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

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1. ALL POSTS SHALL BE 6', EXCEPT THOSE THAT CAN MEET **.
2. THE SLOPE BACK FILL MATERIAL SHALL BE COMPACTED FIRMLY TO THE ESTABLISHED SLOPE AND STABILIZED AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHOULD CONSTRUCT THE END ANCHORAGE TERMINAL AS SHOWN ON STD. MD 605.01-02.
4. LOW SPEED INSTALLATIONS REQUIRE 50 FEET (MINIMUM) LON.
5. RAIL PAID FOR PER LINEAR FOOT OF "TRAFFIC BARRIER W-BEAM USING 6' POST" (FROM POST AT A-A TO POST 3, BUT NOT INCLUDE POST(3). THE BURIED-IN-BACKSLOPE END TREATMENT PAID FOR PER EACH.
6. FOR ALTERNATIVE OFFSET BLOCKS, SEE STD. MD 605.21.
5. The slope back fill material shall be compacted firmly to the established slope and stabilized as directed by Buried-in-backslope end treatment (Type A) traffic barrier W-beam.

** Posts in back of ditch bottom may be shortened. Minimum embedment into ground below cover is 4'.

*** 1/2" steel plate to be bolted to posts 1, 2, and 3.

---

**Notes**

1. All posts shall be 8', except those that can meet **.

2. The bottom rail shall be tucked behind and bolted to post A-A using a 1/2" dia. hex. head bolt.

3. Offset blocks are not used for the bottom rail.

4. Maintain height of top rail on the front slope relative to edge of shoulder until a maximum height of 46" 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 should construct the end anchorage terminal as shown on Std. MD 605.01-02.

7. Low speed installations require 50 feet (minimum) LON.

8. Top rail paid for per linear foot of "traffic barrier W-beam using 8' post" (from post A-A to Post 3). Bottom rail paid for per linear foot of "traffic barrier W-beam panel." The Buried-in-backslope end treatment paid for per each.

9. For alternative offset blocks, see Std. MD 605.21.
**NOTES**

1. The 1" steel plate shall conform to the requirements of A-36. The plate may be welded or bolted to posts 1, 2, and 3 buried in the cut slope.

2. Field drilled holes and welded areas shall be coated with zinc rich paint.

3. For standard MD 605.01, posts shall be 6', except those that can meet ** on MD 605.01.

   For standard MD 605.01-01, posts shall be 8', except those that can meet ** on MD 605.01-01.

---

**SPECIFICATION**

**CATEGORY CODE ITEMS**

**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

**TRAFFIC BARRIER W–BEAM**

**BURIED–IN–BACKSLOPE END TREATMENT (TYPE A) – ANCHORAGE**

**STANDARD NO.**

**MD 605.01–02**
**NOTES**

1. 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 25:1 OVER THE FULL LENGTH AND ON A STRAIGHT LINE.
2. AN EFFECTIVE LON OF 34" SHALL BE INCLUDED IN THE END TREATMENT PAYMENT.
3. SYSTEM MUST BE INSTALLED AT A HEIGHT OF 31".
5. THIS SCHEMATIC DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. SEE MDOT SHA QPL FOR APPROVED SYSTEMS THAT ARE 2016 MASH COMPLIANT.

**SPECIFICATION**

<table>
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**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

**TRAFFIC BARRIER W-BEAM ONE-SIDED END TREATMENT (TYPE C)**

**STANDARD NO.**

MD 605.03
GRADE TO LIMIT OF END TREATMENT
OR AS DIRECTED BY THE ENGINEER

DIRECTION OF TRAFFIC

PLAN VