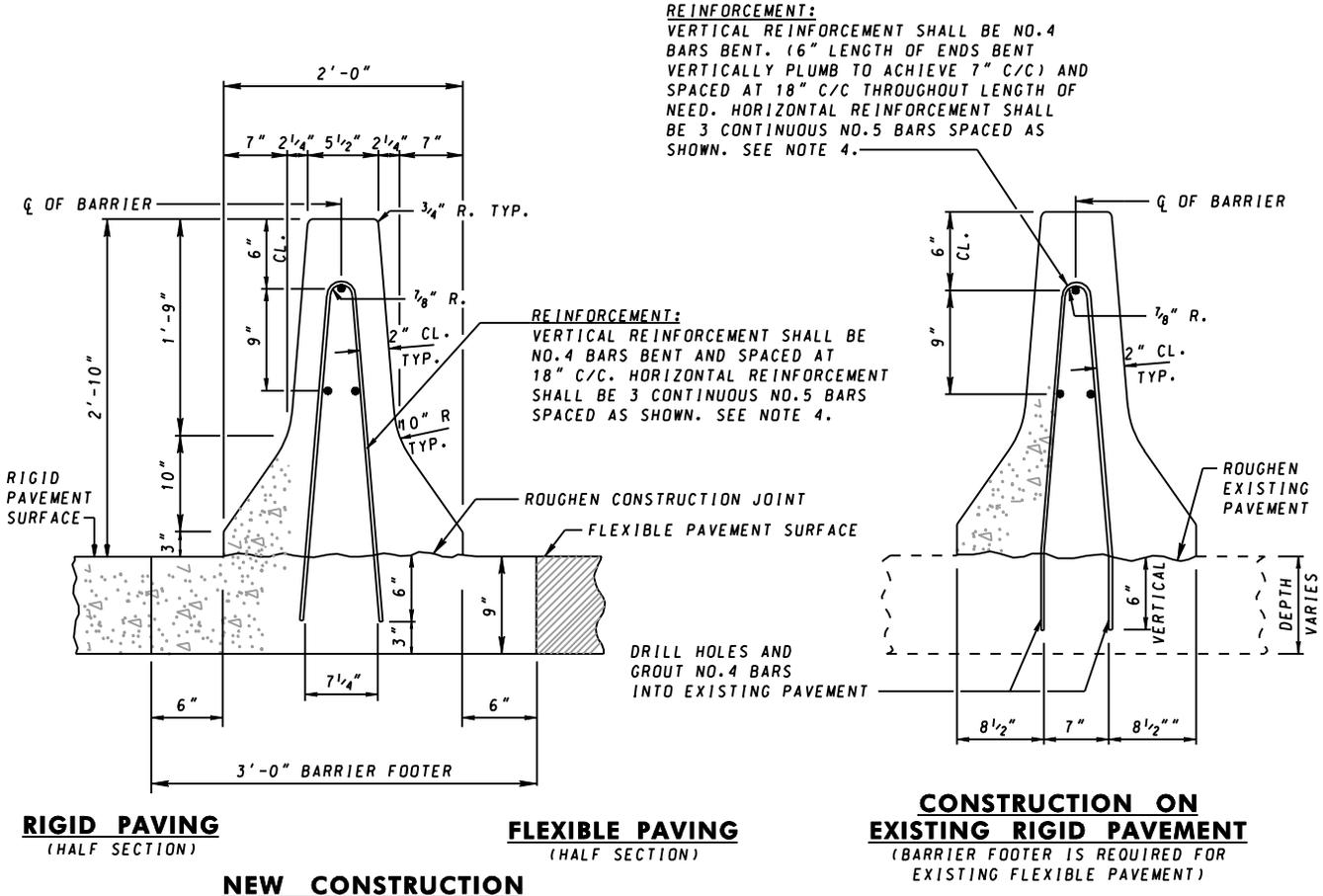
1. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING THE FIXED FORM METHOD. SEE STDS. MD 648.01, MD 648.02, AND MD 648.03 FOR BARRIER FOOTER DETAILS. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.
2. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI).
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, AND TIES SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER.
4. THIS TRAFFIC BARRIER END TRANSITION IS PROHIBITED WHEN THE DESIGN SPEED IS 45 MPH OR GREATER. THE ENGINEER MUST DETERMINE THE TYPE OF END TREATMENT REQUIRED FOR DESIGN SPEEDS OVER 45 MPH.
5. THE COST OF THE BARRIER END TRANSITION TOE, REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR THE CONCRETE TRAFFIC BARRIER SINGLE FACE END TRANSITION.
6. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 7-31-90	
REVISED 3-28-01	
REVISED	
REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE TRAFFIC BARRIER
SINGLE FACE END TRANSITION

STANARD NO. MD 648.10



NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE THE FOOTER AND BARRIER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.
2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) CONTINUOUSLY PLACED.
3. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF REQUIRED, SHALL BE REMOVED BEFORE PLACING PAVEMENT.
4. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD EXTRA DIAGONAL NO.4 REINFORCEMENT BARS ARE REQUIRED. SEE STD. MD 648.15 FOR THE DIAGONAL BAR ARRANGEMENT DETAILS.
5. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 20 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.
6. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
7. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO BE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE A.
8. WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ALL REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE A.
9. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

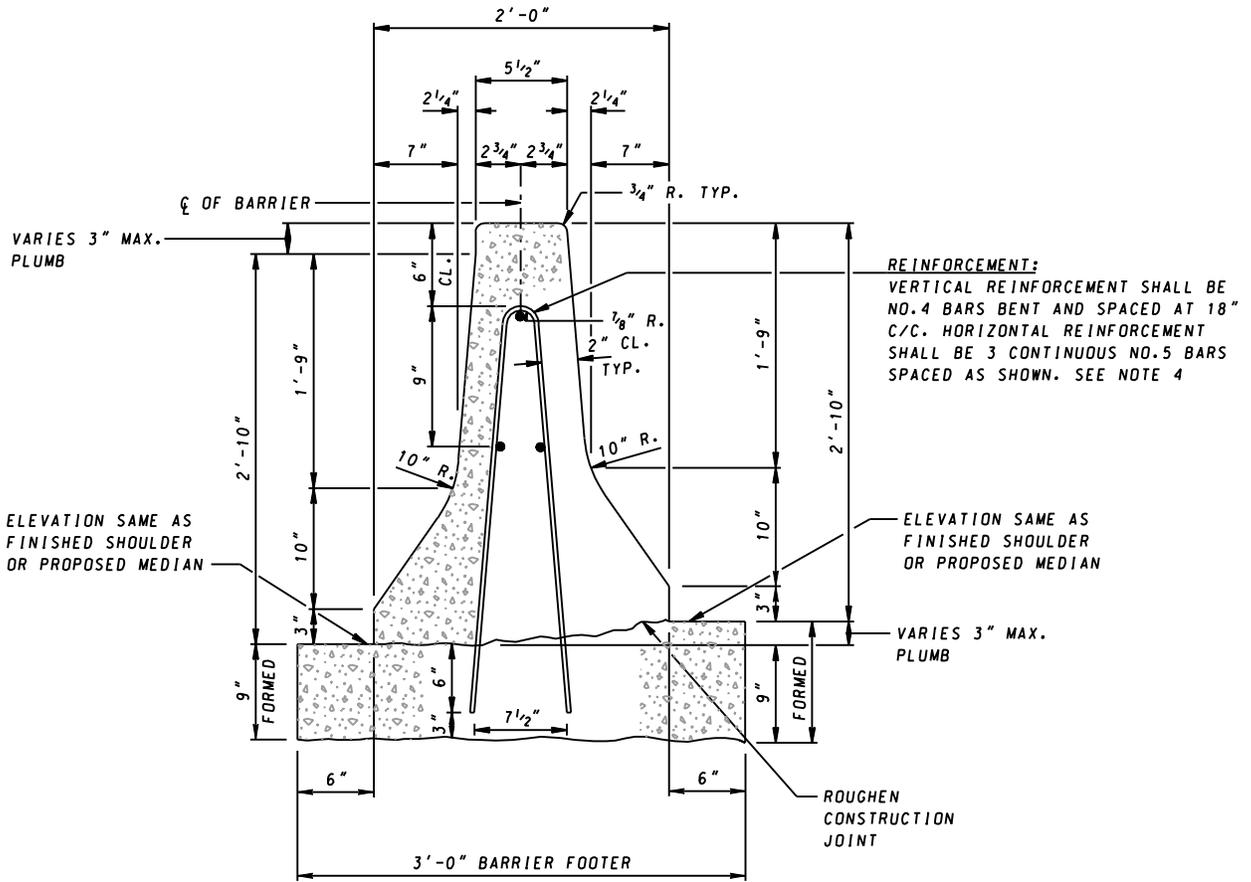
JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
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Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE A

STANDARD NO. MD 648.12



TYPICAL SECTION

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE THE FOOTER AND BARRIER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.
2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) CONTINUOUSLY PLACED.
3. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF REQUIRED, SHALL BE REMOVED BEFORE PLACING PAVEMENT.
4. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD EXTRA DIAGONAL NO. 4 REINFORCEMENT BARS ARE REQUIRED. SEE STD. MD 648.15 FOR THE DIAGONAL BAR ARRANGEMENT DETAILS.
5. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.
6. SPACING OF CONTRACTION JOINTS SHALL BE 30 FEET REGARDLESS OF CONSTRUCTION METHOD.
7. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE B.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

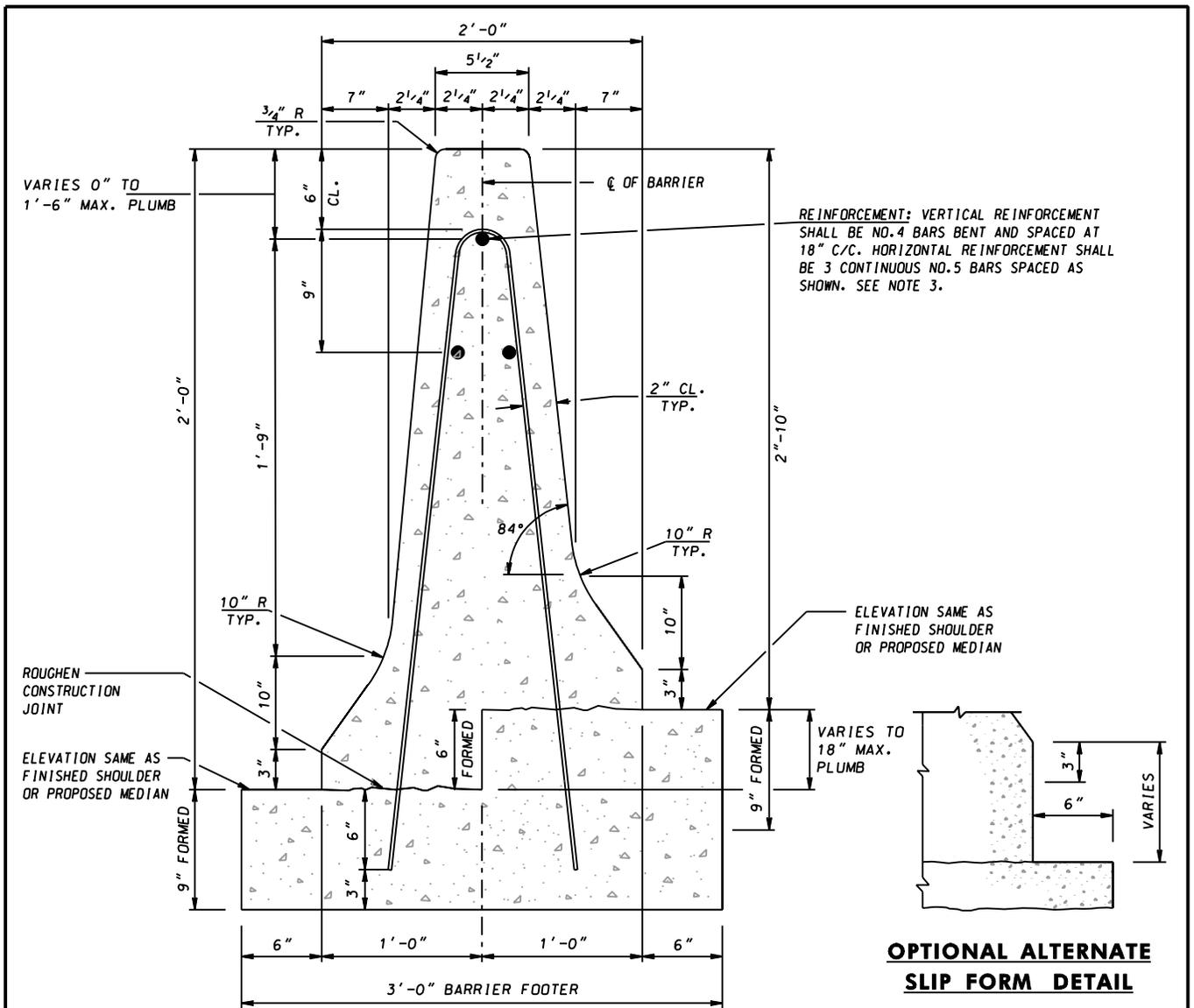
JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISION 10-1-01
	REVISION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**CONCRETE JERSEY SHAPE MEDIAN
 TRAFFIC BARRIER TYPE B**

STANDARD NO. MD 648.13



NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE OF THE FOOTER AND BARRIER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.
2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) CONTINUOUSLY PLACED.
3. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF REQUIRED, SHALL BE REMOVED BEFORE PALCING PAVEMENT.
4. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD EXTRA DIAGONAL NO.4 REINFORCEMENT BARS ARE REQUIRED. SEE STD. MD 648.15 FOR THE DIAGONAL BAR ARRANGEMENT DETAILS.
5. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.
6. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
7. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE C.
8. WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ALL REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE C.
9. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4"

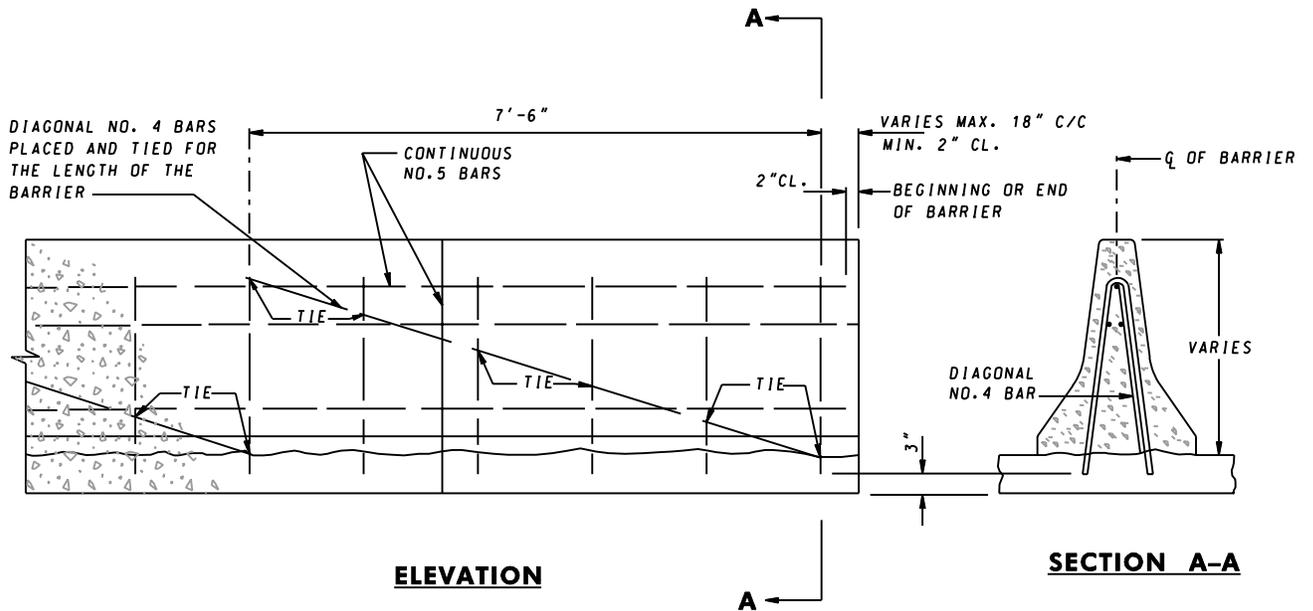
JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE C

STANDARD NO. MD 648.14



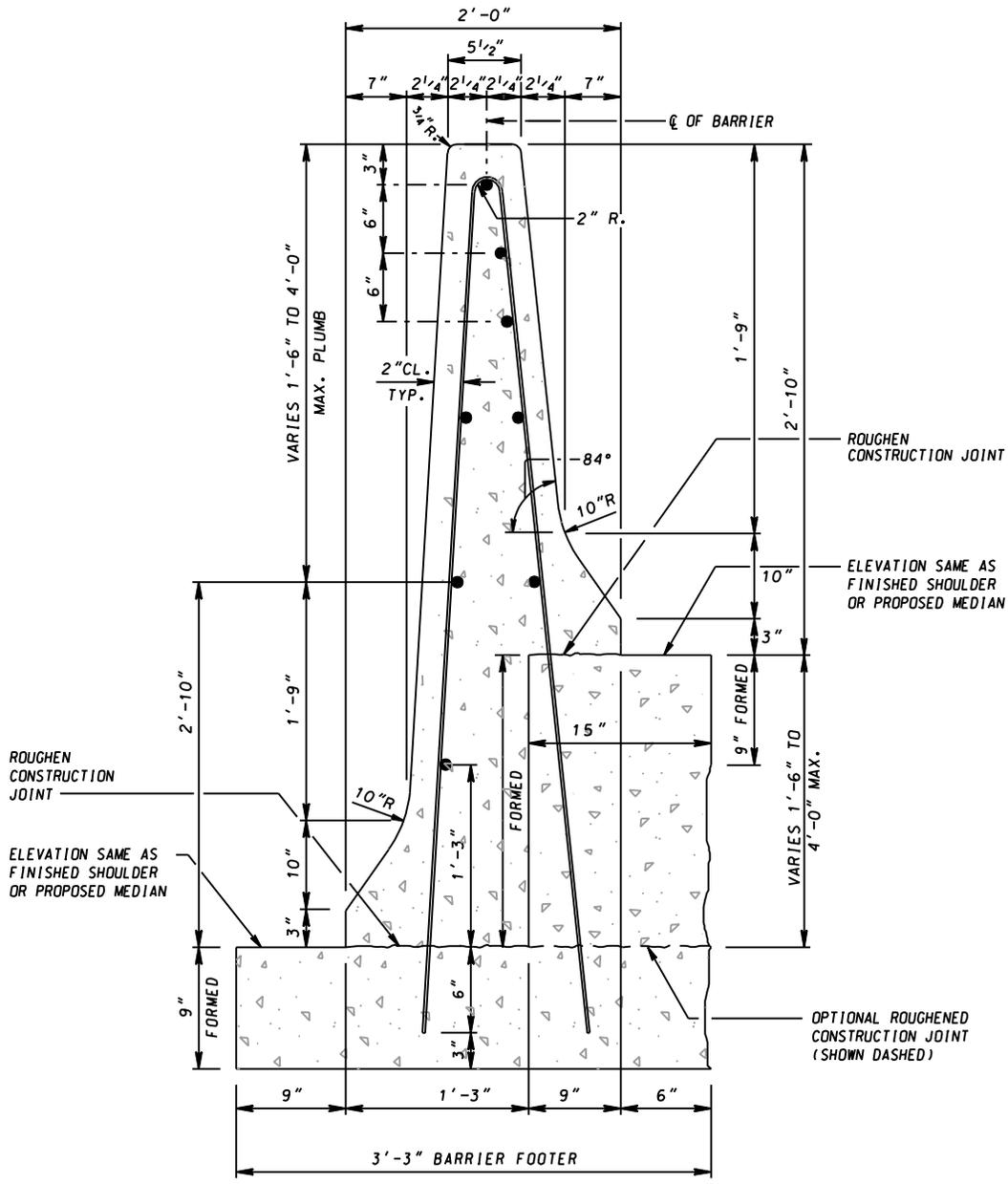
DIAGONAL BAR DETAILS

NOTES

1. APPLICABLE TO SLIP FORM CONSTRUCTION METHOD ONLY.
2. FOR BARRIER TYPES A, B & C AND BARRIERS CONSTRUCTED ON EXISTING RIGID PAVEMENT.
3. DIAGONAL NO. 4 BARS SHALL BE GRADE 40.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES DIAGONAL BAR LOCATION FOR CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER STANDARD NO. MD 648.15	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS APPROVAL 7-16-90 REVISED 10-1-01 REVISED REVISED		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 7-31-90 REVISED 3-28-01 REVISED REVISED



TYPICAL SECTION

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING CONCRETE MIX NO.6 (4500 PSI). MONOLITHIC PLACEMENT NOT PERMITTED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. FOOTER FORM SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER.
4. COST OF CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE D.
5. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

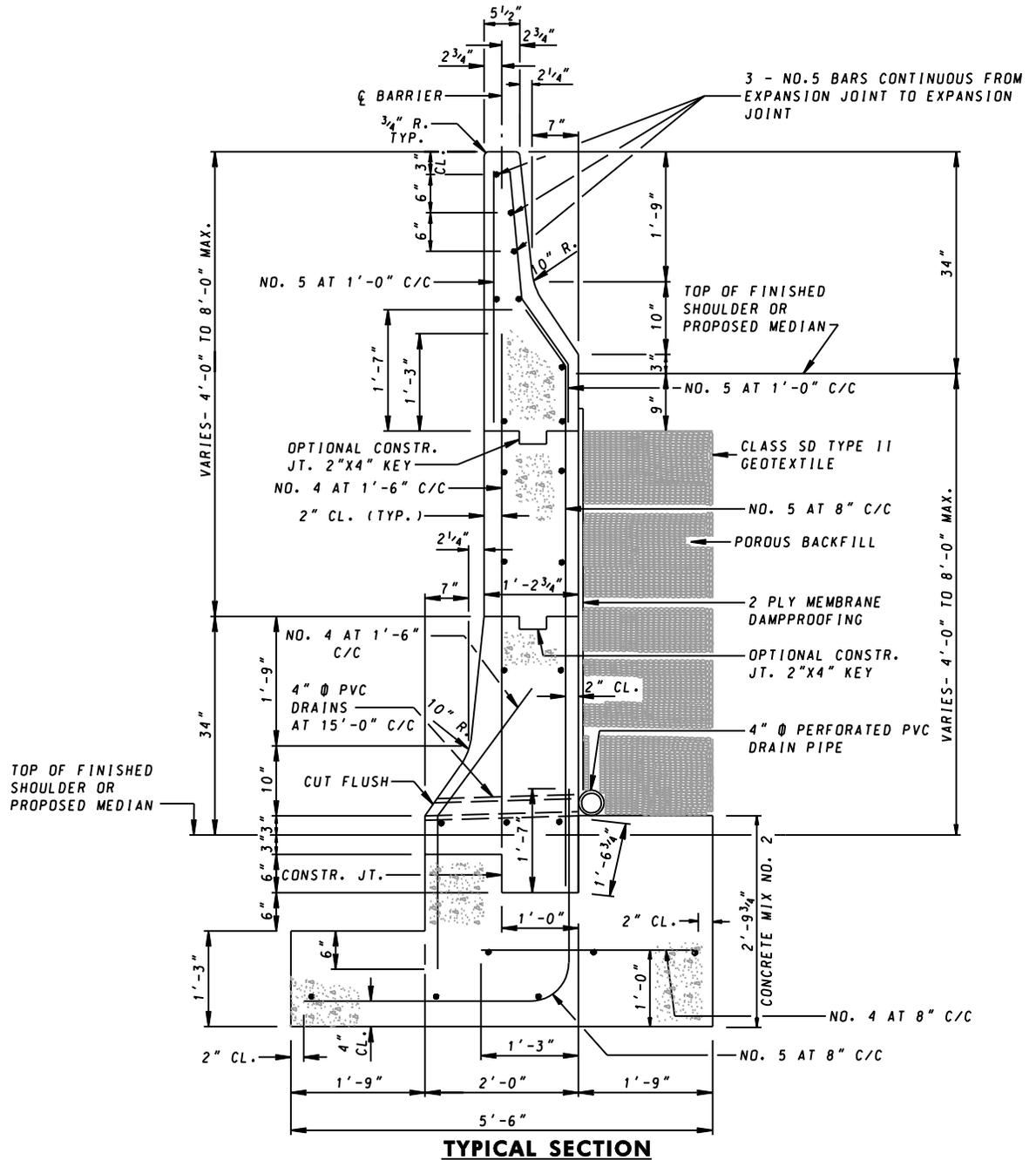
JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 7-16-90
	REVISED 10-1-01
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE D

STANDARD NO. MD 648.20



NOTES

1. BARRIER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI) AND THE FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.2 (3000 PSI). BARRIER AND FOOTER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.
2. ALL LONGITUDINAL BARS SHOWN WITHOUT SIZE SPECIFIED SHALL BE NO.4 BARS AT 1'-6" C/C.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615, GRADE 60.
4. SEE STANDARD NO. MD 648.26 FOR CONTRACTION AND EXPANSION JOINTS.
5. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, DRAINAGE APPURTENANCES, JOINT MATERIAL, EXCAVATION, GEOTEXTILE AND BACKFILLING SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE E.
6. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

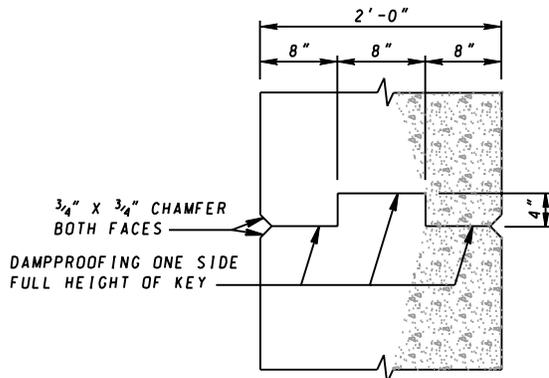
JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
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	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-16-90
	REVISD 2-10-04
	REVISD

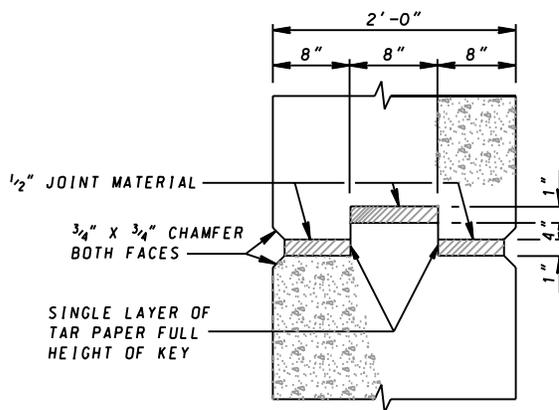
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE E

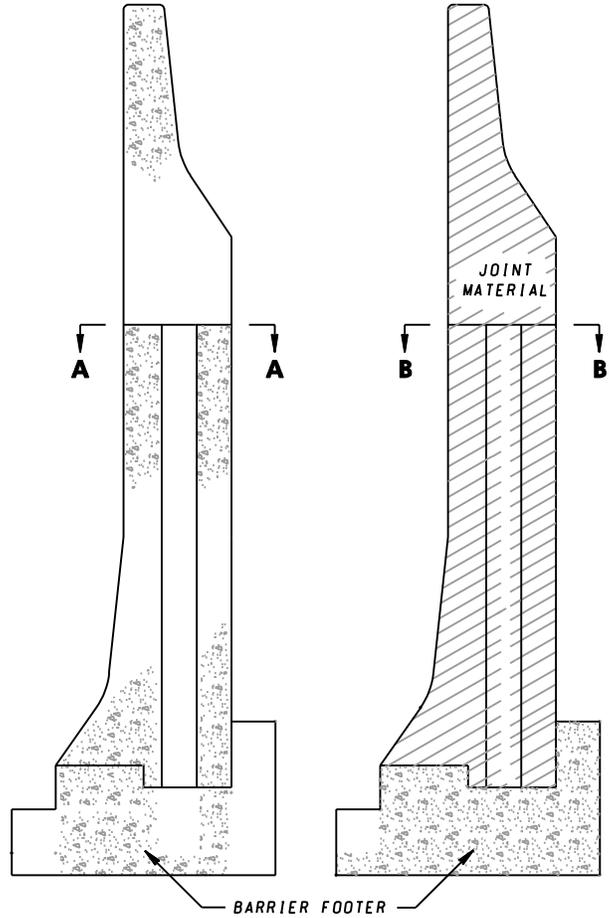
STANDARD NO. MD 648.24



CONTRACTION JOINT
PLAN VIEW SECTION A-A



EXPANSION JOINT
PLAN VIEW SECTION B-B



TYPICAL SECTION
CONTRACTION JOINT

TYPICAL SECTION
EXPANSION JOINT

NOTES

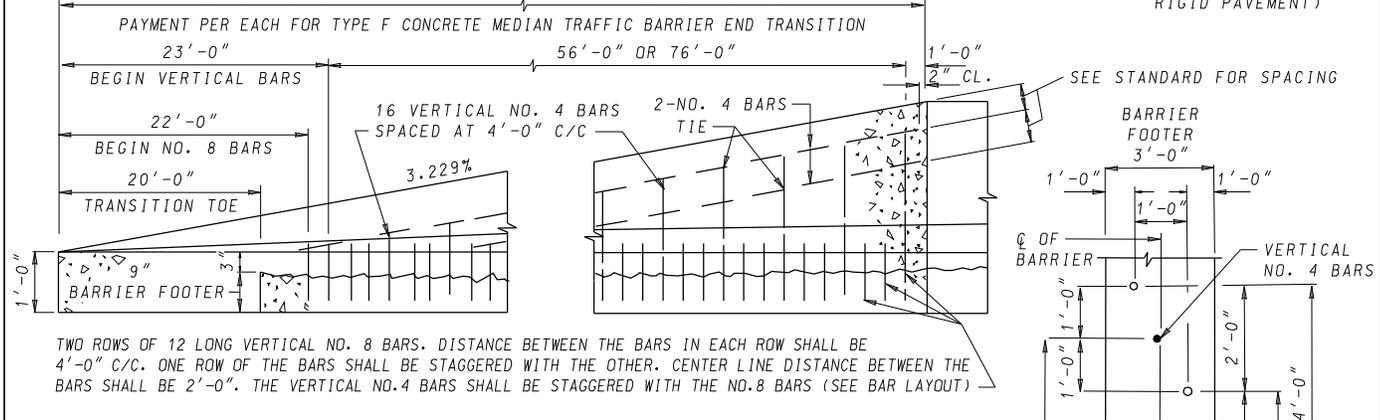
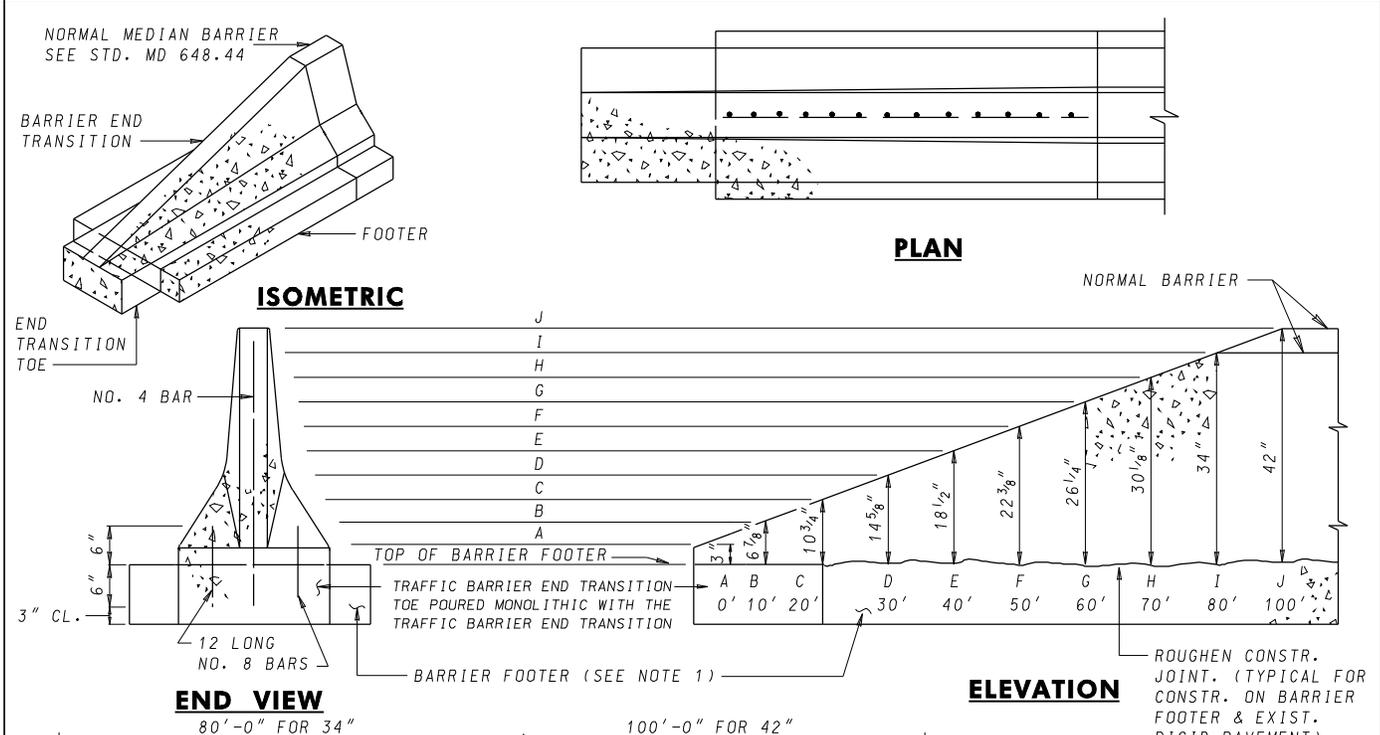
1. EXPANSION JOINTS SHALL BE PLACED AT THE END OF EACH DAYS CONCRETE PLACEMENT REGARDLESS OF LENGTH AND REGARDLESS OF THE CONSTRUCTION METHOD.
2. HORIZONTAL REINFORCEMENT SHALL NOT PASS THROUGH CONTRACTION OR EXPANSION JOINTS.
3. SEE STANDARD NO 648.24 FOR DETAILS OF CONCRETE MEDIAN TRAFFIC BARRIER TYPE E.
4. JOINT MATERIAL SHALL BE HELD IN PLACE BY NAILS, WATERPROOF ADHESIVE OR OTHER MEANS, AS APPROVED BY THE ENGINEER.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION 604	CATEGORY CODE ITEMS		
APPROVED	<i>Kirk G. McCall</i>	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
	APPROVAL 7-16-90	APPROVAL 7-31-90	
	REVISED 10-1-01	REVISED 3-28-01	
	REVISED	REVISED	
	REVISED	REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE MEDIAN TRAFFIC
BARRIER TYPE E CONTRACTION
AND EXPANSION JOINTS

STANDARD NO. MD 648.26



TWO ROWS OF 12 LONG VERTICAL NO. 8 BARS. DISTANCE BETWEEN THE BARS IN EACH ROW SHALL BE 4'-0" C/C. ONE ROW OF THE BARS SHALL BE STAGGERED WITH THE OTHER. CENTER LINE DISTANCE BETWEEN THE BARS SHALL BE 2'-0". THE VERTICAL NO.4 BARS SHALL BE STAGGERED WITH THE NO.8 BARS (SEE BAR LAYOUT)

NOTES

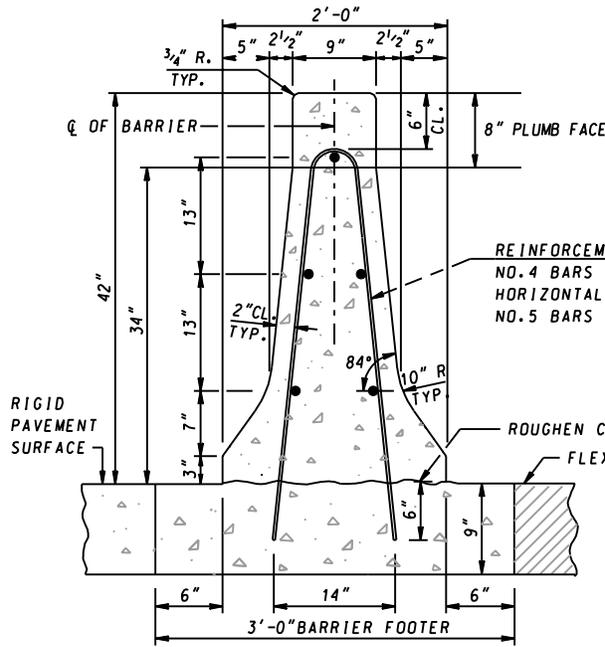
REINFORCEMENT STEEL DETAILS

1. THE TRAFFIC BARRIER END TRANSITION SHALL BE CONSTRUCTED USING THE FIXED FORM METHOD. NO FOOTER IS REQUIRED WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT. BARRIER AND FOOTER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED. SEE STD. MD 648.44 FOR BARRIER FOOTER DETAILS.
2. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI).
3. ALL REINFORCEMENT BARS, INCLUDING ENDS AND TIES, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER.
4. THIS TRAFFIC BARRIER END TRANSITION IS PROHIBITED WHEN THE DESIGN SPEED IS 45 MPH OR GREATER. THE ENGINEER MUST DETERMINE THE TYPE OF END TREATMENT FOR DESIGN SPEEDS OVER 45 MPH.
5. COST OF THE CONCRETE BARRIER FOOTER (IF REQUIRED) SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR THE 34 INCH OR 42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER END TRANSITION.
6. WHEN THE BARRIER END TRANSITION IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ROUGHENING THE PAVEMENT SURFACE, EXCAVATION FOR TRANSITION TOE, REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR THE ITEM SPECIFIED IN NOTE 5.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

**PLAN VIEW
END TRANSITION
BAR LAYOUT**

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i>	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-1-01
	REVISED 11-08-06
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-28-01
REVISED 10-25-06	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER END TRANSITION
STANDARD NO. MD 648.33-04



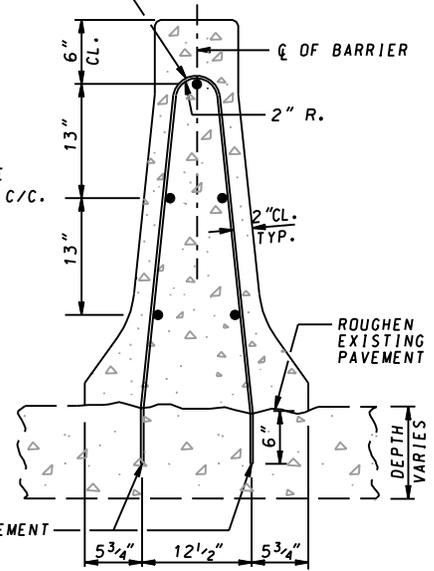
RIGID PAVING
(HALF SECTION)

FLEXIBLE PAVING
(HALF SECTION, SEE NOTE 9)

NEW CONSTRUCTION
(OR CONSTRUCTION ON EXISTING FLEXIBLE PAVEMENT)

REINFORCEMENT: VERTICAL SHALL BE NO. 4 BARS BENT. THE 6" LENGTH OF ENDS BENT VERTICALLY PLUMB TO ACHIEVE 12 1/2". THE BARS SHALL BE SPACED AT 18" C/C. HORIZONTAL SHALL BE 5 CONTINUOUS NO.5 BARS SPACED AS SHOWN. SEE NOTE 3.

REINFORCEMENT: VERTICAL SHALL BE NO.4 BARS BENT AND SPACED AT 18" C/C. HORIZONTAL SHALL BE 5 CONTINUOUS NO.5 BARS SPACED AS SHOWN.



CONSTRUCTION ON EXISTING RIGID PAVEMENT
(BARRIER FOOTER IS REQUIRED FOR EXISTING FLEXIBLE PAVEMENT)

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO.6 (4500 PSI).
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF USED, SHALL BE REMOVED IF THE BARRIER AND FOOTER ARE CONSTRUCTED BEFORE THE PAVEMENT.
3. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO. 4 REINFORCEMENT BARS ARE REQUIRED. SEE STD. NO. 648.44-04.
4. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL REINFORCEMENT BARS SHALL BE ASTM A 615, GRADE 60.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER.
7. WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ALL REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4"
9. WHEN THE BARRIER IS TO BE CONSTRUCTED ON EXISTING FLEXIBLE PAVEMENT THE PAVEMENT SHALL BE SAW CUT FULL DEPTH. THE WIDTH FOR THE CONCRETE FOOTER SHALL BE AS INDICATED. THE COST FOR ALL SAW CUTS, PAVEMENT REMOVAL, AND ALL INCIDENTALS AND LABOR SHALL BE INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.

SPECIFICATION 604	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

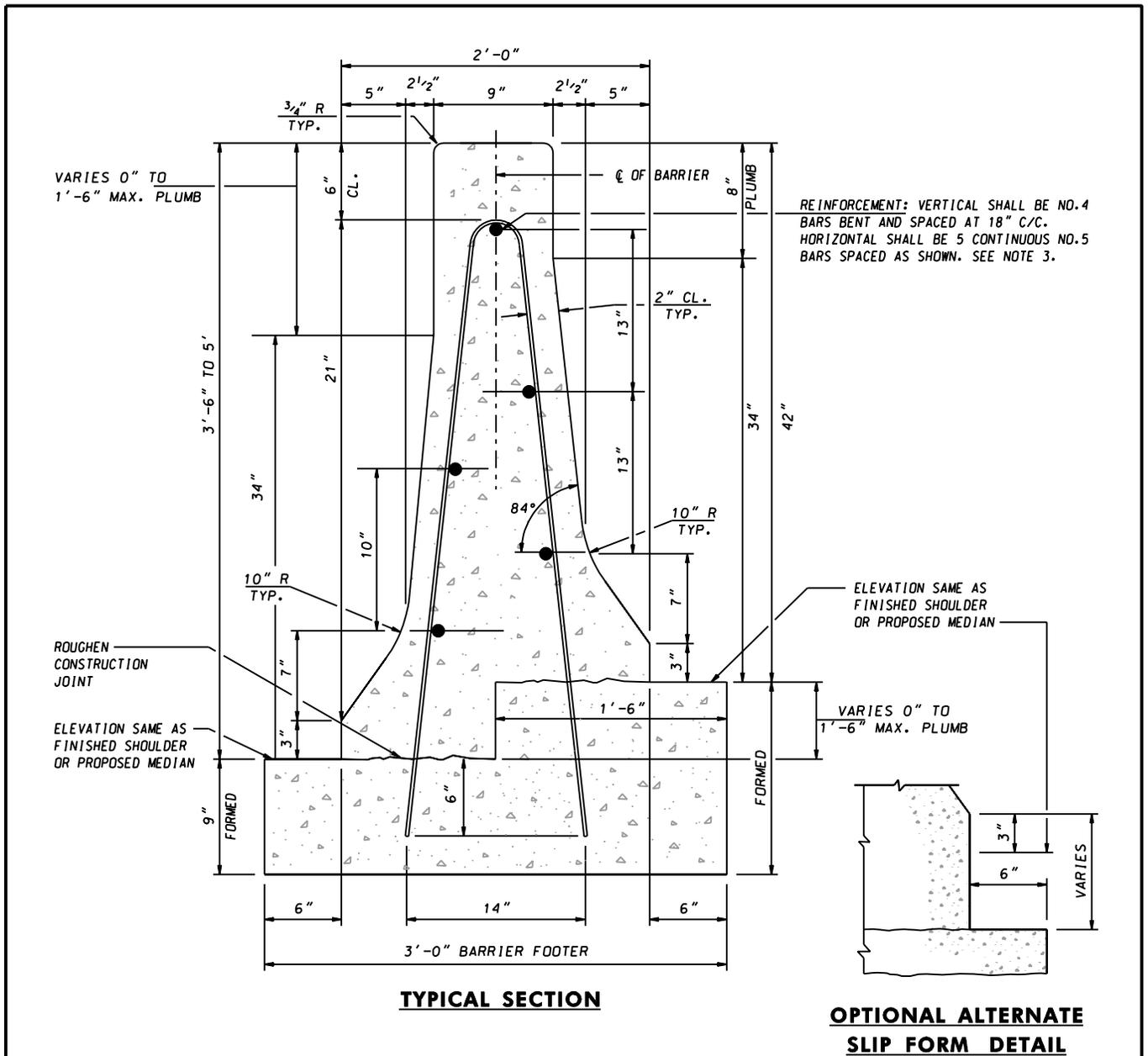


APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 3-1-01	APPROVAL 3-28-01
REVISED 2-10-04	REVISED 3-31-04
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER

STANDARD NO. MD 648.44

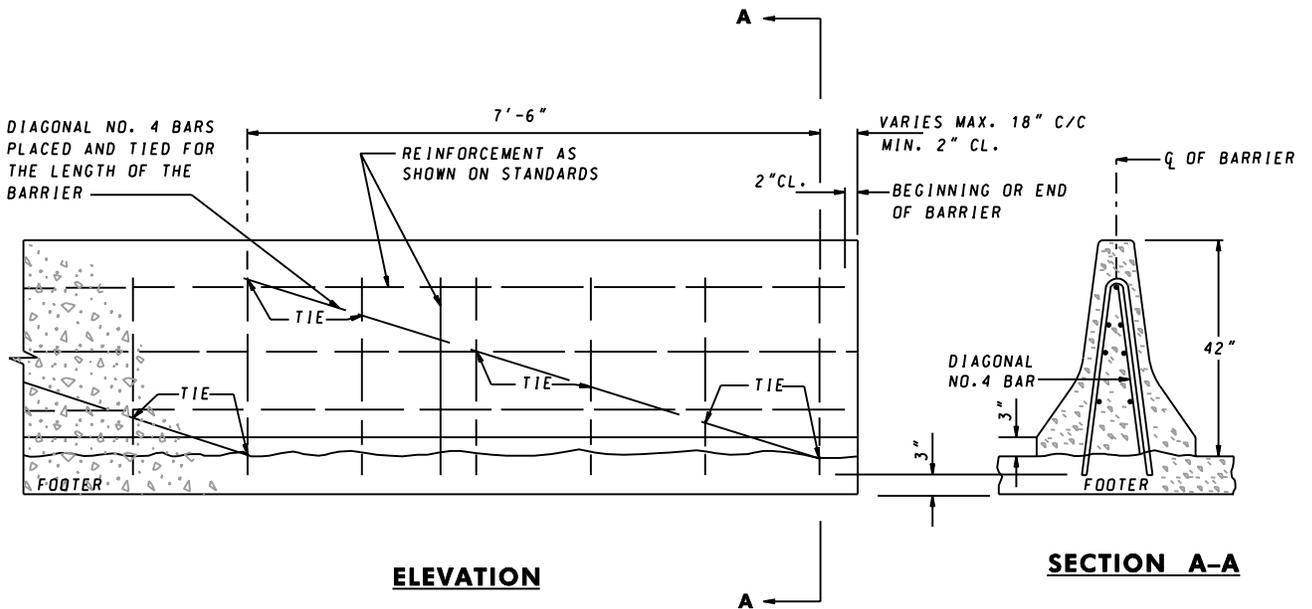


NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 (4500 PSI).
2. THE BARRIER FOOTER AND BARRIER FORMS SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO. 4 REINFORCEMENT BARS ARE REQUIRED. SEE STD. MD 648.44-04.
4. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL REINFORCEMENT BARS SHALL BE ASTM A 615, GRADE 60.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 0 INCHES TO 1 FOOT 6 INCHES.
7. WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ALL REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE PRICE BID PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4"

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-1-01
	APPROVAL 3-28-01
REVISED 2-10-04	REVISED 3-31-04
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE MEDIAN
TRAFFIC BARRIER BIFURCATED
0 INCH TO 1 FOOT 6 INCHES
STANDARD NO. MD 648.44-01

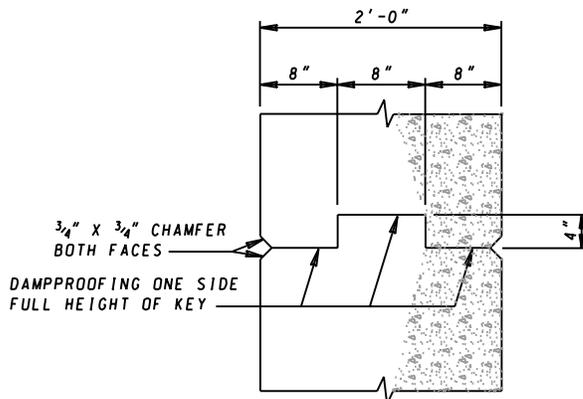


DIAGONAL BAR DETAILS

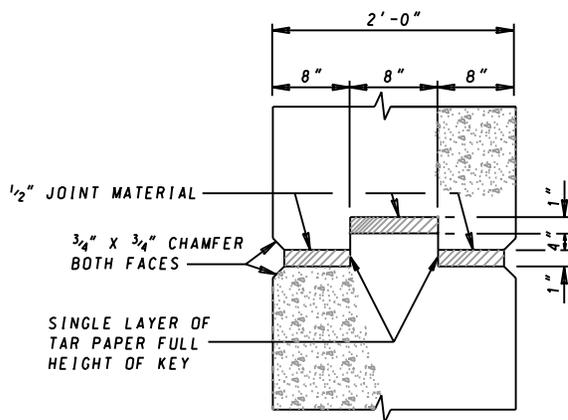
NOTES

1. APPLICABLE TO SLIP FORM CONSTRUCTION METHOD ONLY.
2. REFER TO STANDARDS FOR SPACING OF VERTICAL AND HORIZONTAL REINFORCEMENT.
3. DIAGONAL NO.4 BARS SHALL BE ASTM A 615, GRADE 60.
4. ALL REINFORCEMENT BARS, INCLUDING ENDS AND TIES, SHALL BE EPOXY COATED.

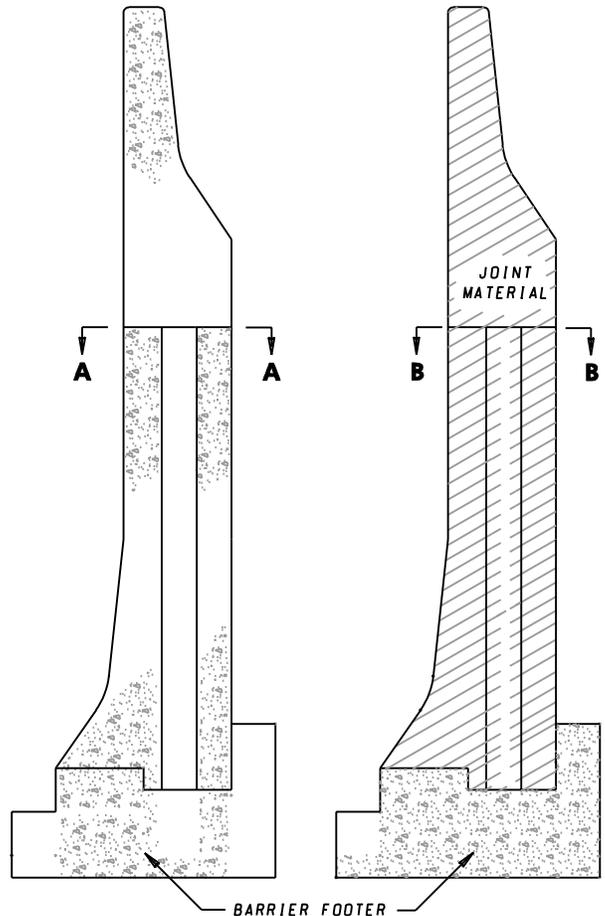
SPECIFICATION 604	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES DIAGONAL BAR FOR ALL SLIP FORMED F SHAPE DOUBLE FACED CONCRETE MEDIAN TRAFFIC BARRIER	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-1-01		APPROVAL 3-28-01
	REVISED 2-10-04	REVISED 3-31-04	
	REVISED	REVISED	
	REVISED	REVISED	
STANDARD NO. MD 648.44-04			



CONTRACTION JOINT
PLAN VIEW SECTION A-A



EXPANSION JOINT
PLAN VIEW SECTION B-B



TYPICAL SECTION
CONTRACTION JOINT

TYPICAL SECTION
EXPANSION JOINT

NOTES

1. EXPANSION JOINTS SHALL BE PLACED AT THE END OF EACH DAYS CONCRETE PLACEMENT REGARDLESS OF LENGTH AND REGARDLESS OF THE CONSTRUCTION METHOD.
2. HORIZONTAL REINFORCEMENT SHALL NOT PASS THROUGH CONTRACTION OR EXPANSION JOINTS.
3. SEE STANDARD NO 648.44-03 FOR 42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 4 FEET 0 INCHES TO 8 FEET 0 INCHES.
4. JOINT MATERIAL SHALL BE HELD IN PLACE BY NAILS, WATERPROOF ADHESIVE OR OTHER MEANS, AS APPROVED BY THE ENGINEER.

SPECIFICATION 604	CATEGORY CODE ITEMS
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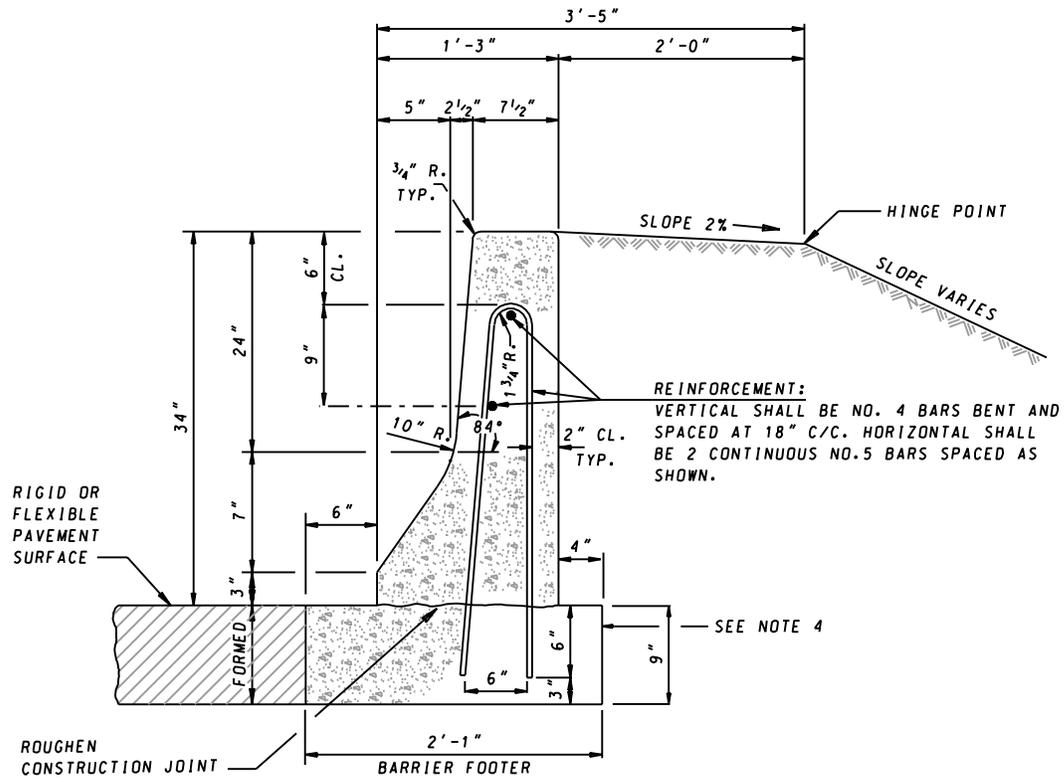
APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT



APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 3-1-01	APPROVAL 3-28-01
REVISED 10-1-01	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 4 FEET 0 INCHES TO 8 FEET 0 INCHES CONTRACTION AND EXPANSION JOINTS

STANDARD NO. MD 648.44-05



TYPICAL SECTION

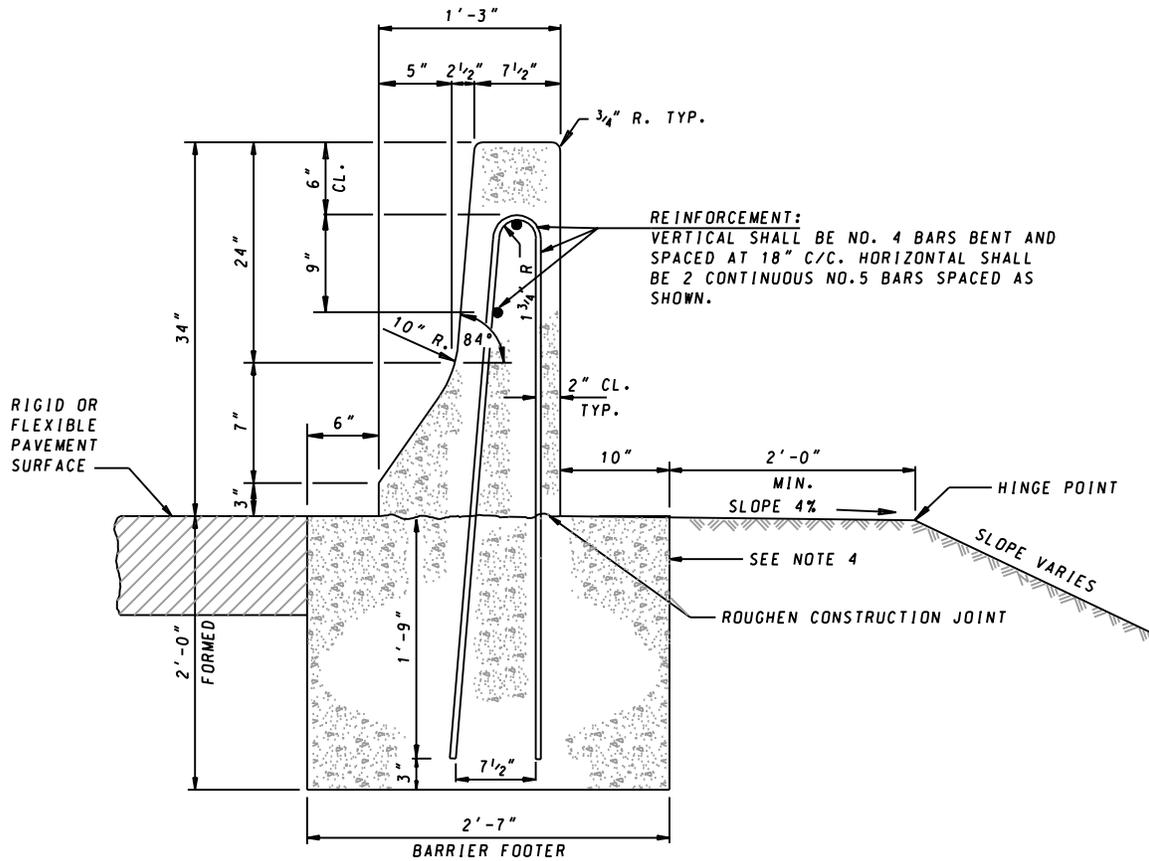
TO BE USED WITH EARTH BACKING AT THE TOP OF FILL SLOPES.
 (SEE STD. MD 648.46 FOR 34" TYPE F CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 FREE STANDING AT TOP OF FILL SLOPES)
 (SEE STD. MD 648.47 FOR 34" TYPE F CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS A RETAINING WALL)

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. THE FOOTER REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1. FILL MATERIAL IN BACK OF THE BARRIER IS INCLUDED IN THE EMBANKMENT QUANTITY.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FROM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 3-1-01
	REVISED 8-12-02
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 3-28-01	
REVISED	
REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH F SHAPE
CONCRETE TRAFFIC BARRIER SINGLE FACE
TYPE 1 (WITH EARTH BACKING IN FILL)
STANDARD NO. MD 648.45



TYPICAL SECTION

TO BE USED WHEN THE BARRIER IS FREE STANDING (NO BACKING) AT THE TOP OF FILL SLOPES.
 (SEE STD. MD 648.45 FOR 34" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES)
 (SEE STD. MD 648.47 FOR 34" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS A RETAINING WALL)

NOTES

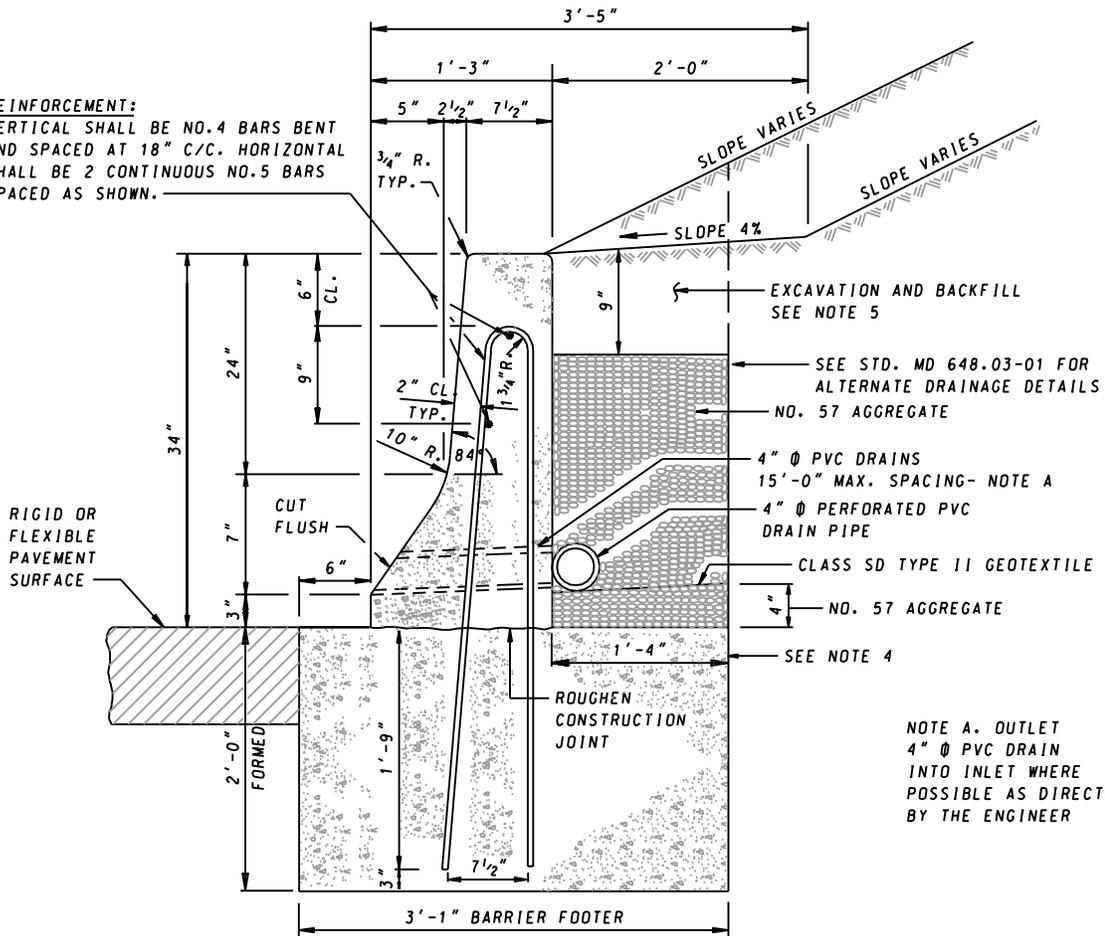
1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF USED, SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. THE REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.
5. SPACING OF CONSTRUCTION JOINTS SHALL BE 20 FEET REGARDLESS OF THE CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-1-01
	REVISION 8-12-02
REVISION	REVISION
REVISION	REVISION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH F SHAPE
CONCRETE TRAFFIC BARRIER SINGLE FACE
TYPE 2 (FREE STANDING IN FILL)

STANDARD NO. MD 648.46

REINFORCEMENT:
 VERTICAL SHALL BE NO.4 BARS BENT
 AND SPACED AT 18" C/C. HORIZONTAL
 SHALL BE 2 CONTINUOUS NO.5 BARS
 SPACED AS SHOWN.



TYPICAL SECTION

TO BE USED WHEN THE BARRIER IS FUNCTIONING AS A RETAINING WALL AT THE BOTTOM OF THE CUT OR FILL SLOPES.
 (SEE STD. MD 648.45 FOR 34" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES)
 (SEE STD. MD 648.46 FOR 34" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 FREE STANDING AT TOP OF FILL SLOPES)

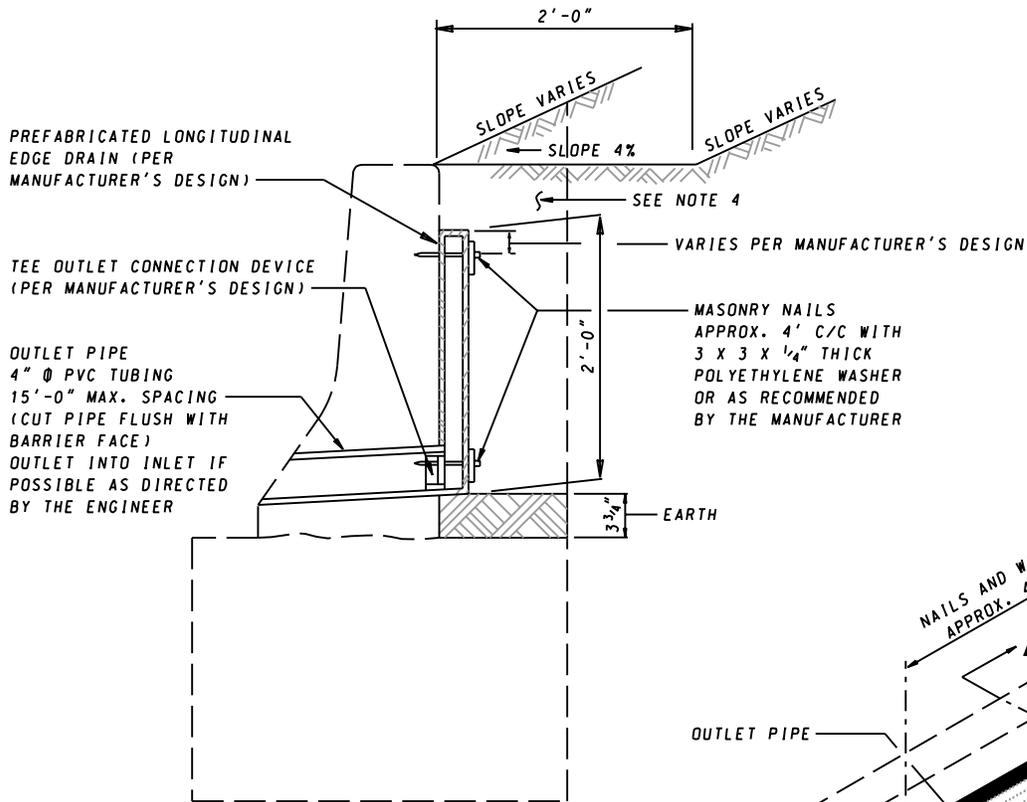
NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF USED, SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. THE REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.
5. LIMITS OF EXCAVATION: WHEN THE BARRIER IS AT THE BOTTOM OF A CUT SLOPE THE EXCAVATION LIMITS SHALL BE THE LINES INDICATING THE BARRIER FOOTER AND A VERTICAL LINE EXTENDING FROM THE HEEL OF THE FOOTER TO ITS INTERSECTION WITH THE CUT SLOPE. WHEN THE BARRIER IS AT THE TOE OF A FILL SLOPE THE EXCAVATION LIMITS SHALL BE THE LINES INDICATING THE BARRIER FOOTER.
6. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF THE CONSTRUCTION METHOD.
7. COST OF THE CONCRETE FOOTER (FORMED OR NON-FORMED), REINFORCEMENT, DRAINAGE APPURTENANCES, EXCAVATION, GEOTEXTILE, AND BACKFILLING USING SELECT BORROW SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
9. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50.
10. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

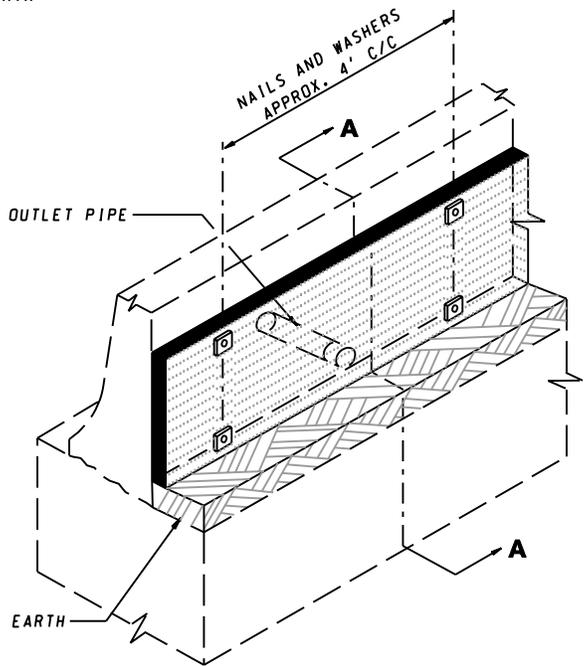
SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL 3-1-01
	REVISED 2-10-04
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 3-28-01	
REVISED 3-31-04	
REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH F SHAPE
CONCRETE TRAFFIC BARRIER SINGLE FACE
TYPE 3 (BOTTOM OF CUT OR TOE OF FILL)

STANDARD NO. MD 648.47



SECTION A-A
(THROUGH CENTER OF OUTLET PIPE)



ISOMETRIC

NOTES

1. THE PREFABRICATED LONGITUDINAL EDGE DRAIN MAY BE USED AS AN ALTERNATE DRAINAGE SYSTEM IN LIEU OF THE DRAINAGE SHOWN ON STD. MD 648.47 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL).
2. COST OF THE PREFABRICATED LONGITUDINAL EDGE DRAIN IS INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM IN NOTE 7 STD. MD 648.47.
3. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
4. FOR LIMITS OF EXCAVATION REFER TO STD. MD 648.47 NOTE 5.

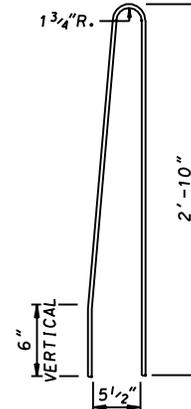
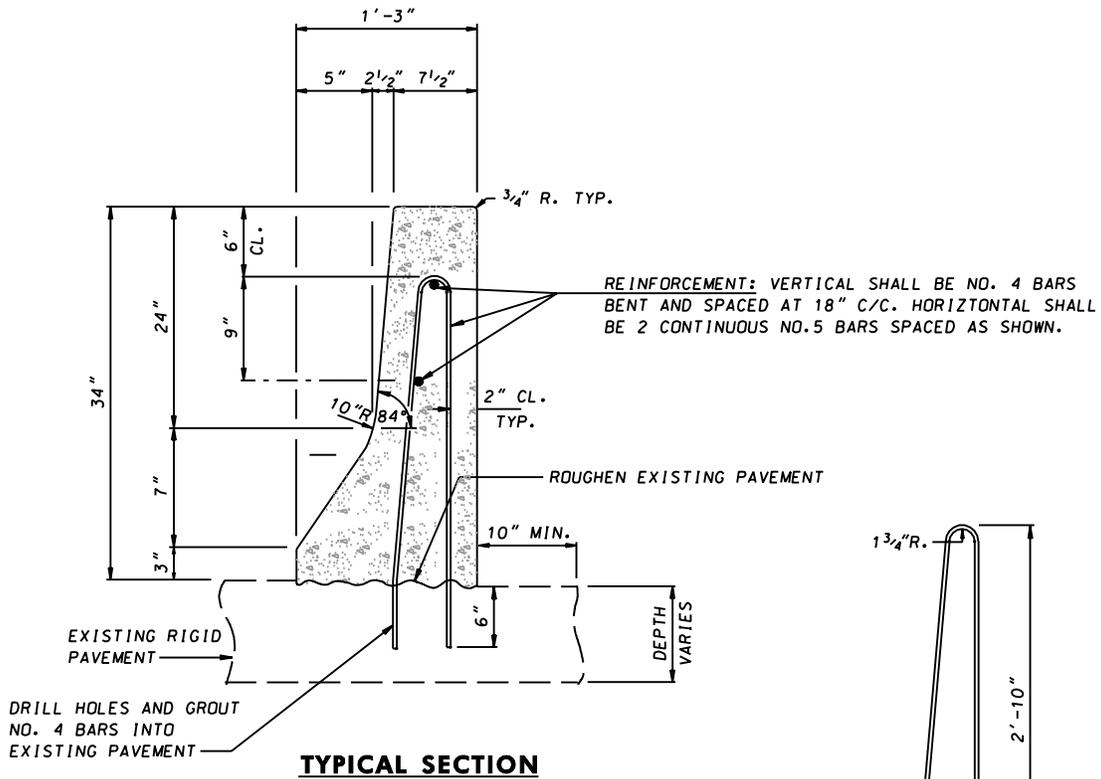
SPECIFICATION 604	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-1-01	APPROVAL 3-28-01
	REVISED 10-1-01	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
ALTERNATE PREFABRICATED LONGITUDINAL EDGE DRAIN FOR 34 INCH OR 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3

STANDARD NO. MD 648.47-01



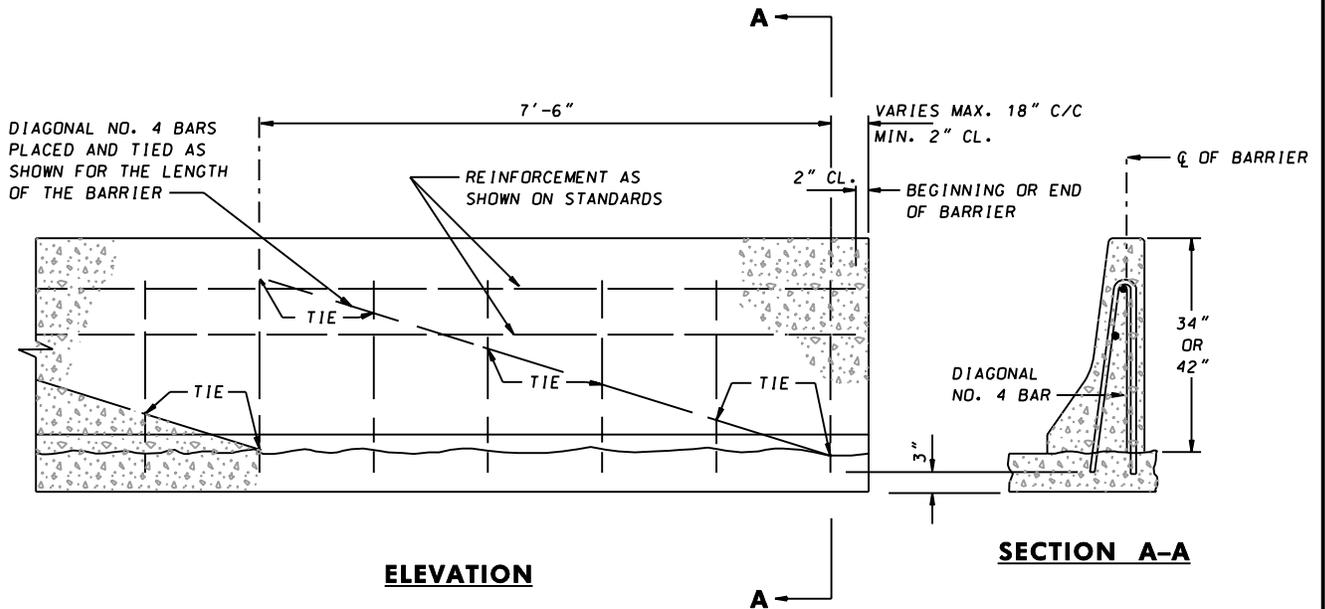
NOTES

1. THE BARRIER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE BARRIER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
5. COST OF LABOR, ALL REINFORCEMENT, DRILLED HOLES, GROUT, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT.
6. TO BE USED AS FREE STANDING BARRIER ONLY (NO BACKING).
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-1-01
	REVISED 8-12-02
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-28-01
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT

STANDARD NO. MD 648.48

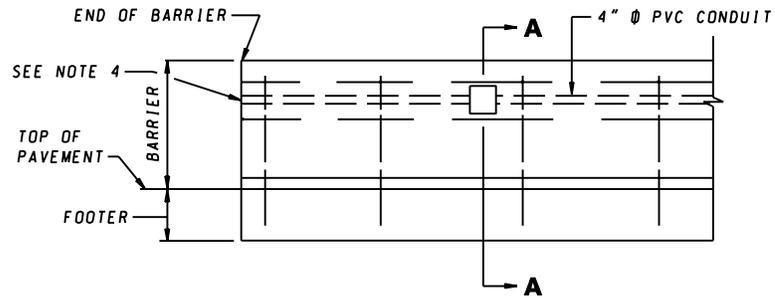


DIAGONAL BAR DETAILS

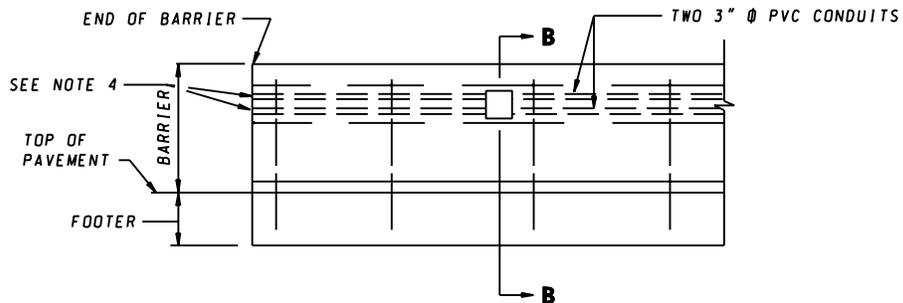
NOTES

1. APPLICABLE TO SLIP FORM CONSTRUCTION METHOD ONLY.
2. FOR BARRIER TYPES 1, 2, 3 AND BARRIERS CONSTRUCTED ON EXISTING RIGID PAVEMENT.
3. DIAGONAL NO.4 BARS SHALL BE ASTM A 615 GRADE 60.
4. ALL REINFORCEMENT BARS INCLUDING ENDS AND TIES SHALL BE EPOXY COATED.
5. REFER TO STANDARDS FOR SPACING OF VERTICAL AND HORIZONTAL REINFORCEMENT.

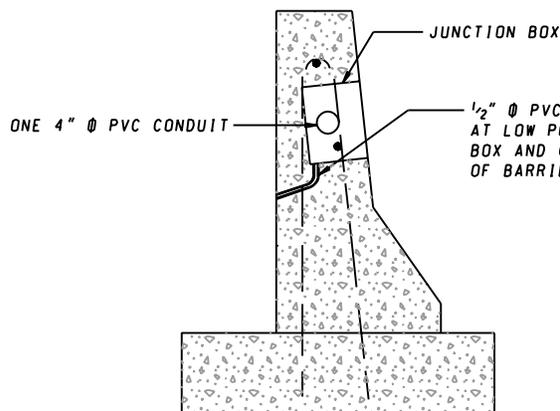
SPECIFICATION 604	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES DIAGONAL BAR FOR SLIP FORMED 34 INCH OR 42 INCH F SHAPE SINGLE FACE CONCRETE TRAFFIC BARRIER STANDARD NO. MD 648.49
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
 SHA State Highway Administration	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-1-01	APPROVAL 3-28-01
	REVISED 10-1-01	REVISED
	REVISED	REVISED



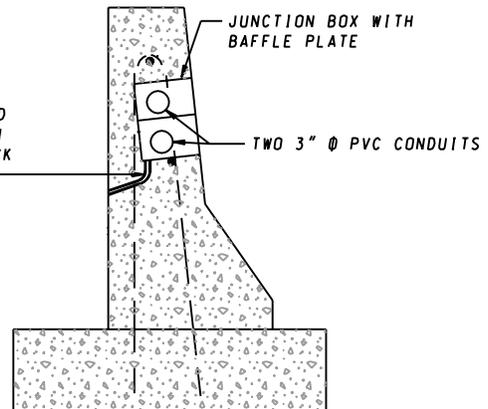
ELEVATION
(SINGLE CONDUIT)



ELEVATION
(DOUBLE CONDUIT)



SECTION A-A
SINGLE CONDUIT



SECTION B-B
DOUBLE CONDUIT

NOTES

1. THE JUNCTION BOXES SHALL BE LOCATED EVERY 750 FEET OR AS DIRECTED BY THE ENGINEER.
2. THE COST OF THE CONDUITS, JUNCTION BOXES, AND ALL APPURTENANCES SHALL BE INCLUDED IN THE COST OF THE BARRIER UNLESS OTHERWISE SPECIFIED.
3. IN INSTANCES WHERE THE BARRIER CONNECTS TO A BRIDGE PARAPET CONTAINING CONDUIT SHALL ALIGN.
4. CAP CONDUIT, COVER WITH 1" CONCRETE AND MARK FOR FUTURE REFERENCE, OR PROVIDE END TREATMENT AS DIRECTED BY THE ENGINEER OR AS SHOWN ON THE PLANS.
5. REFER TO SECTION 805 FOR CONDUIT, ETC.

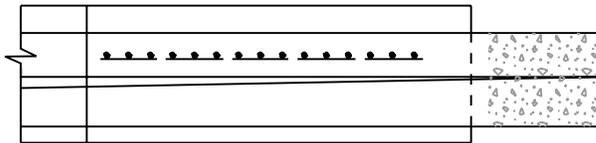
SPECIFICATION 604	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

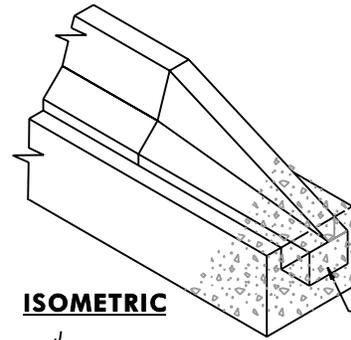


APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 3-1-01	APPROVAL 3-28-01
REVISED 10-1-01	REVISED
REVISED	REVISED
REVISED	REVISED

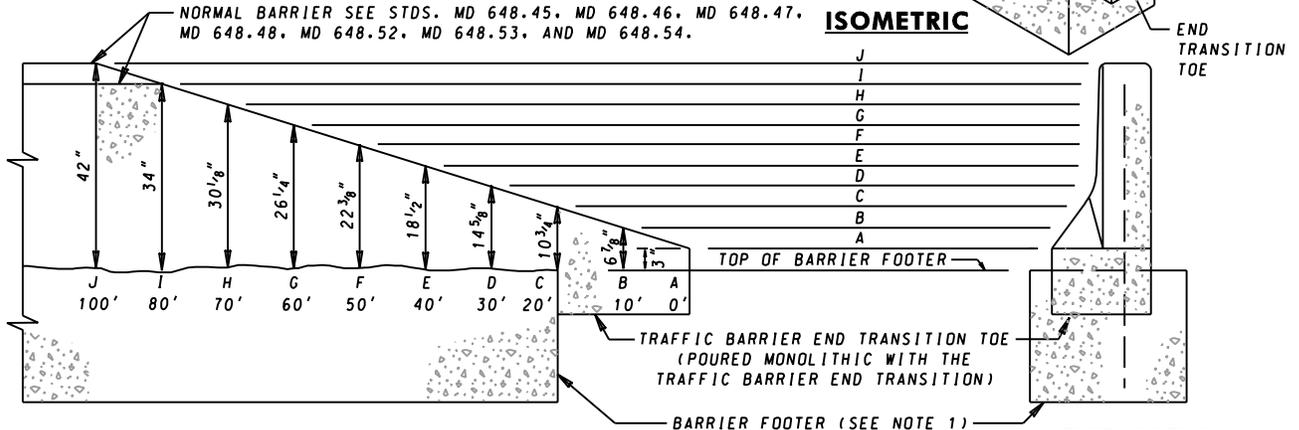
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONDUIT AND JUNCTION BOX LOCATION FOR
34 INCH AND 42 INCH F SHAPE CONCRETE
TRAFFIC BARRIER SINGLE FACE
STANDARD NO. MD 648.50



PLAN



ISOMETRIC

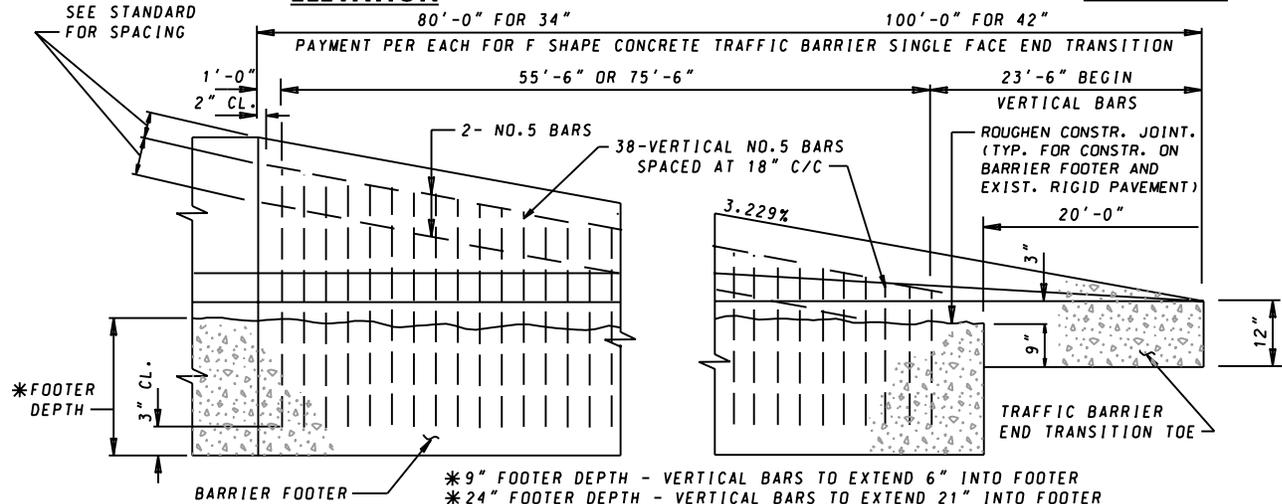


NORMAL BARRIER SEE STDS. MD 648.45, MD 648.46, MD 648.47, MD 648.48, MD 648.52, MD 648.53, AND MD 648.54.

END TRANSITION TOE

ELEVATION

END VIEW



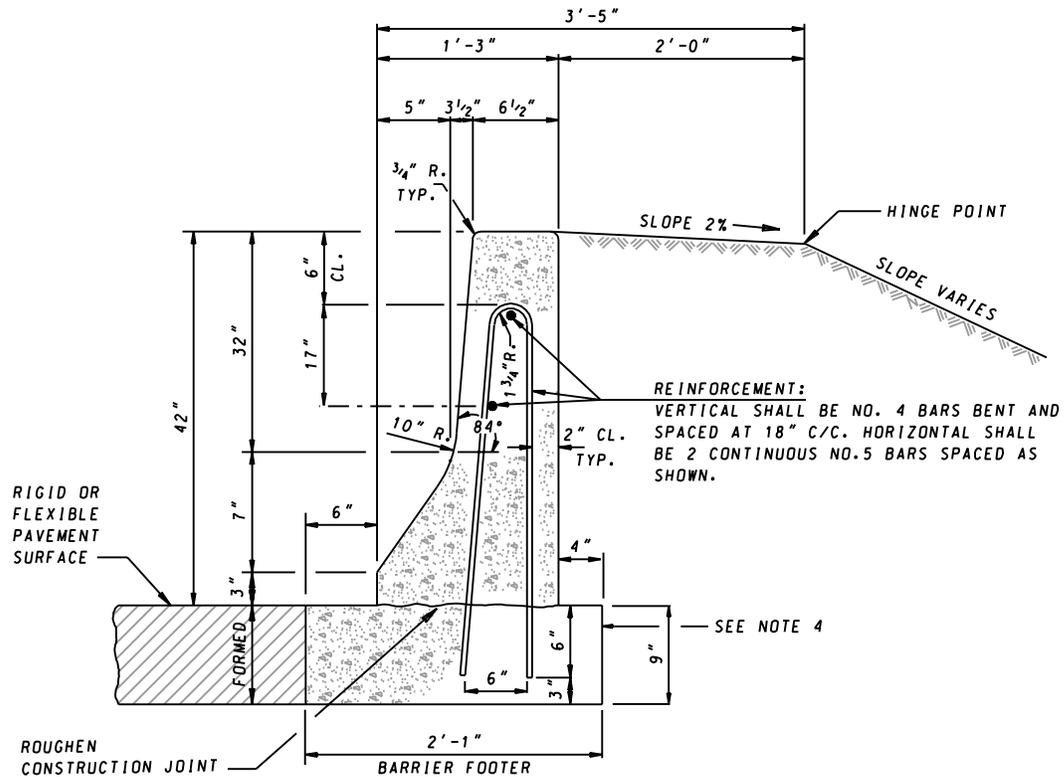
REINFORCEMENT STEEL DETAIL

NOTES

1. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING THE FIXED FORM METHOD. SEE STDS. MD 648.45, MD 648.46, MD 648.47, MD 648.52, MD 648.53, AND MD 648.54 FOR BARRIER FOOTER DETAILS. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.
2. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 (4500 PSI).
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, AND TIES SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER.
4. THIS TRAFFIC BARRIER END TRANSITION IS PROHIBITED WHEN THE DESIGN SPEED IS 45 MPH OR GREATER. THE ENGINEER MUST DETERMINE THE TYPE OF END TREATMENT REQUIRED FOR DESIGN SPEEDS OVER 45 MPH.
5. THE COST OF THE BARRIER END TRANSITION TOE, REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR THE 34 INCH OR 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE END TRANSITION.
6. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-1-01
	APPROVAL 3-28-01
REVISION 10-1-01	REVISION
REVISION	REVISION
REVISION	REVISION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH AND 42 INCH F SHAPE
CONCRETE TRAFFIC BARRIER
SINGLE FACE END TRANSITION
STANARD NO. MD 648.51



TYPICAL SECTION

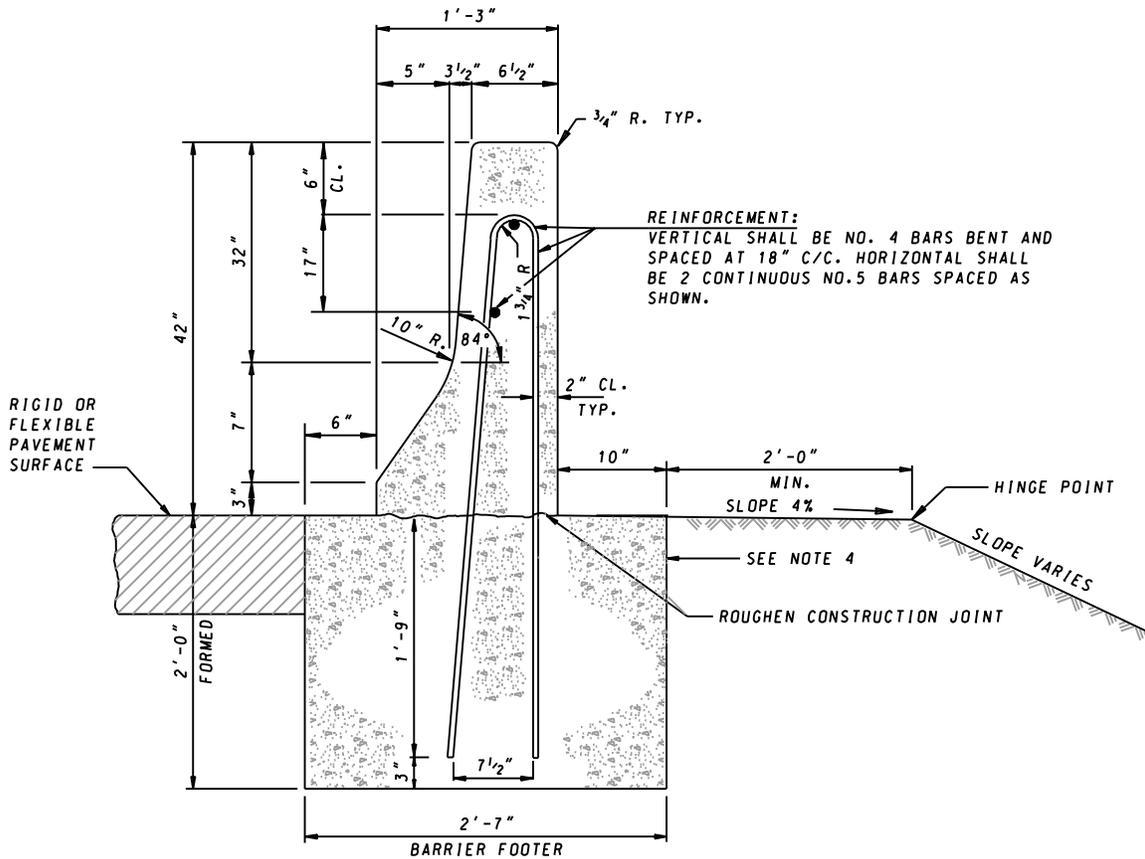
TO BE USED WITH EARTH BACKING AT THE TOP OF FILL SLOPES.
 (SEE STD. MD 648.02 FOR 42" TYPE F CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 FREE STANDING AT TOP OF FILL SLOPES)
 (SEE STD. MD 648.03 FOR 42" TYPE F CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS A RETAINING WALL)

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 CONTINUOUSLY PLACED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. THE FOOTER REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1. FILL MATERIAL IN BACK OF THE BARRIER IS INCLUDED IN THE EMBANKMENT QUANTITY.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FROM METHOD DIAGONAL NO. 4 BARS ARE REQUIRED. SEE STD. MD 648.49.

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-16-90
	REVISIONS 10-1-01

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 (WITH EARTH BACKING IN FILL)
STANDARD NO. MD 648.52



TYPICAL SECTION

TO BE USED WHEN THE BARRIER IS FREE STANDING (NO BACKING) AT THE TOP OF FILL SLOPES.
 (SEE STD. MD 648.52 FOR 42" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES)
 (SEE STD. MD 648.54 FOR 42" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS A RETAINING WALL)

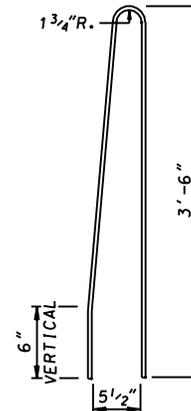
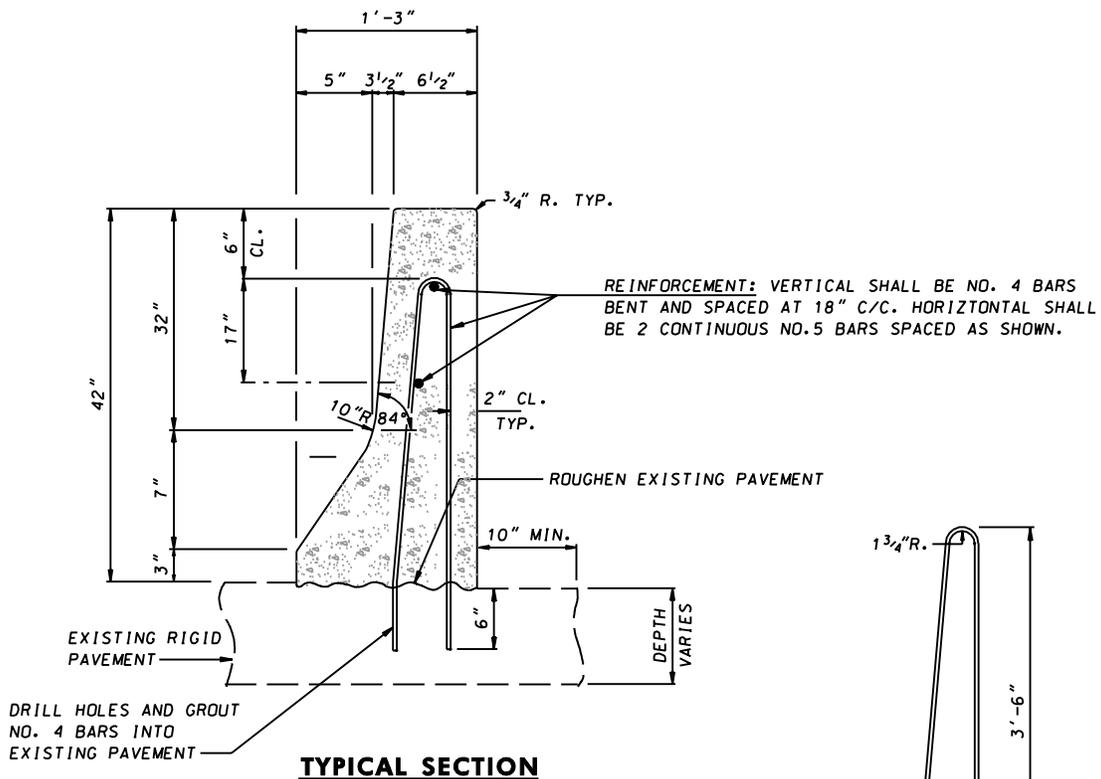
NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF USED, SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. THE REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF THE CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-1-01
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-28-01
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 (FREE STANDING IN FILL)

STANDARD NO. MD 648.53

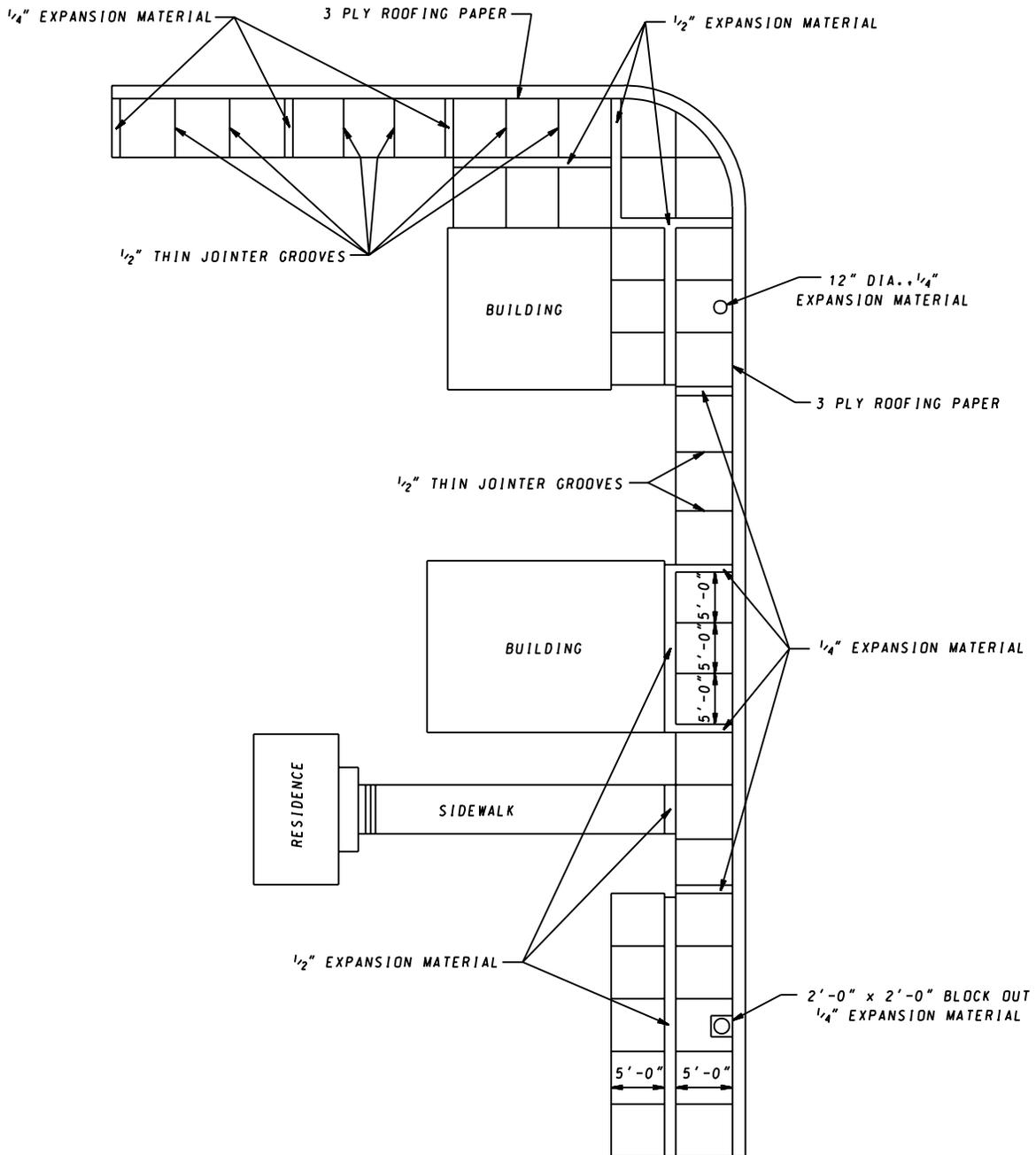


NOTES

1. THE BARRIER SHALL BE CONSTRUCTED USING CONCRETE MIX NO.6 CONTINUOUSLY PLACED.
2. THE BARRIER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
5. COST OF LABOR, ALL REINFORCEMENT, DRILLED HOLES, GROUT, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT.
6. TO BE USED AS FREE STANDING BARRIER ONLY (NO BACKING).
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

SPECIFICATION 604	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-1-01
	REVISED 10-1-01
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT
STANDARD NO. MD 648.55



SPECIFICATION	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

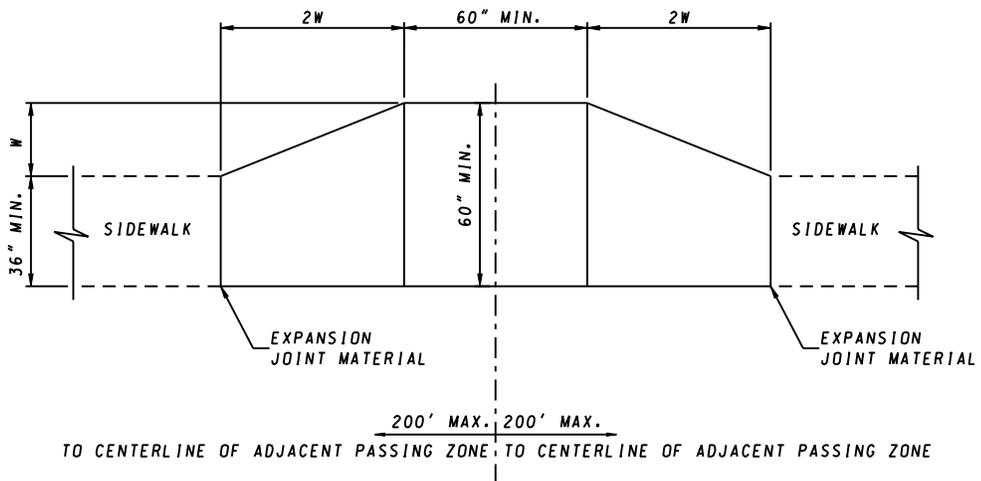
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES



APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 3-11-64	APPROVAL 6-9-64
REVISED 10-1-01	REVISED
REVISED	REVISED
REVISED	REVISED

SIDEWALK EXPANSION JOINTS

STANDARD NO. MD 655.01

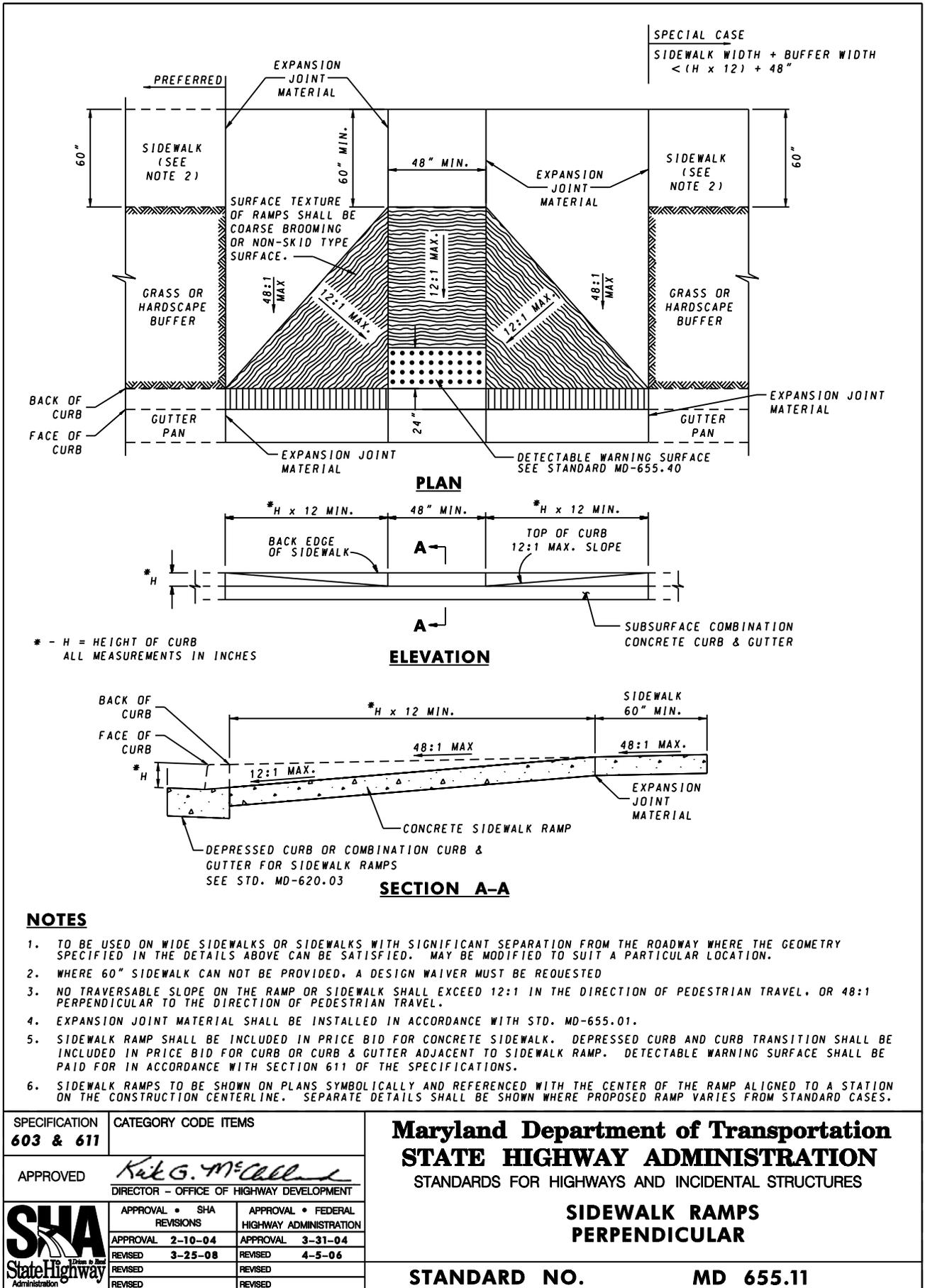


PLAN

NOTES

1. WHERE THE CONTINUOUS WIDTH FOR TRAVEL IS LESS THAN 60", SIDEWALK PASSING ZONES SHALL BE PROVIDED AT AN INTERVAL NOT TO EXCEED 200'. USE OF ENTRANCES AND LEADER WALKS AS PASSING ZONES IS ACCEPTABLE PROVIDED THAT THE GEOMETRY MEETS THE REQUIREMENTS OF THIS STANDARD.
2. SIDEWALK PASSING ZONES SHALL BE LOCATED AS INDICATED ON DRAWINGS, HOWEVER EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. MAY AFFECT PLACEMENT.
3. SIDEWALK TRANSVERSE SLOPE SHALL BE MAINTAINED ACROSS THE ENTIRE WIDTH OF THE PASSING ZONE (48:1 MAX.).

SPECIFICATION 603	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA	APPROVAL • FEDERAL
	REVISIONS	HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04	APPROVAL 3-31-04
	REVISED	REVISED
	REVISED	
	REVISED	
	REVISED	
STANDARD NO. MD 655.02		SIDEWALK PASSING ZONES

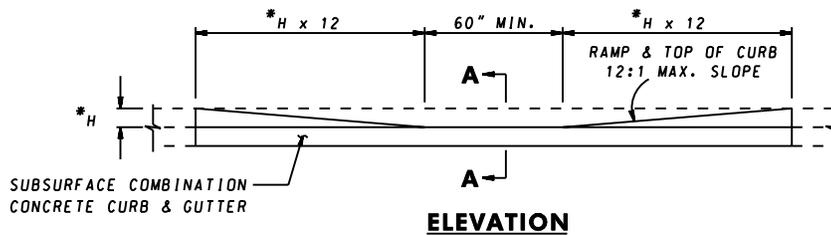
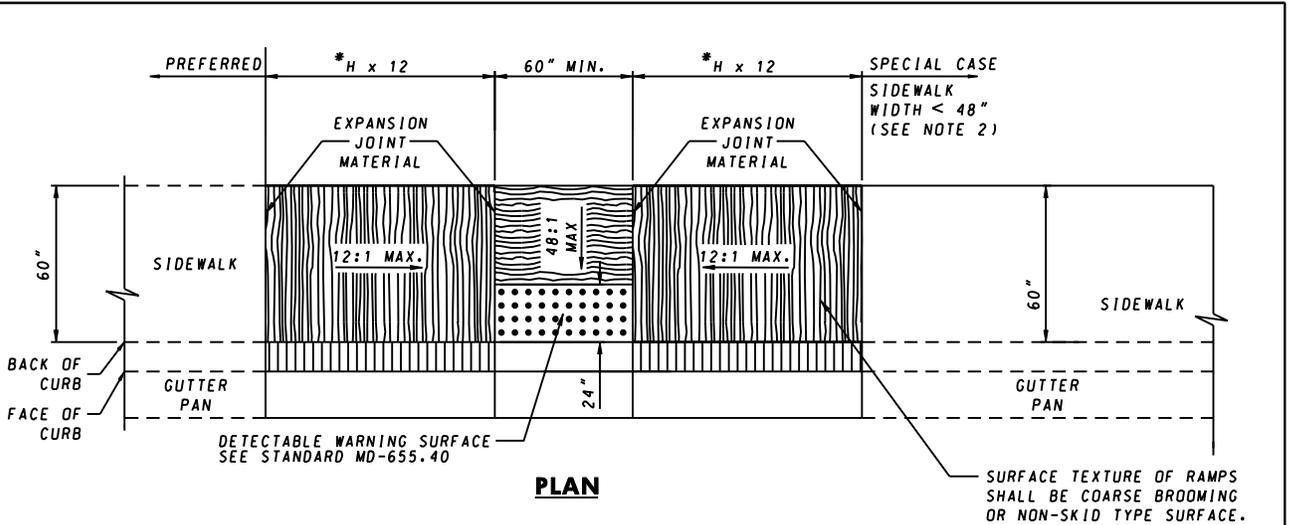


SPECIFICATION 603 & 611	CATEGORY CODE ITEMS
APPROVED	<i>Kat G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 2-10-04
	REVISED 3-25-08
	REVISED
	REVISED

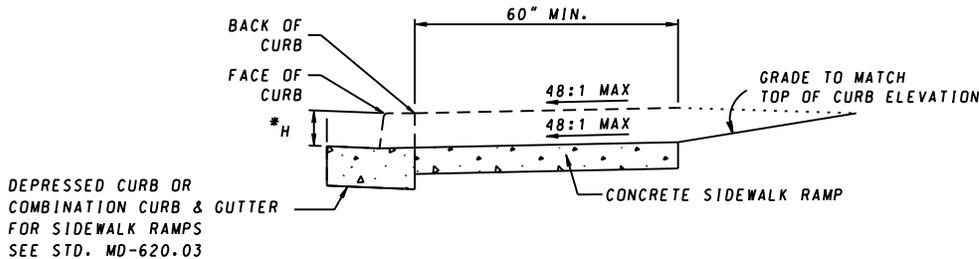
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SIDEWALK RAMPS PERPENDICULAR

STANDARD NO. MD 655.11



* - H = HEIGHT OF CURB
ALL MEASUREMENTS IN INCHES



NOTES

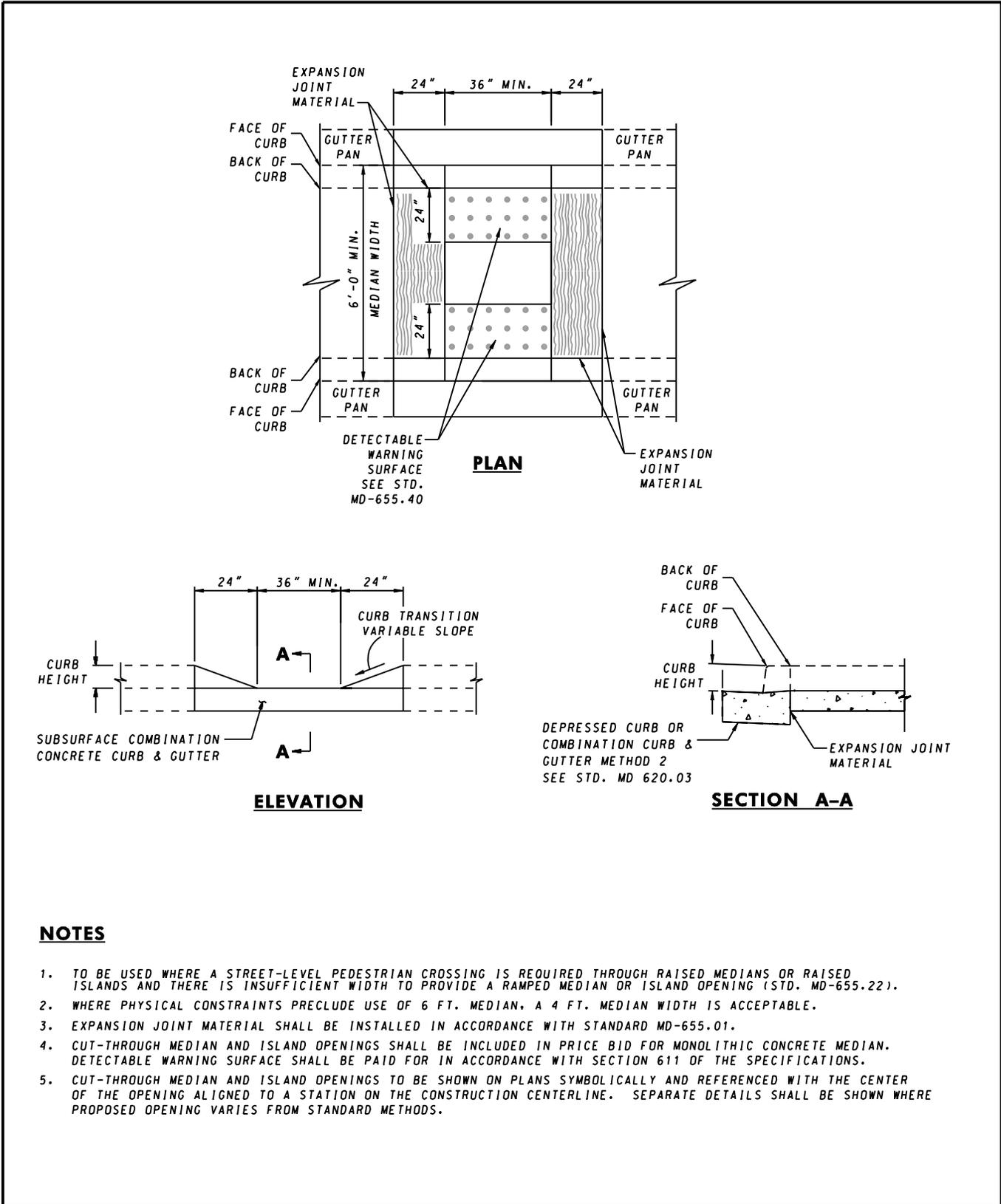
1. TO BE USED WHERE SIDEWALK IS ADJACENT TO THE CURB. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
2. WHERE 60" SIDEWALK CAN NOT BE PROVIDED, A DESIGN WAIVER MUST BE REQUESTED.
3. NO TRAVERSABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL, OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.
4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
5. SIDEWALK RAMP SHALL BE INCLUDED IN PRICE BID FOR CONCRETE SIDEWALK. DEPRESSED CURB AND CURB TRANSITION SHALL BE INCLUDED IN PRICE BID FOR CURB OR CURB & GUTTER ADJACENT TO SIDEWALK RAMP. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
6. SIDEWALK RAMPS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.

SPECIFICATION 603 & 611	CATEGORY CODE ITEMS
APPROVED	<i>Kat G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
	REVISD 3-25-08
REVISD 4-5-06	
REVISD	REVISD
REVISD	REVISD

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SIDEWALK RAMPS
PARALLEL

STANDARD NO. MD 655.12



NOTES

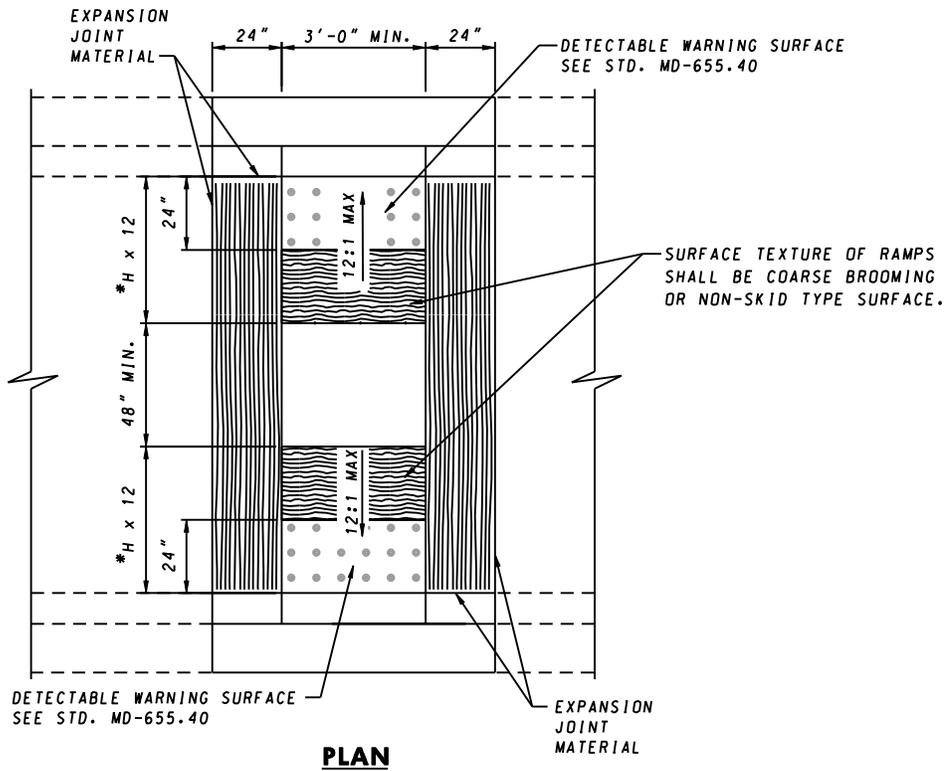
1. TO BE USED WHERE A STREET-LEVEL PEDESTRIAN CROSSING IS REQUIRED THROUGH RAISED MEDIANS OR RAISED ISLANDS AND THERE IS INSUFFICIENT WIDTH TO PROVIDE A RAMPED MEDIAN OR ISLAND OPENING (STD. MD-655.22).
2. WHERE PHYSICAL CONSTRAINTS PRECLUDE USE OF 6 FT. MEDIAN, A 4 FT. MEDIAN WIDTH IS ACCEPTABLE.
3. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD MD-655.01.
4. CUT-THROUGH MEDIAN AND ISLAND OPENINGS SHALL BE INCLUDED IN PRICE BID FOR MONOLITHIC CONCRETE MEDIAN. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
5. CUT-THROUGH MEDIAN AND ISLAND OPENINGS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE OPENING ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED OPENING VARIES FROM STANDARD METHODS.

SPECIFICATION 603 & 611	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 2-10-04
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

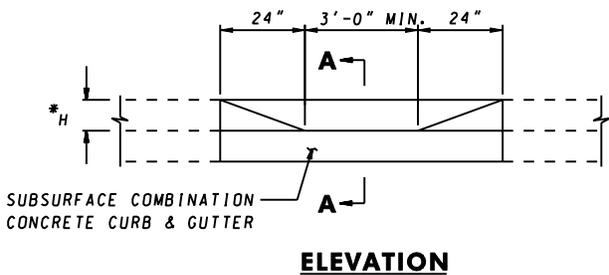
**CUT-THROUGH
 MEDIAN AND ISLAND OPENINGS**

STANDARD NO. MD 655.21

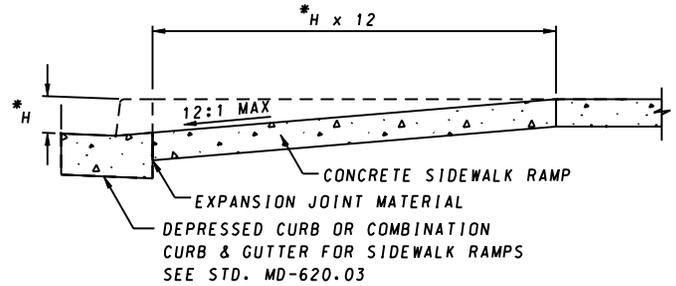


PLAN

* - H = HEIGHT OF CURB
ALL MEASUREMENTS IN INCHES



ELEVATION



SECTION A-A

NOTES

1. TO BE USED WHERE A PEDESTRIAN ACCESS ROUTE CROSSES RAISED MEDIANS OR RAISED ISLANDS AND THERE IS SUFFICIENT WIDTH TO SATISFY THE GEOMETRY OUTLINED IN THIS STANDARD.
2. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD MD-655.01.
3. RAMPED MEDIAN AND ISLAND OPENINGS SHALL BE MEASURED AND PAID AT THE CONTRACT UNIT PRICE PER SQUARE FOOT FOR CONCRETE SIDEWALK. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
4. RAMPED MEDIAN AND ISLAND OPENINGS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE OPENING ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED OPENING VARIES FROM STANDARD METHODS.

SPECIFICATION 603 & 611	CATEGORY CODE ITEMS
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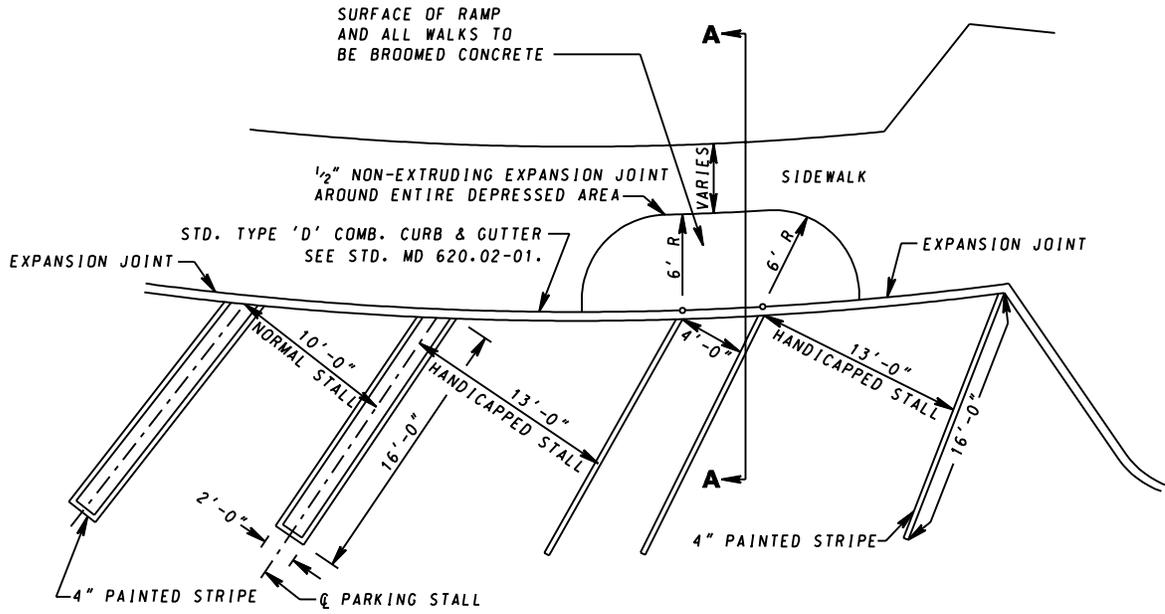
APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04	APPROVAL 3-31-04
	REVISED	REVISED
	REVISED	REVISED
	REVISED	REVISED

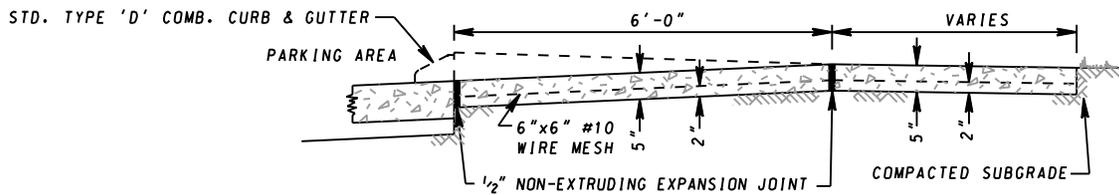
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**RAMPED
MEDIAN AND ISLAND OPENINGS**

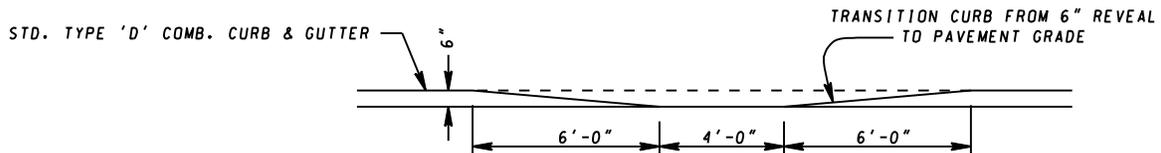
STANDARD NO. MD 655.22



PLAN



SECTION A-A



ELEVATION

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 2-13-73
	REVISED 10-1-01
	REVISED
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-16-73
	REVISED
	REVISED

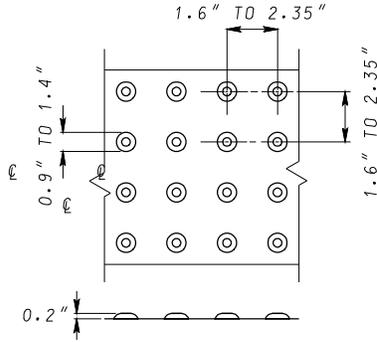
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

REST AREA PARKING FOR HANDICAPPED

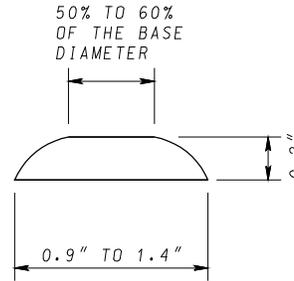
STANDARD NO. MD 655.30

MAT DETAILS

SEE PLACEMENT GUIDELINES BELOW

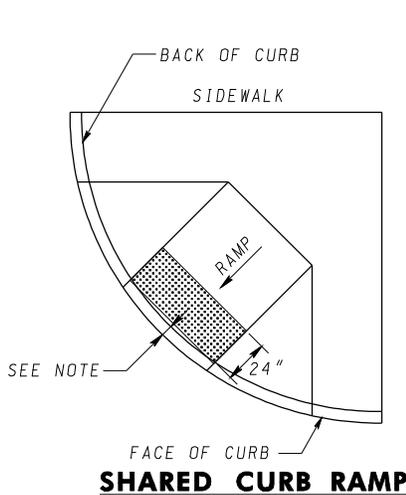


DOME SPACING

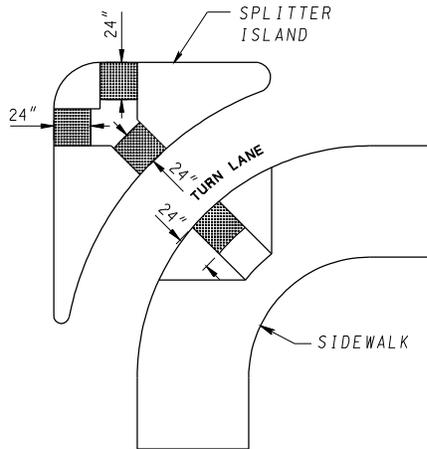


DOME SECTION

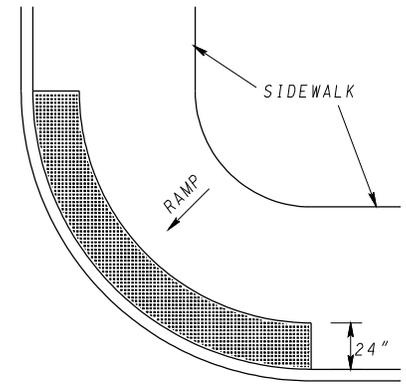
PLACEMENT GUIDELINES



SHARED CURB RAMP



REFUGE ISLAND



BLENDED CURB

WHERE ISLANDS OR MEDIANS ARE LESS THAN 6 FEET WIDE, THE DETECTABLE WARNING SHOULD EXTEND ACROSS THE FULL LENGTH OF THE CUT THROUGH THE ISLAND OR MEDIAN

NOTES

1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF CURB.
2. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF CURB ARE NO LESS THAN 0.5" AND NO MORE THAN 3.0" FROM THE BACK OF CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.
3. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
4. DETECTABLE WARNING SURFACES ARE REQUIRED AT STREET CROSSING & SIGNALIZED INTERSECTIONS.

SPECIFICATION 611	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-10-04
	APPROVAL 3-31-04
	REVISD 3-15-06
REVISD 4-5-06	
REVISD	REVISD
REVISD	REVISD

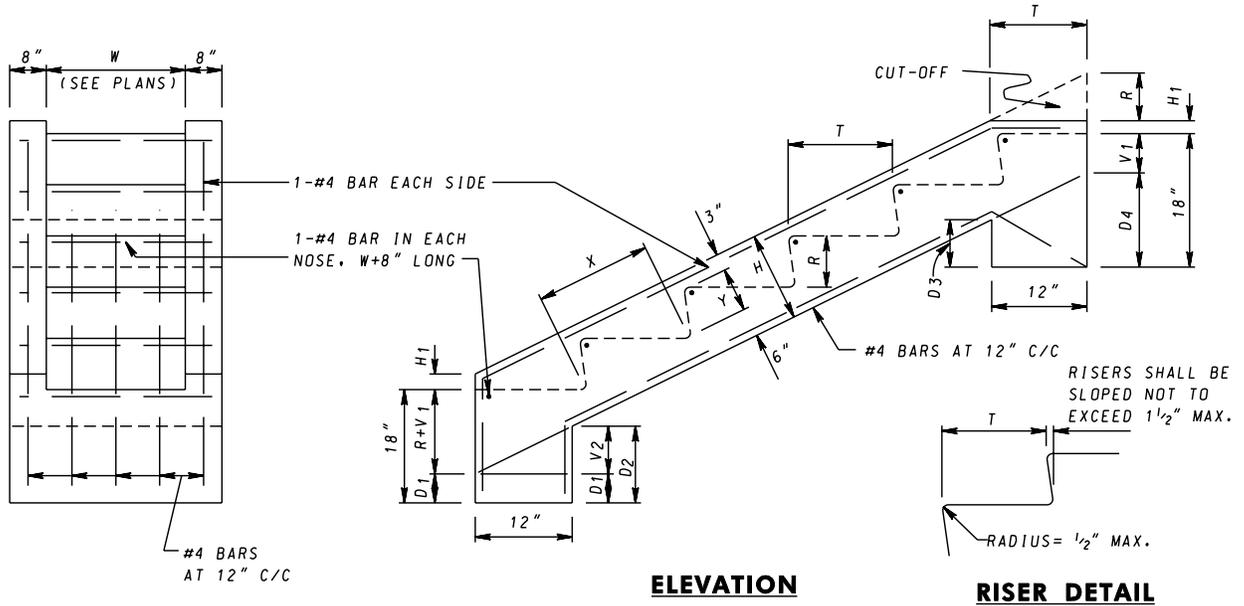
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

DETECTABLE WARNING SURFACES

STANDARD NO.

MD 655.40

NOTE: ALL REINFORCING TO BE #4 BARS, CONFORMING TO A.S.T.M. DESIGNATION A-615 GRADE 40. 1" COVER. (TYP)



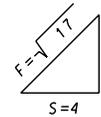
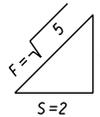
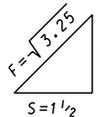
FRONT VIEW

ELEVATION

RISER DETAIL

STANDARD SLOPES, DIMENSIONS & FORMULAS

SLOPE RATIO S:1 VALUES OF S	R	T	F	H ₁	X	Y	H	V ₁	V ₂	D ₁	D ₂	D ₃	D ₄
1 1/2	7"	11"	$\sqrt{3.25}$	3.61"	13.04"	5.91"	14.91"	7.21"	8"	3.79"	11.79"	2.79"	10.79"
2	6"	12"	$\sqrt{5}$	3.36"	13.44"	5.36"	14.36"	6.72"	6"	5.28"	11.28"	5.28"	11.28"
4	3 1/2"	14"	$\sqrt{17}$	3.09"	14.44"	3.39"	12.39"	6.19"	3"	8.31"	11.31"	8.81"	11.81"



**CONCRETE REQUIRED FOR STANDARD STAIRWAYS
TABLE OF UNIT QUANTITIES**

ITEM - UNIT OF STAIRWAY	SLOPE RATIO & T:R			VOLUMES PER STAIRWAY
	1 1/2 : 1	2 : 1	4 : 1	
	11 : 7	12 : 6	14 : 3 1/2	
VOL. OF 1 STEP + BOTTOM SLAB PER 1" WIDTH OF W	= .0651	.0675	.0643	MULTIPLIED BY (NW) =A
VOL. OF 2 SIDEWALLS PER STEP OR TREAD	= 1.7317	1.7870	1.6566	MULTIPLIED BY (N) =B
VOL. OF UPPER & LOWER FOOTINGS PER 1" OF TOTAL WIDTH	= .1012	.1150	.1397	MULTIPLIED BY (W+16)=C
VOL. OF 2 UPPER SIDE WALL CUT-OFFS TO DEDUCT	= -.3403	.3333	-.2269	MULTIPLIED BY 1 =D

CONCRETE=MIX NO. 2 (VOLUMES SHOWN IN TABLE ABOVE ARE IN CUBIC FEET) NUMBER OF STEPS OR TREADS=N
 TOTAL VOLUME IN CUBIC YARDS/STAIRWAY= $\frac{A+B+C-D}{27}$ TREAD WIDTH (IN INCHES)=W

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
SHA State Highway Administration	APPROVAL • SHA REVISIONS APPROVAL 2-7-51 REVISD 09-06-07
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL REVISD 2-27-85
	REVISD REVISD

**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD STAIRWAYS

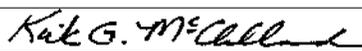
STANDARD NO. MD 657.00

POST MOUNTED DELINEATORS

- REFER TO SHA "ROADWAY DELINEATION POLICY" FOR APPLICATION AND PLACEMENT GUIDELINES.
- PLASTIC POSTS SHOULD BE USED AT ALL NEW INSTALLATIONS. WOOD POSTS SHOULD BE USED ONLY AS SNOW STAKES.
- PLASTIC POSTS ARE GRAY IN COLOR; WOOD POSTS ARE HIGHWAY YELLOW IN COLOR. BLUE DELINEATOR POSTS, WITH 3" x 9" BLUE REFLECTIVE SHEETING MOUNTED BACK TO BACK ON THE POST, MAY BE USED TO IDENTIFY HYDRANT CONNECTIONS IN NOISE BARRIERS.
- REFLECTORIZATION IS HIGH INTENSITY WHITE, YELLOW, BLUE OR GREEN REFLECTIVE SHEETING APPLIED TO CENTER-MOUNT DELINEATORS FOR WOOD POSTS; AND APPLIED DIRECTLY TO THE PLASTIC POSTS.
- CENTER-MOUNT DELINEATORS ARE ROUND HAVING A 4" DIAMETER (0.063" THICK ALUMINUM) AND ARE PLACED SINGLY OR DOUBLY (VERTICALLY).
- REFLECTIVE SHEETING APPLIED TO PLASTIC POSTS, FOR A SINGLE REFLECTIVE UNIT, CONSISTS OF A PATTERN THAT IS 3" WIDE BY 4" HIGH; AND FOR A DOUBLE REFLECTIVE UNIT, CONSISTS OF TWO PATTERNS 3" WIDE BY 4" HIGH, PLACED VERTICALLY WITH A 2" SPACE BETWEEN THEM.
- WOOD POSTS ARE DRIVEN INTO THE GROUND WHILE PLASTIC POSTS ARE INSERTED INTO A FOOTING THAT IS DRIVEN INTO THE GROUND, FLUSH WITH THE SURFACE. FOOTING SHOULD BE AS PER MANUFACTURERS SPECIFICATIONS.
- REFER TO THE SHA OFFICE OF TRAFFIC AND SAFETY APPROVED PRODUCT LIST FOR ACCEPTABLE MODELS.
- REFER TO STANDARDS 665.02 THROUGH 665.06 THAT FOLLOW REGARDING LOCATION AND INSTALLATION OF POST MOUNTED DELINEATORS.
- UTILITY IDENTIFICATION MARKERS (UIM's):
UIM's ARE THE SAME SIZE AS DELINEATORS AND ARE USED TO IDENTIFY EXISTING FACILITIES AS FOLLOWS:
 - 1) BLUE - TO IDENTIFY WATER SOURCES (FIRE HYDRANTS, STREAMS, PONDS, ETC.)
 - 2) GREEN - TO IDENTIFY DRAINAGE INLETS, DRAINAGE PIPES AND CULVERT CROSSINGS
- MULTIPLE DELINEATORS LOCATED ON THE SAME POST SHALL BE POSITIONED FROM TOP TO BOTTOM AS FOLLOWS:
 - 1) COLOR OF ADJACENT PAVING MARKER
 - 2) BLUE (AS NECESSARY)
 - 3) GREEN (AS NECESSARY)

NOTES

1. SKETCHES ARE DESCRIPTIVE ONLY, NOT TO SCALE. INDICATED HEIGHTS ARE GENERAL. SEE STD. 665.04 FOR SPECIFIC HEIGHT INFORMATION.
2. DELINEATOR COLOR IS TO BE THE SAME AS THE ADJACENT EDGE LINE (YELLOW ON THE LEFT AND WHITE ON THE RIGHT).

SPECIFICATION 604, 605	CATEGORY CODE ITEMS	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL	APPROVAL 7-1-94
	REVISED 11-08-06	REVISED 10-25-06
	REVISED	REVISED
	REVISED	REVISED

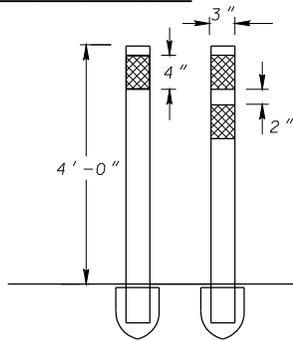
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

POST MOUNTED DELINEATORS

STANDARD NO.

MD 665.01

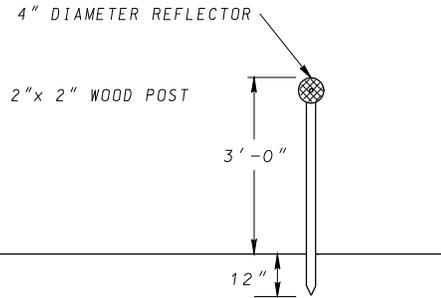
PLASTIC POSTS



- SEE SHA LIST FOR APPROVED MODELS AND NEEDED PARTS

* TOP OF REFLECTING HEAD IS 4'-0" ABOVE NEAR ROADWAY EDGE.

WOOD SNOW GUIDE STAKE



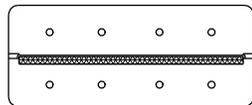
- WOOD SNOW STAKE
- HIGHWAY YELLOW

BARRIER WALL AND W-BEAM BARRIER MARKERS

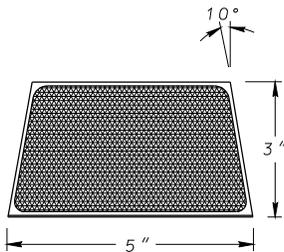
BARRIER WALL MARKER (TYPICAL)



SIDE VIEW



TOP VIEW

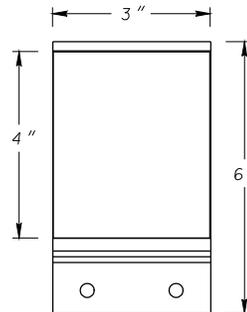


FRONT VIEW

W-BEAM MARKER (TYPICAL)



TOP VIEW



FRONT VIEW



SIDE VIEW

NOTES

1. BARRIER MARKERS SHALL BE YELLOW IN COLOR WHEN PLACED ON LEFT MEDIAN-SIDE BARRIER, WHITE WHEN PLACED ON RIGHT SHOULDER-SIDE BARRIER.
2. SEE S.H.A. LIST FOR APPROVED MODELS AND NEEDED PARTS.
3. REFER TO STDS. 665.03 THRU 665.06 FOR PLACEMENT, SPACING AND MOUNTING HEIGHT.

SPECIFICATION 604, 605	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 11-08-06
	APPROVAL 7-1-94
REVISD 10-25-06	REVISD
REVISD	REVISD
REVISD	REVISD

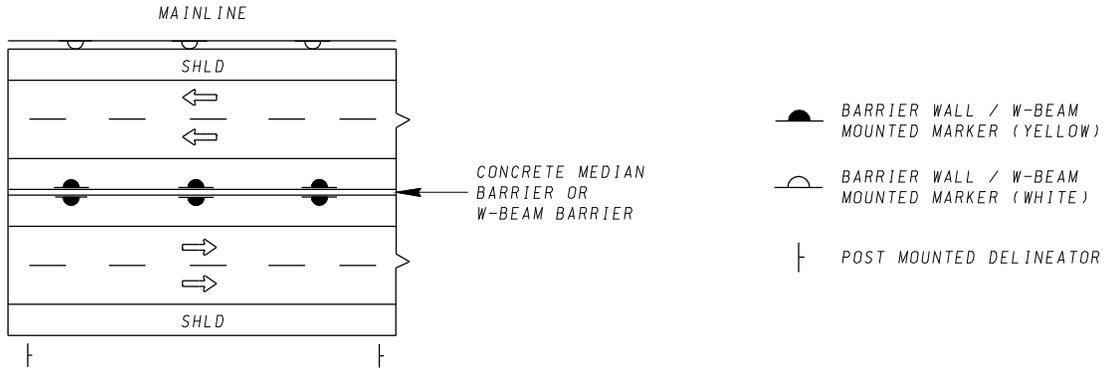
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

BARRIER MARKERS

STANDARD NO.

MD 665.02

DELINEATION PLACEMENT



TYPICAL SPACING FOR POST MOUNTED DELINEATORS

MAINLINE - 264'
 ACCEL/DECEL AND C/D ROADS - 100' (DOUBLE DELINEATORS) REFER TO STD. MD 665.05
 RAMPS - REFER TO STD. MD 665.06

TYPICAL SPACING FOR PERMANENT BARRIER WALL MOUNTED MARKERS

(FOR ALL BARRIER WALLS WITHIN 15' OF THE TRAVEL LANE)
 MAINLINE - 100' **NOTE** SPACING SHOULD BE REDUCED TO 75' IN CURVES WITH A RADIUS LESS THAN 1000' AND 50' IN CURVES WITH A RADIUS LESS THAN 300'.
 ACCEL/DECEL AND C/D ROADS - 100' (DOUBLE DELINEATORS) REFER TO STD. MD 665.05
 RAMPS - REFER TO STD. MD 665.06

TYPICAL SPACING FOR W-BEAM MOUNTED DELINEATORS

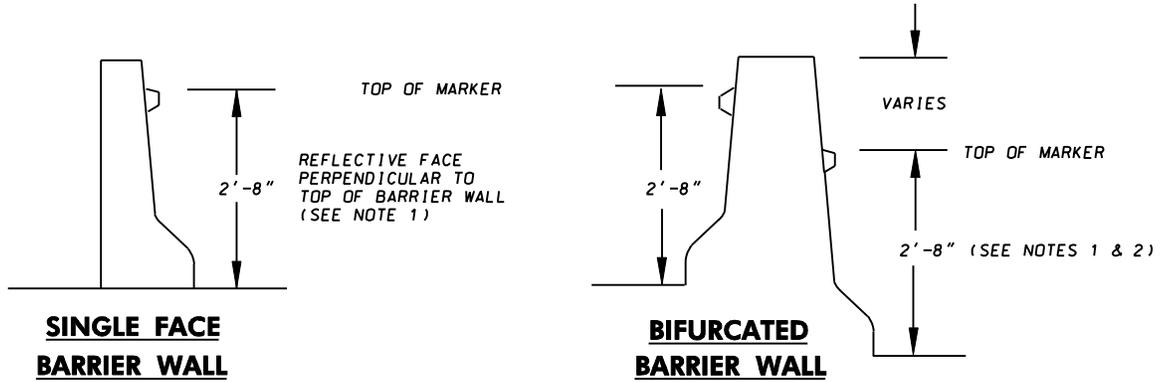
(FOR ALL W-BEAM BARRIERS WITHIN 6' OF THE SHOULDER)
 MAINLINE - 100' **NOTE** SPACING SHOULD BE REDUCED TO 50' IN CURVES WITH A RADIUS LESS THAN 1000' AND IN TANGENT SECTIONS LESS THAN 500' IN LENGTH.
 ACCEL/DECEL AND C/D ROADS - 100' (DOUBLE DELINEATORS) REFER TO STD. MD 665.05
 RAMPS - REFER TO STD. MD 665.06

NOTE

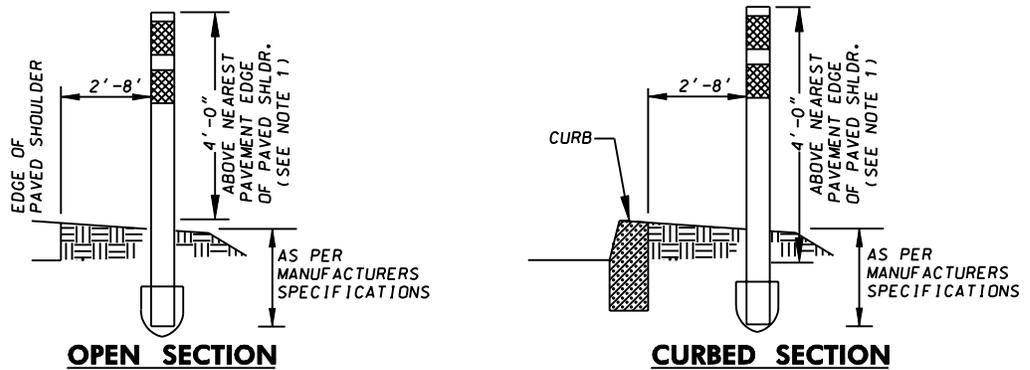
DELINEATORS LOCATED WITHIN 50' OF A UTILITY SHOULD BE INSTALLED AT THE UTILITY AND COMBINED WITH THE APPROPRIATE UIM(S).

SPECIFICATION 604, 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES PLACEMENT OF DELINEATORS STANDARD NO. MD 665.03	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
 State Highway Administration	APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL		APPROVAL
	REVISED 11-08-06	REVISED 10-25-06	
	REVISED	REVISED	
REVISED	REVISED		

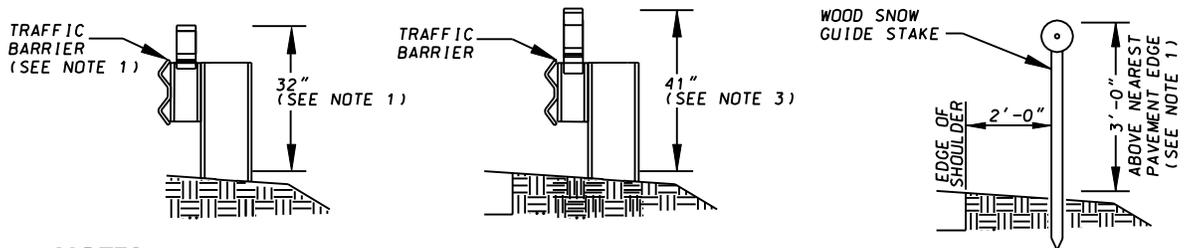
PLACEMENT OF BARRIER WALL MOUNTED MARKERS



PLACEMENT OF POST MOUNTED DELINEATORS



PLACEMENT OF W-BEAM & WOOD POST DELINEATORS



NOTES:

1. THE HEIGHT OF THE DELINEATOR SHOULD BE WITHIN 2 INCHES OF THE DIMENSIONS SHOWN.
2. BARRIER MARKERS SHOULD BE TOP AND SIDE MOUNTED IN CONSTRUCTION ZONES. PERMANENT INSTALLATIONS SHOULD BE SIDE MOUNTED ONLY.
3. HEIGHT OF DELINEATOR MAY BE INCREASED AS NECESSARY IN AREAS HAVING EXCESSIVE PLOWED SNOW STORAGE.
4. W-BEAM MARKERS SHALL BE FASTENED TO WOOD OFFSET BLOCKS BY GALVANIZED 6 PENNY NAILS.

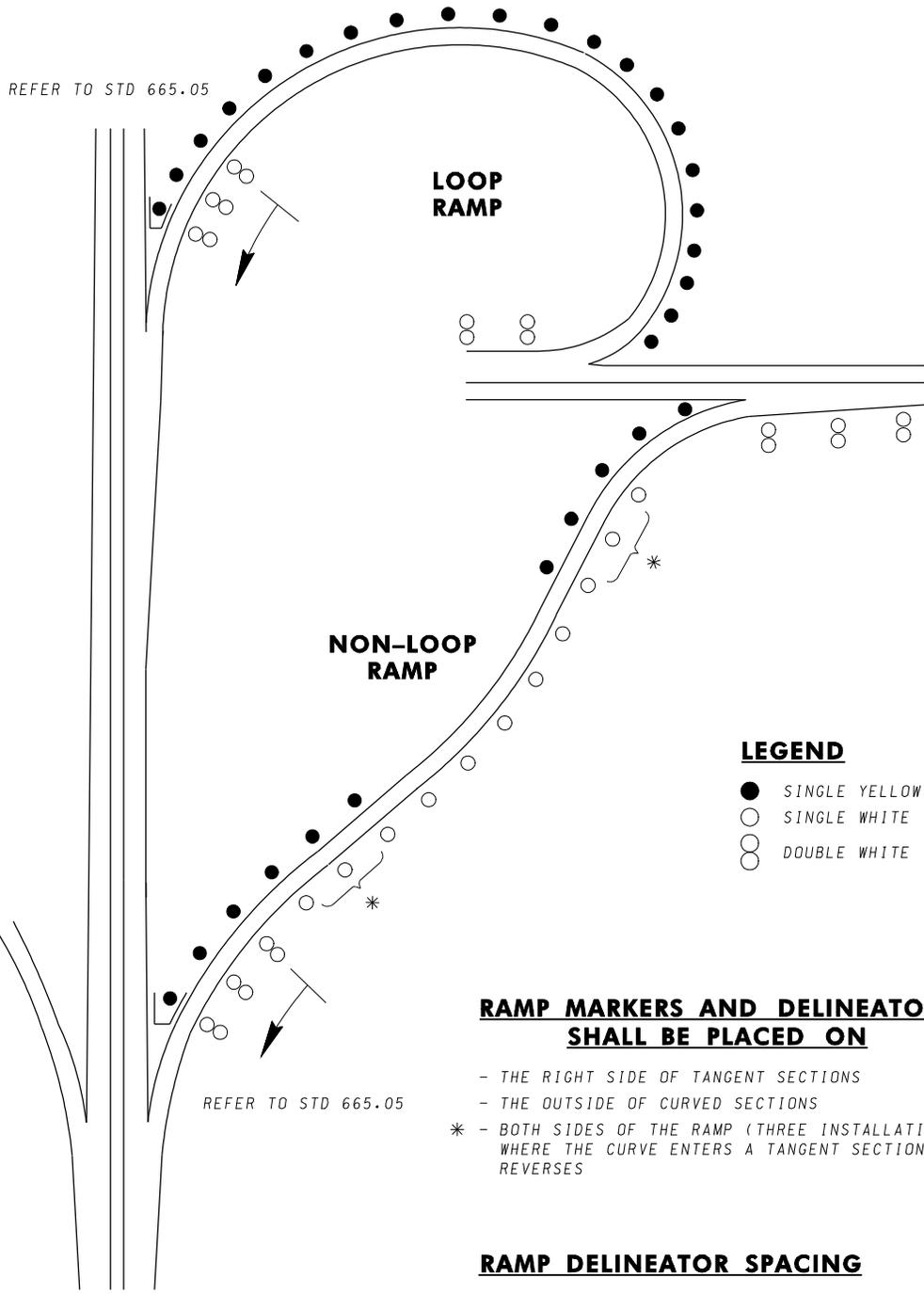
SPECIFICATION	CATEGORY CODE ITEMS										
APPROVED	 DIRECTOR - OFFICE OF TRAFFIC AND SAFETY										
	<table border="1"> <tr> <td>APPROVAL • SHA REVISIONS</td> <td>APPROVAL • FEDERAL HIGHWAY ADMINISTRATION</td> </tr> <tr> <td>APPROVAL 7-1-94</td> <td>APPROVAL 7-1-94</td> </tr> <tr> <td>REVISED 8-12-02</td> <td>REVISED 9-4-02</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> </table>	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 7-1-94	APPROVAL 7-1-94	REVISED 8-12-02	REVISED 9-4-02	REVISED	REVISED	REVISED	REVISED
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION										
APPROVAL 7-1-94	APPROVAL 7-1-94										
REVISED 8-12-02	REVISED 9-4-02										
REVISED	REVISED										
REVISED	REVISED										

**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

PLACEMENT OF DELINEATORS AND MARKERS

STANDARD NO. MD 665.04

RAMP DELINEATION



LOOP RAMP

NON-LOOP RAMP

- LEGEND**
- SINGLE YELLOW
 - SINGLE WHITE
 - ⊖ DOUBLE WHITE

RAMP MARKERS AND DELINEATORS SHALL BE PLACED ON

- THE RIGHT SIDE OF TANGENT SECTIONS
- THE OUTSIDE OF CURVED SECTIONS
- * - BOTH SIDES OF THE RAMP (THREE INSTALLATIONS) WHERE THE CURVE ENTERS A TANGENT SECTION OR REVERSES

RAMP DELINEATOR SPACING

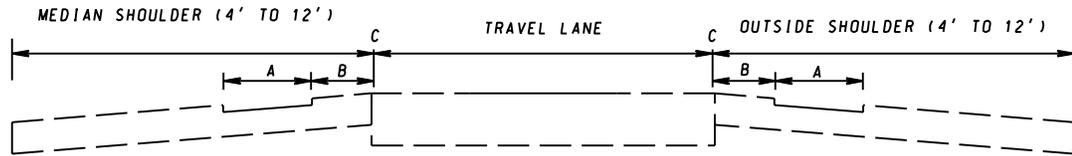
- SPACING SHOULD BE AS SPECIFIED IN MUTCD TABLE 111-1.

SPECIFICATION 604, 605	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 7-1-94
	REVISED 11-08-06
	REVISED 10-25-06

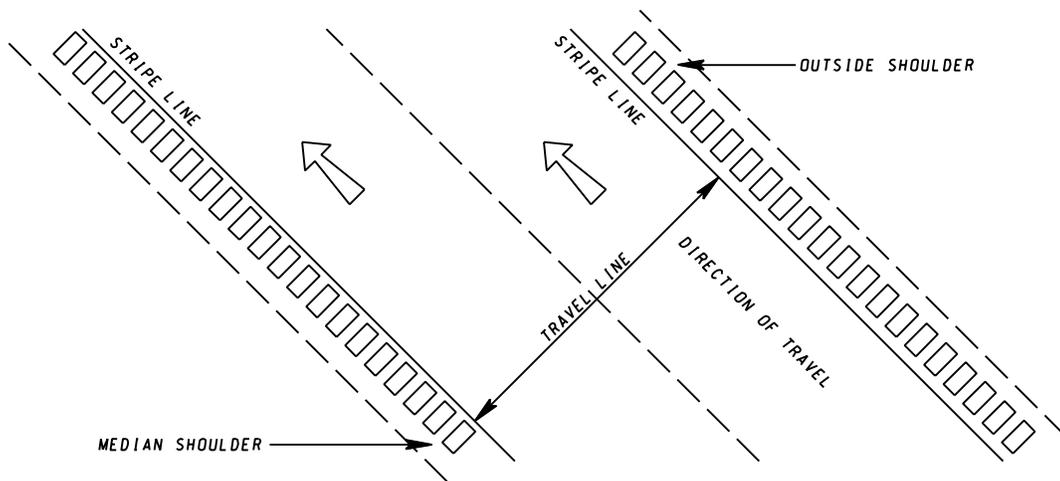
**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

RAMP DELINEATION

STANDARD NO. MD 665.06



- A. SEE STD MD 670.01 FOR RUMBLE STRIP DETAILS
- B. 6" - 12"
- C. TRAVEL LANE STRIPE LINE



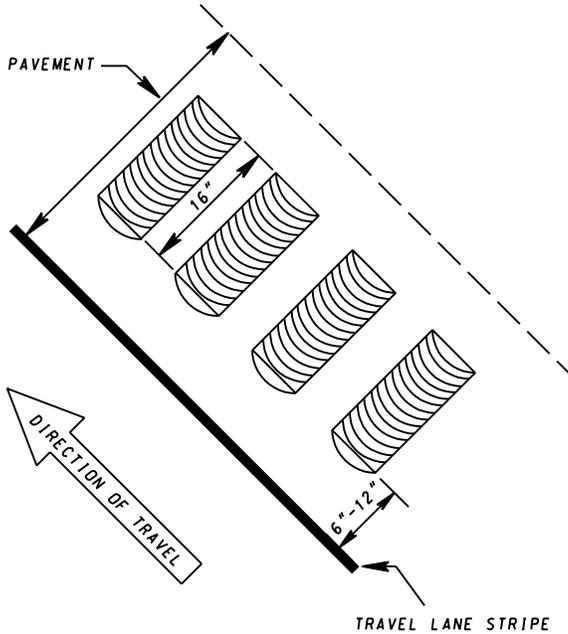
PLAN VIEW - DIVIDED HIGHWAY

NOTES

1. THE RUMBLE STRIPS ARE FOR USE ON NEW OR EXISTING ASPHALT OR CONCRETE SHOULDERS. THE PATTERN IS DESIGNED SO THAT IT CAN BE MILLED OR GROUND INTO THE SHOULDER. SEE SPECIFICATIONS.
2. THE LEADING EDGE OF A RUMBLE STRIP SHOULD NOT BE CLOSER THAN 6" TO ANY JOINT, TRANSVERSE OR LONGITUDINAL, IN CONCRETE SHOULDERS.
3. IF SHOULDER WIDTH IS 4 FT. OR LESS, RUMBLE STRIPS ARE TO BE PLACED 6" FROM EDGE OF TRAVEL LANE STRIPE. FOR SHOULDER WIDTHS GREATER THAN 4 FT RUMBLE STRIPS ARE TO BE 12" FROM TRAVEL LANE STRIPE.

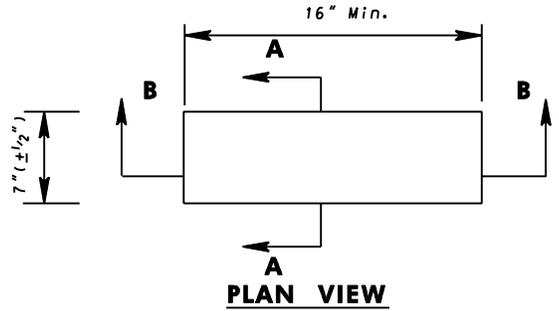
SPECIFICATION 610	CATEGORY CODE ITEMS	<p>Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES</p> <p>LOCATION OF SHOULDER RUMBLE STRIPS</p> <p>STANDARD NO. MD 670.00</p>	
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT		
	APPROVAL • SHA REVISIONS APPROVAL 2-10-04		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 3-31-04
	REVISED		REVISED
	REVISED	REVISED	

SHOULDER PAVEMENT

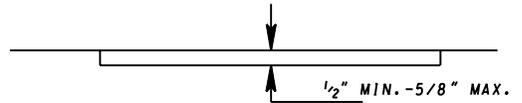


ISOMETRIC VIEW

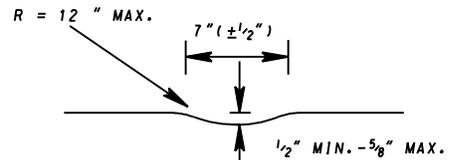
TRAVEL LANE STRIPE



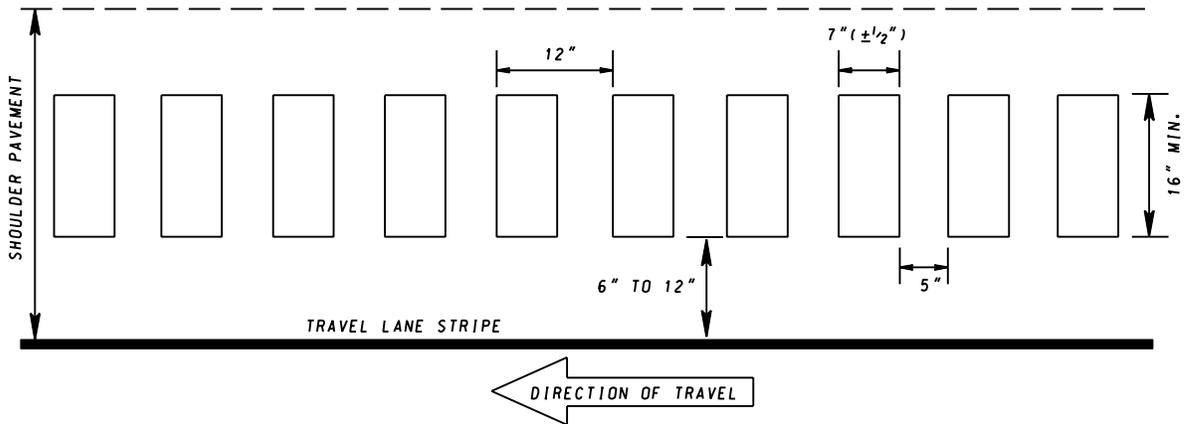
PLAN VIEW



SECTION 'BB'



SECTION 'AA'



PLAN VIEW

SPECIFICATION 610	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT



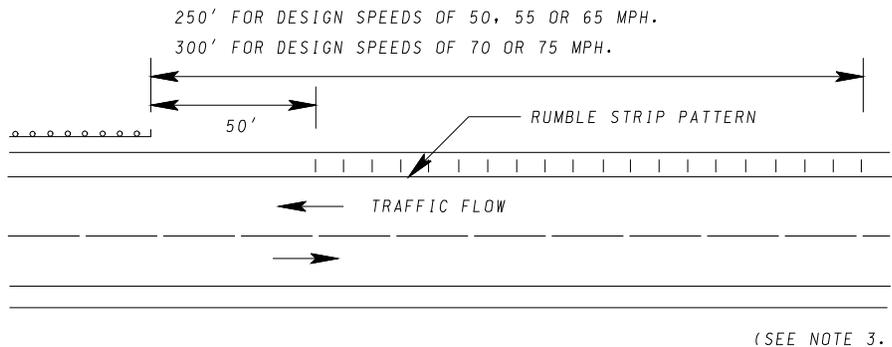
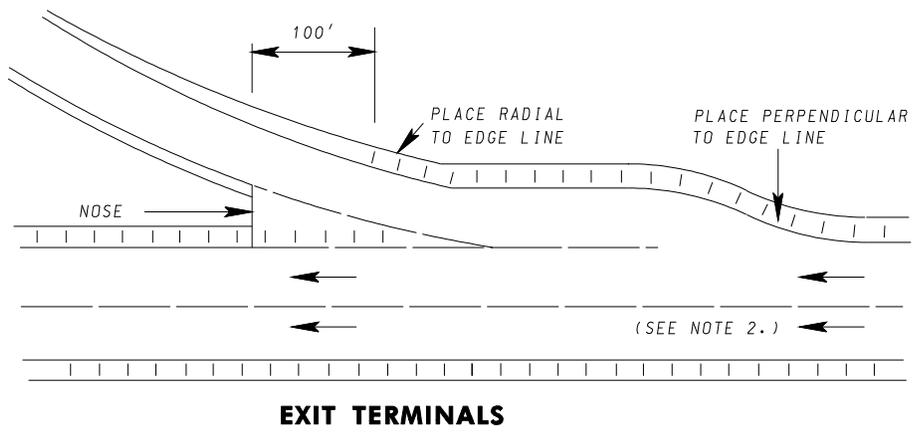
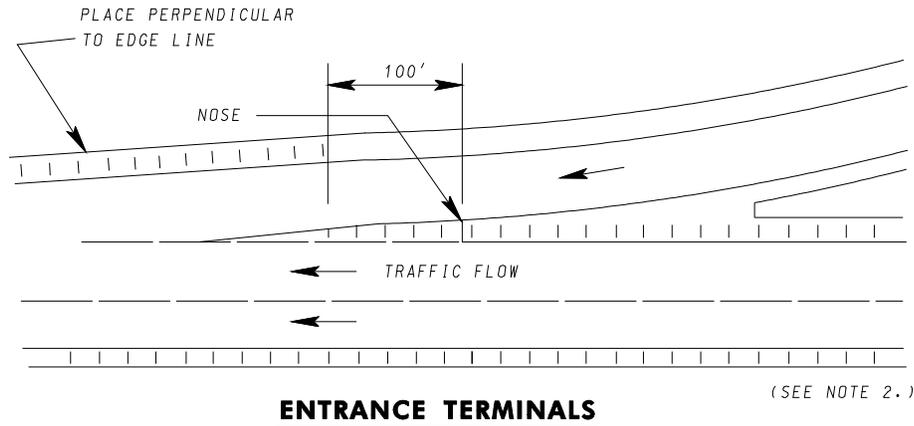
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 2-10-04	APPROVAL 3-31-04
REVISED	REVISED
REVISED	REVISED
REVISED	REVISED

**Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION**

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**SHOULDER RUMBLE STRIP DETAILS
TYPICAL LAYOUT**

STANDARD NO. MD 670.01

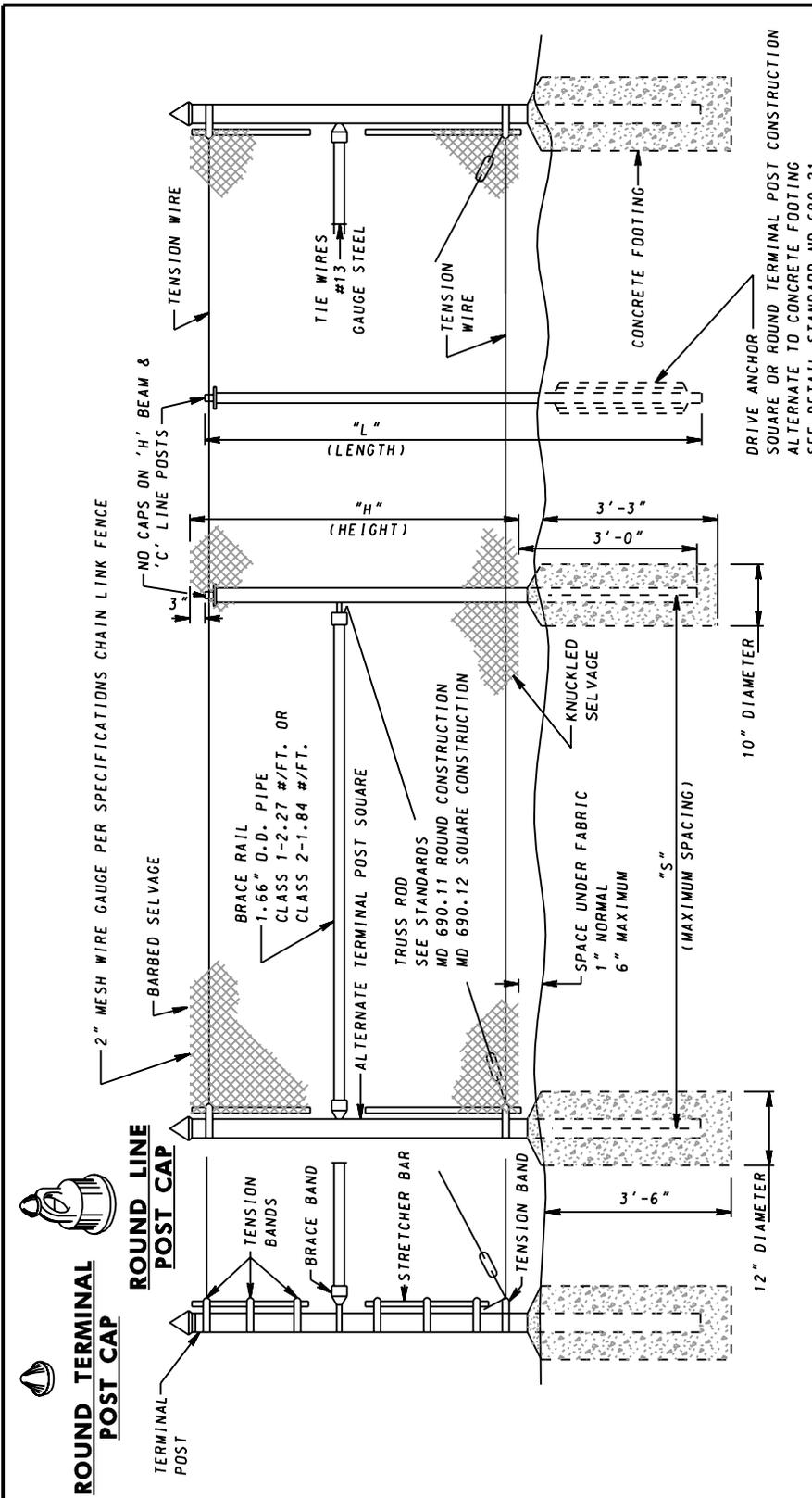


NOTES

1. SEE STD MD 670.01 FOR RUMBLE STRIP DETAILS.
2. AT ENTRANCE AND EXIT TERMINALS, THE OUTSIDE SHOULDER PATTERN SHOULD BE EXTENDED TOWARD THE RAMP JUNCTURE AS FAR AS POSSIBLE, AND THEN SHIFTED OVER TO THE OUTSIDE SHOULDER OF THE TERMINAL AREA. THE "NOSE" OF AN ENTRANCE OR EXIT TERMINAL IS A LOGICAL REFERENCE POINT. ON EITHER TERMINAL EXTEND THE PATTERN 100' INTO THE TERMINAL AREA AND THEN TRANSFER TO THE OUTSIDE SHOULDER.
3. RUMBLE STRIPS, WHEN USED IN ADVANCE OF CRITICAL LOCATIONS, SUCH AS APPROACHES TO NARROW BRIDGES, IN GORE AREAS, AND AHEAD OF TRAFFIC BARRIER END TREATMENTS, SHOULD BE PLACED AS SHOWN.

SPECIFICATION 610	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i>	DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 2-10-04
	REVISED 06-01-08
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-31-04
REVISED	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
LOCATION OF SHOULDER RUMBLE STRIPS AT CRITICAL LOCATIONS
STANDARD NO. MD 670.02



NOTES

1. ALL ROUND LINE POSTS TO BE CAPPED WITH LOOP CAPS. TENSION WIRE TO RUN THROUGH LOOPS. CAPS TO BE FASTENED TO ALL TERMINAL POSTS WITH TENSION BANDS.
2. FASTEN FABRIC TO TENSION WIRE WITH HOG RINGS @18 ± C/C. HOG RINGS TO BE 12 1/2 GAUGE GALVANIZED STEEL WIRE.
3. MATERIALS TO MEET REQUIREMENTS OF AASHTO M 181.
4. REFER TO SPECIFICATION 914.01 WHEN VINYL IS SPECIFIED.
5. THE COLOR OF THE COATING SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.

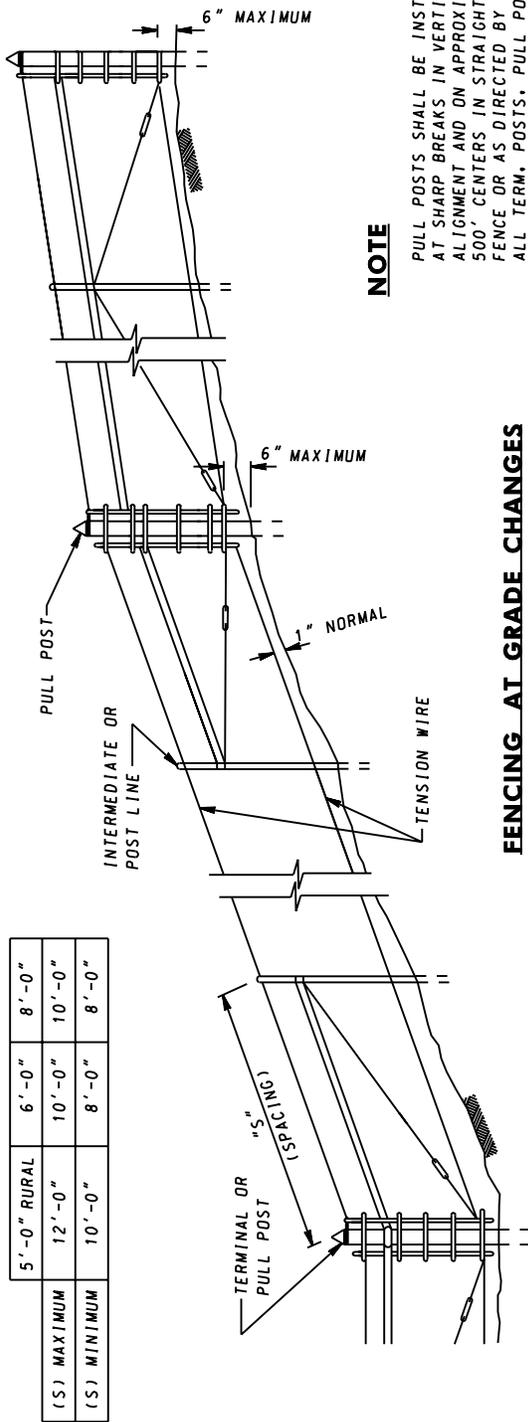
"H" HEIGHT OF FENCE	5' - 0" RURAL	6' - 0"	8' - 0"
"S" POST SPACING-MAX. CAP	12' - 0"	10' - 0"	10' - 0"
"L" LENGTH INCL. CAP	7' - 8" MIN.	8' - 8" MIN.	10' - 8"
LINE POSTS			
ROUND-CLASS 1	1.90" 0.0. @2.72 #/FT	2.375" 0.0. @3.65 #/FT	2.375" 0.0. @3.65 #/FT
ROUND-CLASS 2	1.90" 0.0. @2.28 #/FT	2.375" 0.0. @3.12 #/FT	2.375" 0.0. @3.12 #/FT
H-BEAM-STEEL	2.25" x1.17" @3.26 #/FT	2.25" x1.17" @3.26 #/FT	2.25" x1.17" @3.26 #/FT
H-BEAM-ALUM.	2.25" x1.95" @1.25 #/FT	2.25" x1.95" @1.25 #/FT	2.25" x1.95" @1.25 #/FT
C-POST-STEEL	2.25" x1.70" @2.73 #/FT	2.25" x1.70" @2.73 #/FT	2.25" x1.70" @2.73 #/FT
ROUND-CLASS 1	2.375" 0.0. @3.65 #/FT	2.875" 0.0. @5.79 #/FT	2.875" 0.0. @5.79 #/FT
ROUND-CLASS 2	2.375" 0.0. @3.12 #/FT	2.875" 0.0. @4.64 #/FT	2.875" 0.0. @4.64 #/FT
SQUARE-ALT.	2.00" 50. @3.60 #/FT	2.50" 50. @5.70 #/FT	2.50" 50. @5.70 #/FT

SPECIFICATION 607	CATEGORY CODE ITEMS
APPROVED <i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-4-84
	APPROVAL 8-1-84
	REVISION 10-1-01
REVISION 10-10-89	
REVISION	REVISION
REVISION	REVISION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CHAIN LINK FENCE
TYPICAL 5 FT. RURAL 6 FT. & 8 FT

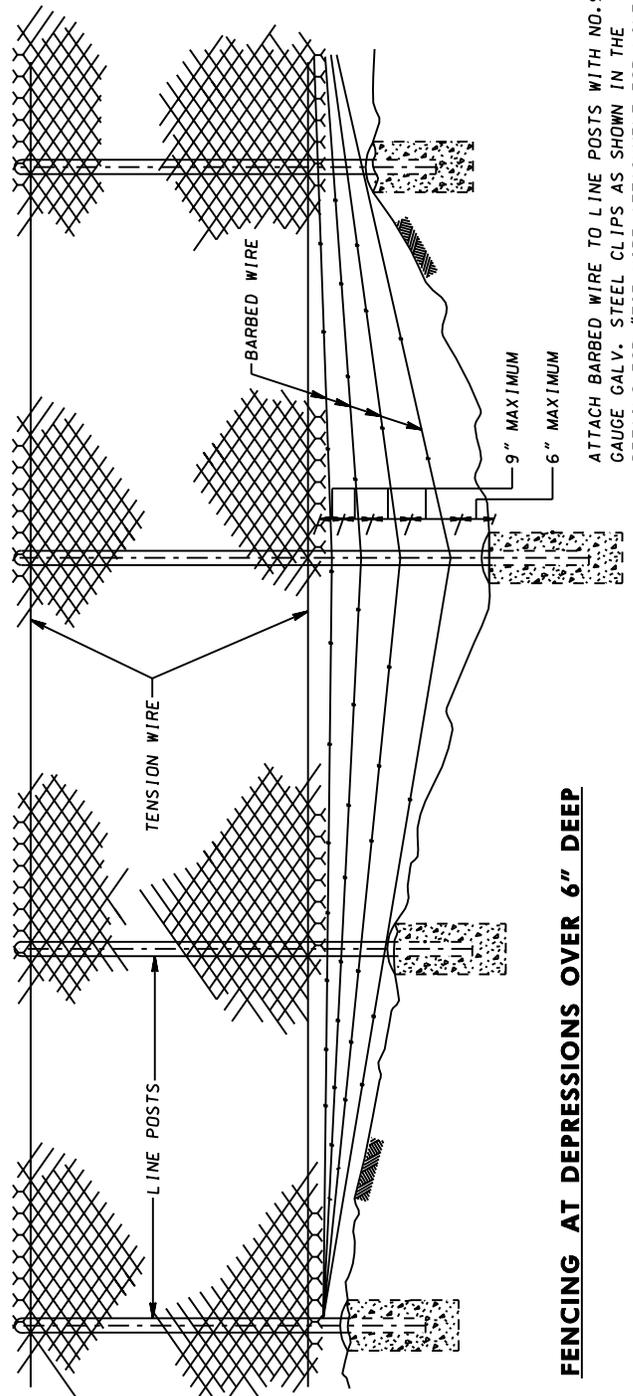
STANDARD NO. MD 690.01



NOTE

PULL POSTS SHALL BE INSTALLED AT SHARP BREAKS IN VERTICAL ALIGNMENT AND ON APPROXIMATE 500' CENTERS IN STRAIGHT RUNS OF FENCE OR AS DIRECTED BY THE ENGINEER. ALL TERM, POSTS, PULL POSTS & CORNER POSTS SHALL BE BRACED AS SHOWN.

FENCING AT GRADE CHANGES



FENCING AT DEPRESSIONS OVER 6" DEEP

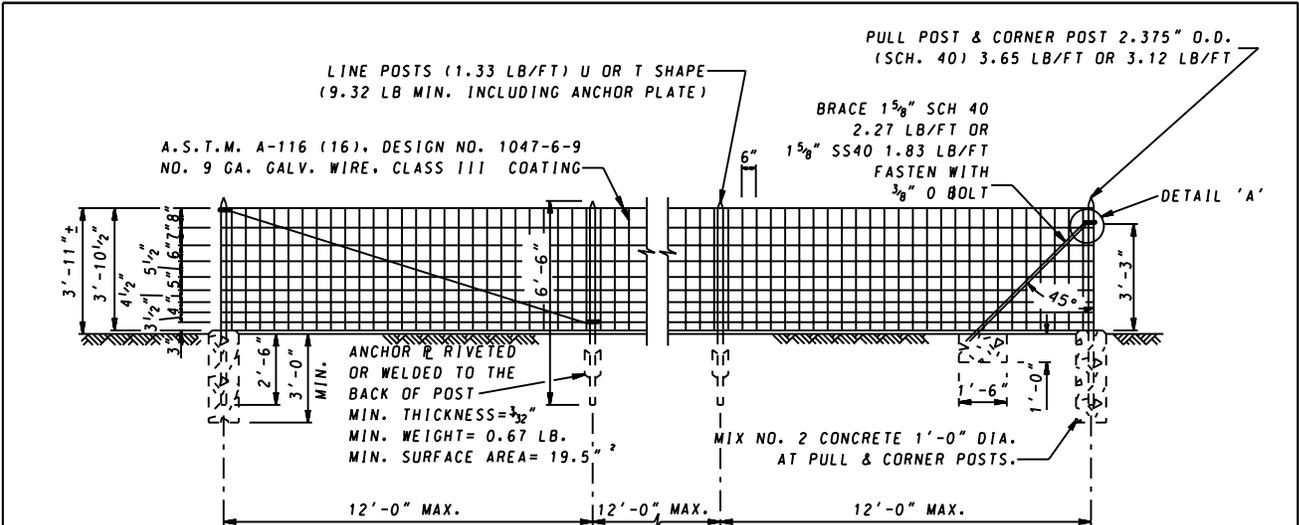
ATTACH BARBED WIRE TO LINE POSTS WITH NO. 9 GAUGE GALV. STEEL CLIPS AS SHOWN IN THE DETAILS FOR "TIE WIRE ATTACHMENT FOR LINE POST" ON STANDARD MD 690.21.

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 12-1-70	APPROVAL 9-14-71
	REVISED 10-1-01	REVISED 4-23-85
	REVISED	REVISED
	REVISED	REVISED

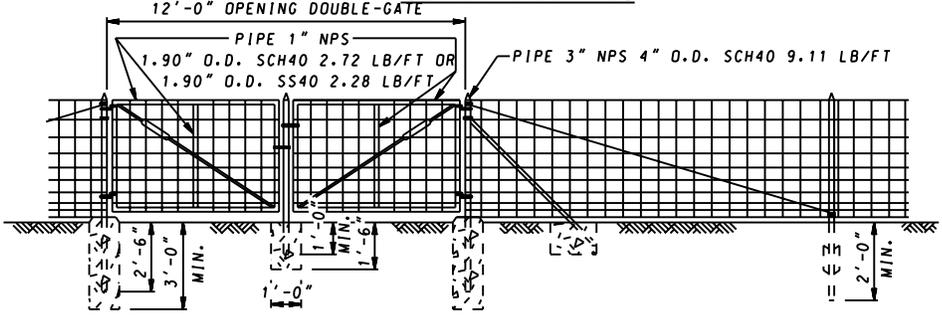
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CHAIN LINK FENCE
AT GRADE CHANGES & DEPRESSIONS

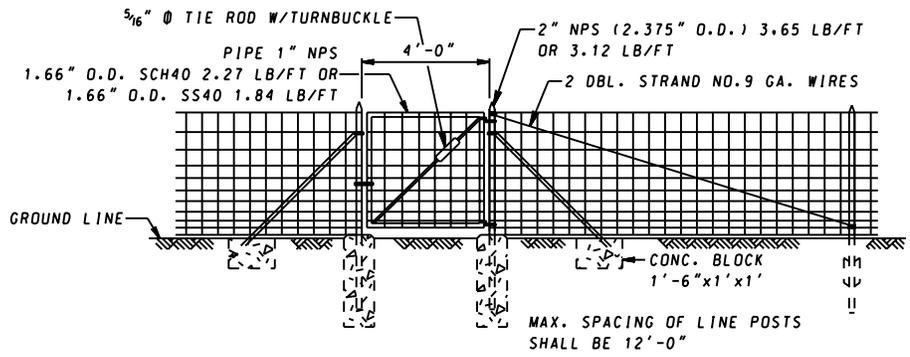
STANDARD NO. MD 690.02



GENERAL DETAILS



DOUBLE SWING GATE

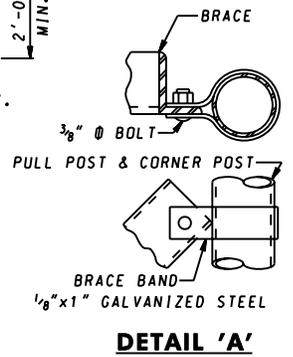


SINGLE GATE

NOMINAL PIPE SIZE (NPS)

NOTE

POSTS IN ROCK—WHERE SUBSTANTIAL ROCK IS ENCOUNTERED A HOLE ONE (1") INCH LARGER IN DIAMETER THAN THE POST AND OF 12" MINIMUM DEPTH FOR LINE POSTS AN 18" MINIMUM DEPTH FOR TERMINAL POSTS. SHALL BE MADE AFTER INSERTING THE POSTS. THE HOLES SHALL BE BACK FILLED WITH A HAND MIXED 1:2 MORTAR CONSISTING OF ONE PART PORTLAND CEMENT AND TWO PARTS FINE AGGREGATES MIXED TO A PLASTIC CONSISTENCY SHOWING NO SIGNS OF FREE WATER. THE HAND MIXING AND CONSOLIDATION OF THE MORTAR SHALL BE PERFORMED IN A MANNER APPROVED BY THE ENGINEER. THE WEIGHT OF STEEL PIPE CALLED FOR ON THIS STANDARD SHALL NOT VARY MORE THAN-5% FROM THE INDICATED WEIGHT, BUT MAY EXCEED SUCH INDICATED WEIGHT. THE WEIGHT OF STEEL SHAPES CALLED FOR ON THIS STANDARD SHALL NOT VARY MORE THAN-2.5% FROM THE INDICATED WEIGHT, BUT MAY EXCEED SUCH INDICATED WEIGHT.



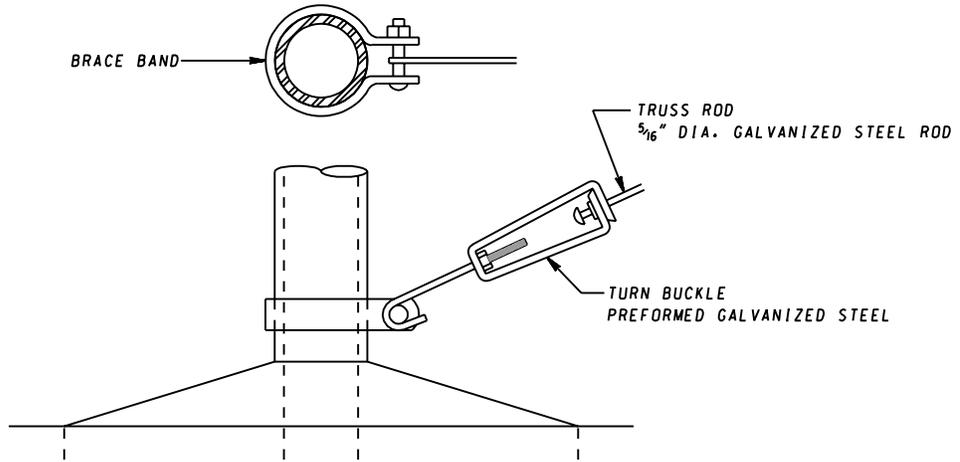
DETAIL 'A'

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kat G. McCallum</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 10-21-76	APPROVAL
	REVISED 8-05-08	REVISED 7-28-08
	REVISED	REVISED
	REVISED	REVISED

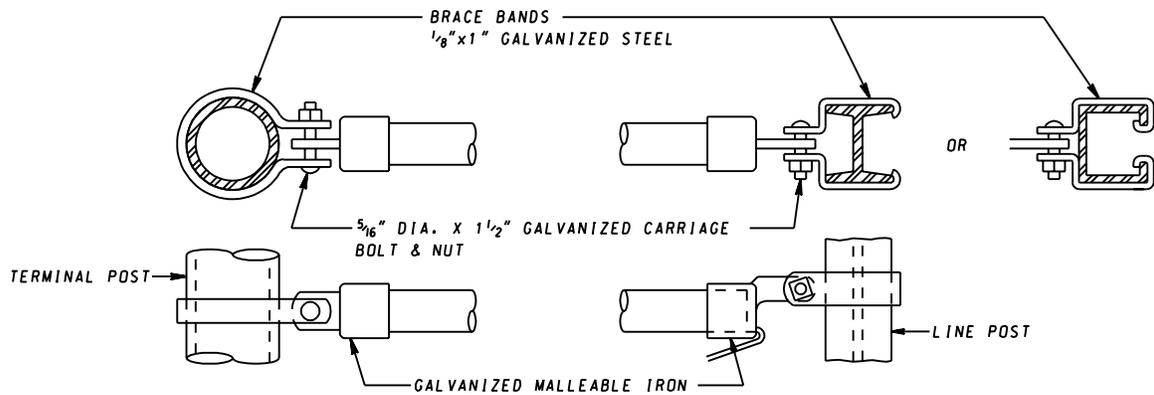
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

4'-0" FARM TYPE FENCE

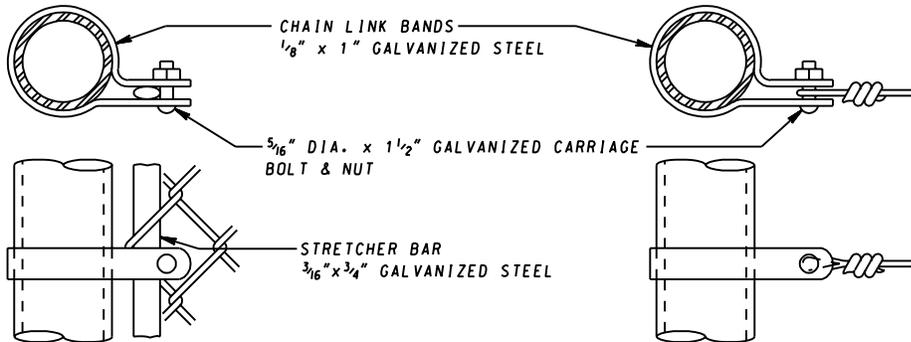
STANDARD NO. MD 690.03



TRUSS BRACE ATTACHMENT FOR ROUND CONSTRUCTION



BRACE RAIL ATTACHMENT FOR ROUND CONSTRUCTION

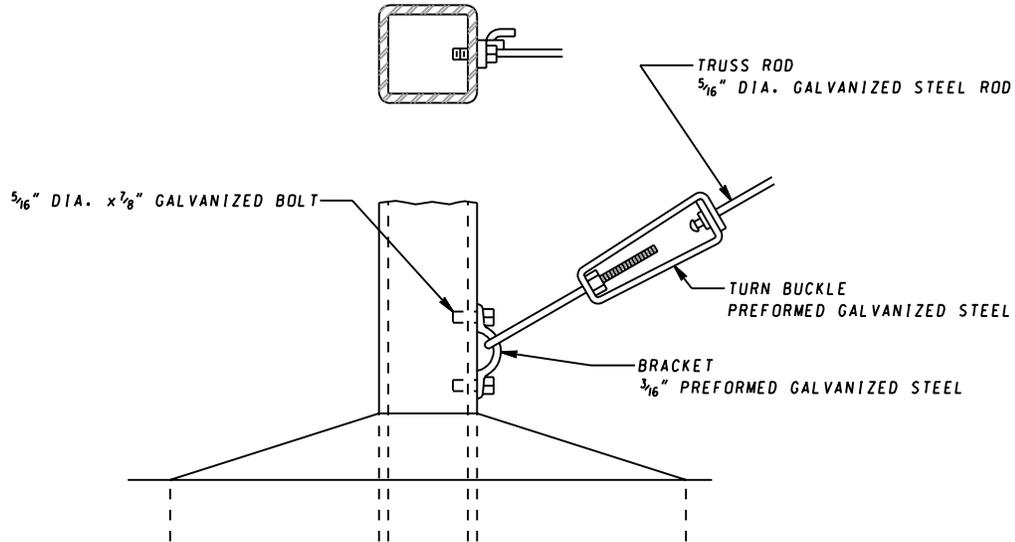


STRETCHER ROD ATTACHMENT

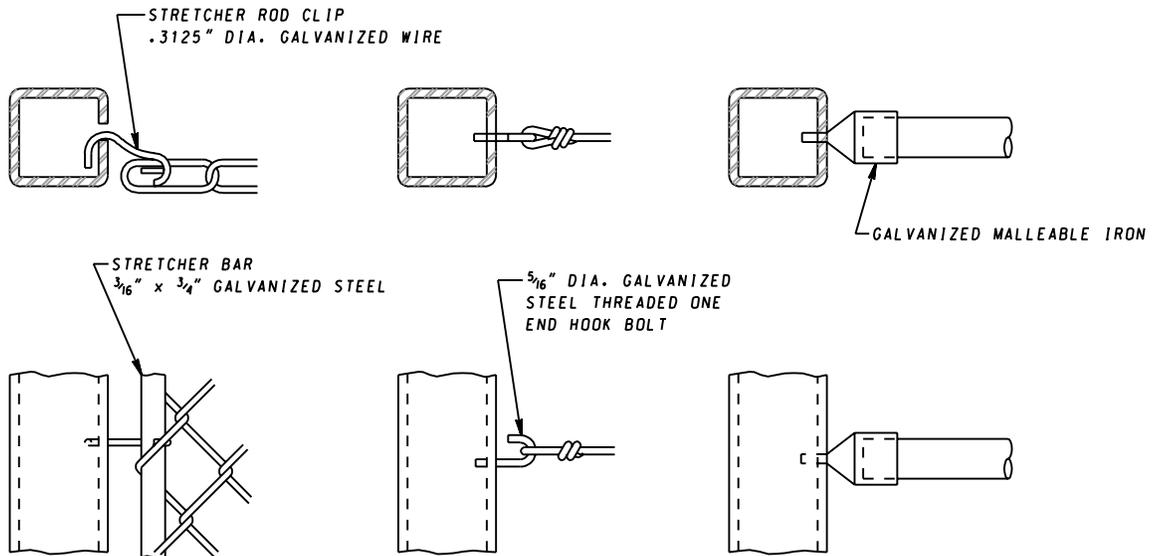
**ATTACHMENT FOR BARB WIRE OR
TENSION WIRE**

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 12-1-70	APPROVAL 9-14-71
	REVISED 10-1-01	REVISED 8-1-94
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CHAIN LINK FENCE
BRACE & ROD ATTACHMENTS-
ROUND CONSTRUCTION
STANDARD NO. MD 690.11



ALTERNATE TRUSS BRACE ATTACHMENT FOR SQUARE CONSTRUCTION



ALTERNATE STRETCHER ROD ATTACHMENT

ALTERNATE ATTACHMENT FOR BARB WIRE OR TENSION WIRE

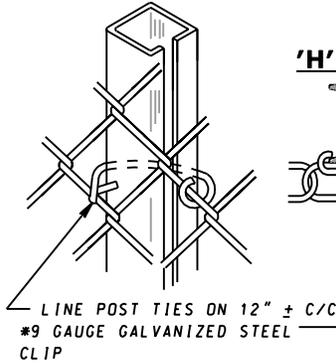
ALTERNATE BRACE RAIL ATTACHMENT FOR SQUARE CONSTRUCTION

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 12-1-70	APPROVAL 9-14-71
	REVISED 10-1-01	REVISED
	REVISED	REVISED

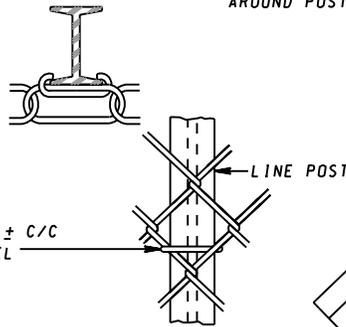
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CHAIN LINK FENCE
BRACE & ROD ATTACHMENTS-SQUARE CONSTRUCTION

STANDARD NO. MD 690.12

'C' POST OR 'ROUND' POST



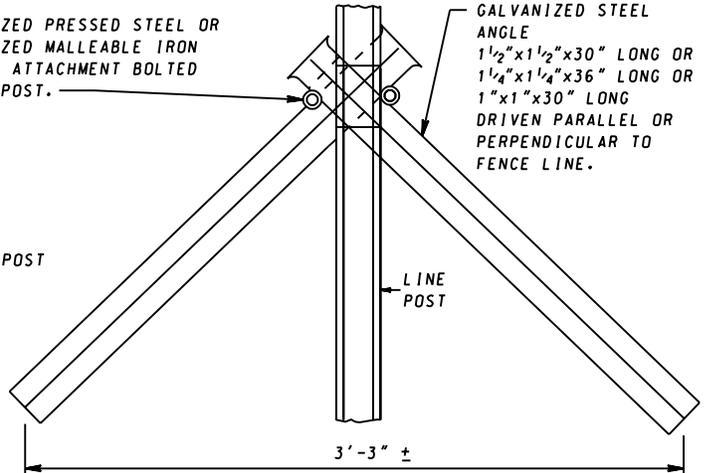
'H' POST



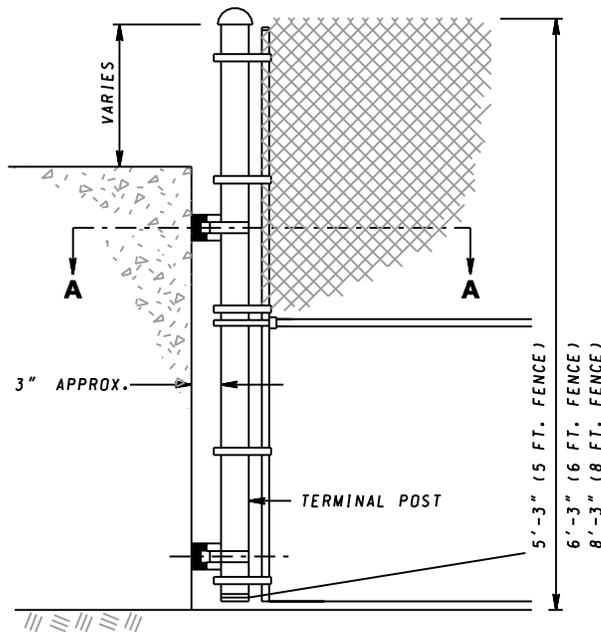
TIE WIRE ATTACHMENT FOR LINE POST

GALVANIZED PRESSED STEEL OR GALVANIZED MALLEABLE IRON SLOTTED ATTACHMENT BOLTED AROUND POST.

DRIVE ANCHOR BLADE GALVANIZED STEEL ANGLE 1 1/2" x 1 1/2" x 30" LONG OR 1 1/4" x 1 1/4" x 36" LONG OR 1" x 1" x 30" LONG DRIVEN PARALLEL OR PERPENDICULAR TO FENCE LINE.

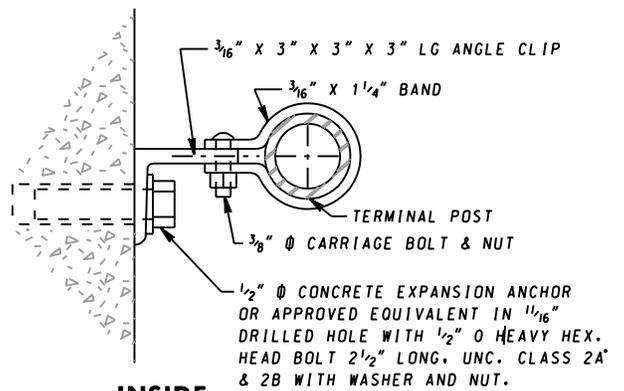


DRIVE ANCHOR FOR LINE POST ALTERNATE TO CONCRETE FOOTING



ALTERNATE POST ATTACHMENT AT BRIDGE END

OUTSIDE



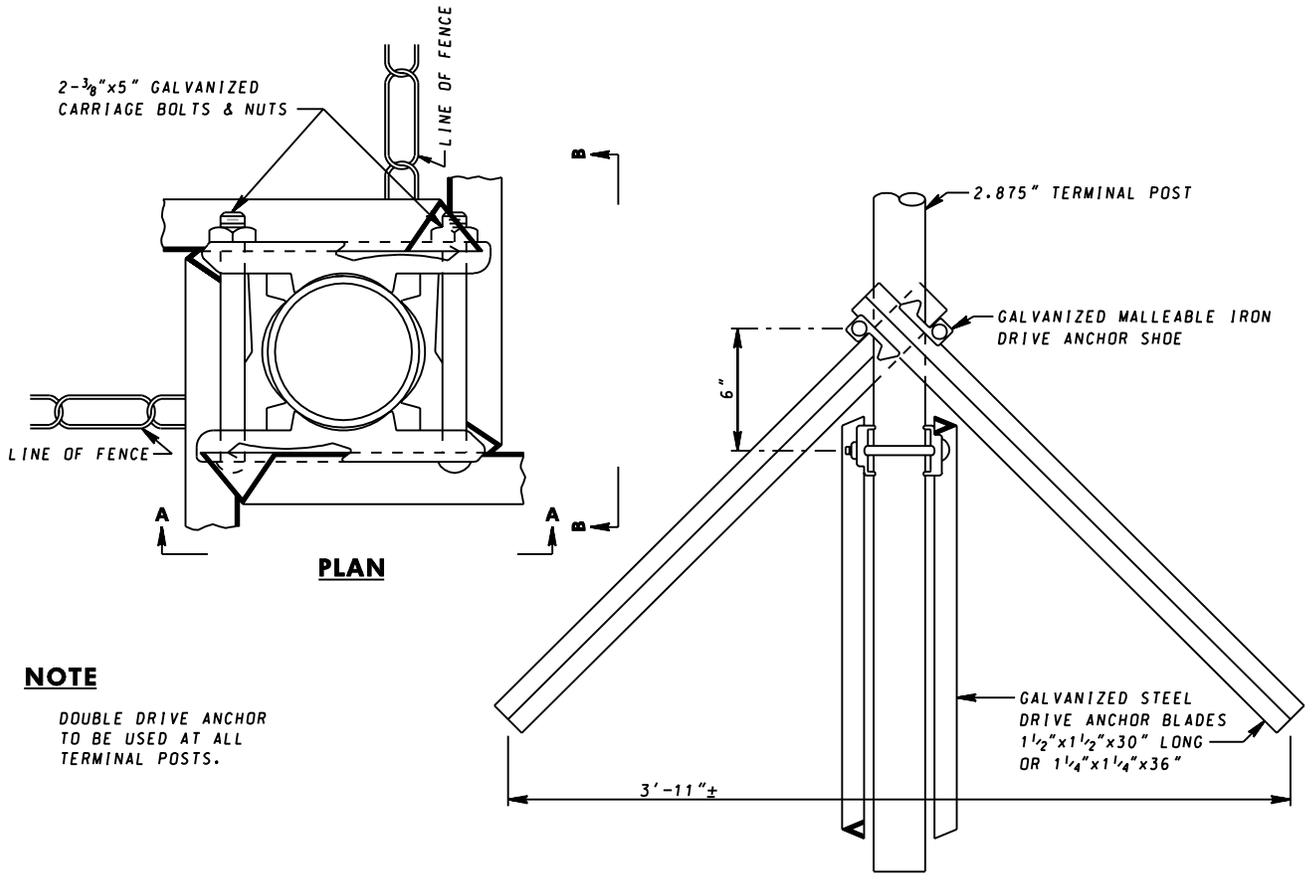
INSIDE

SECTION A-A

SPECIFICATION	CATEGORY CODE ITEMS	
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 2-1-70	APPROVAL 9-14-71
	REVISED 10-1-01	REVISED 4-23-85
	REVISED	REVISED
	REVISED	REVISED

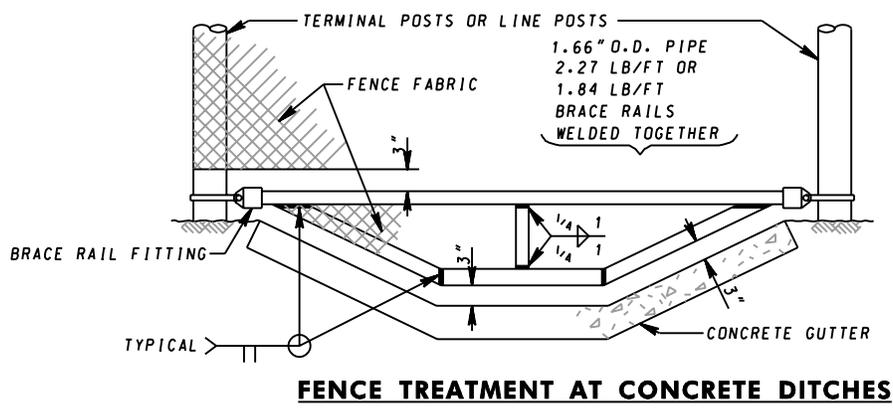
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CHAIN LINK FENCE
DRIVE ANCHOR & POST ATTACHMENT
AT BRIDGE

STANDARD NO. MD 690.21



NOTE
 DOUBLE DRIVE ANCHOR
 TO BE USED AT ALL
 TERMINAL POSTS.

SECTION A-A & SECTION B-B SIMILAR ELEVATION

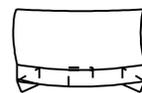
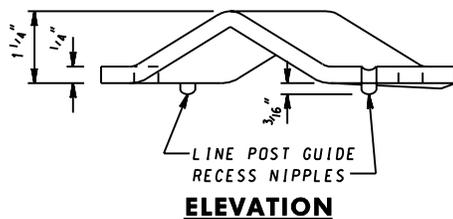
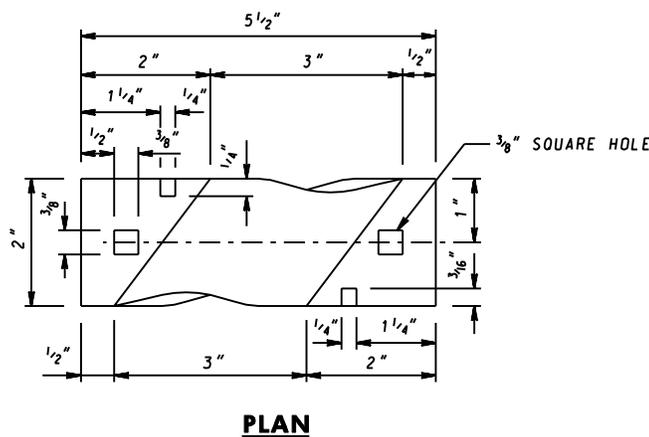
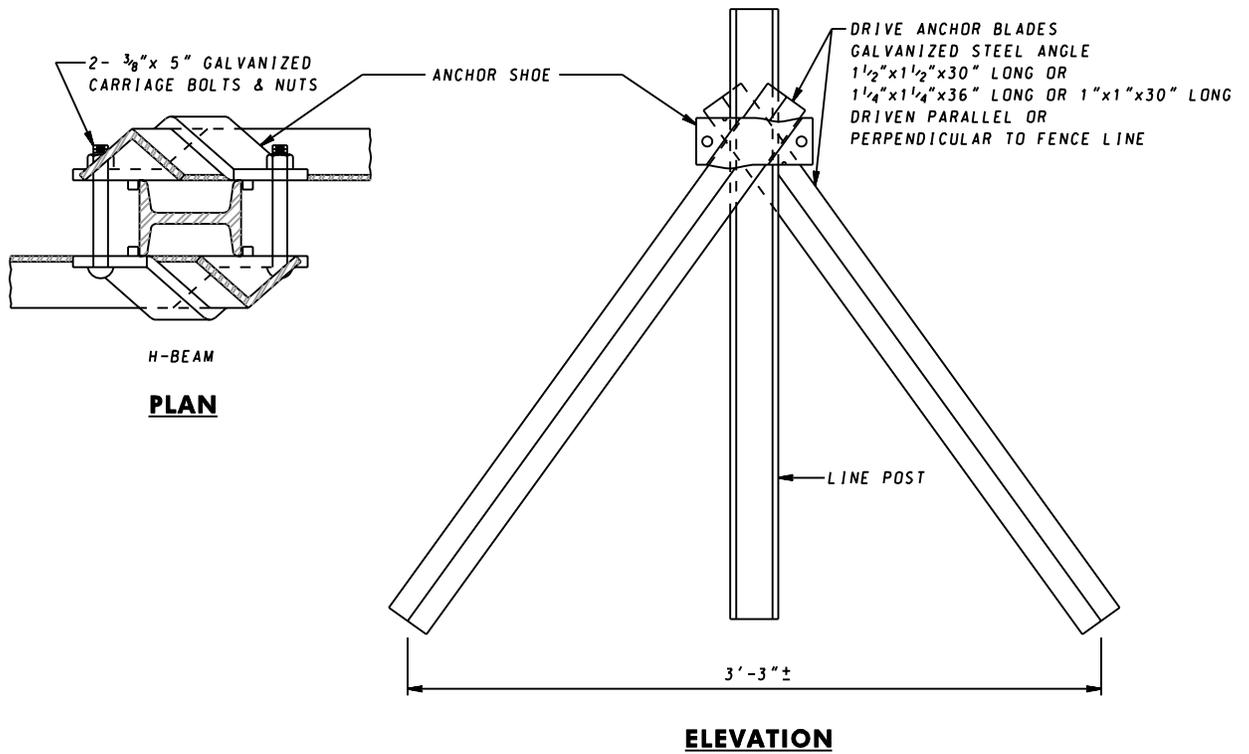


SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS APPROVAL 8-20-71 REVISED 10-1-01
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 9-14-71 REVISED 8-1-84
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CHAIN LINK FENCE
DOUBLE DRIVE ANCHOR & DITCH TREATMENT

STANDARD NO. MD 690.23



NOTE

THIS SHOE ASSEMBLY MAY BE USED IN PLACE OF THE ASSEMBLY SHOWN ON STANDARD PLATE MD-690.21

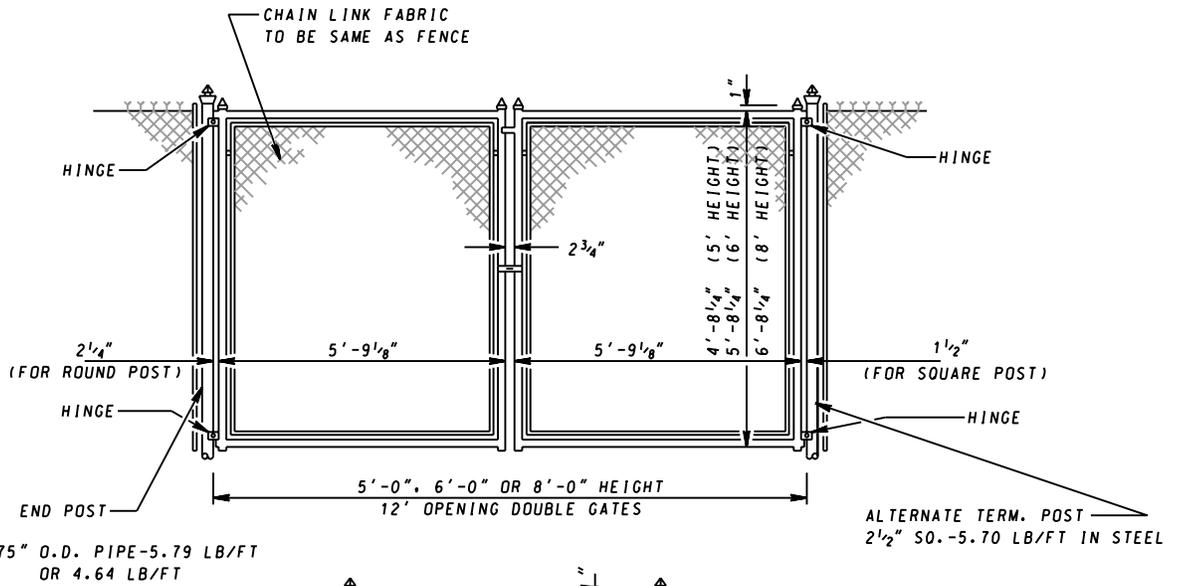
ANCHOR SHOE DETAILS

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	<i>Kirk G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 9-30-75
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 11-11-75
REVISED	REVISED 8-1-84
REVISED	REVISED
REVISED	REVISED

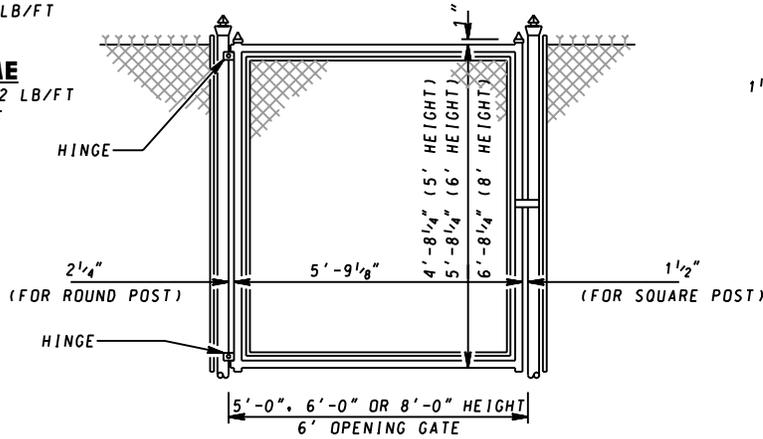
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CHAIN LINK FENCE
DRIVE ANCHOR SHOE ASSEMBLY

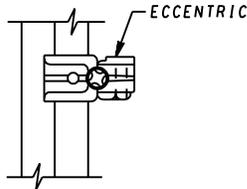
STANDARD NO. MD 690.24



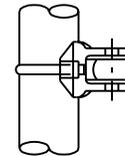
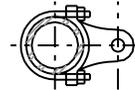
GATE FRAME
1.90" O.D. PIPE - 2.72 LB/FT OR 2.28 LB/FT



GATE FRAME
1 1/2" SQ. FRAME - 2.03 LB/FT



SQUARE POST HINGE



ROUND POST HINGE

SPECIFICATION 615	CATEGORY CODE ITEMS
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APPROVED *Kirk G. McCall*
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES



APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 12-1-70	APPROVAL 9-14-71
REVISED 10-1-01	REVISED 4-3-85
REVISED	REVISED
REVISED	REVISED

CHAIN LINK FENCE
GATE DETAILS

STANDARD NO. MD 692.01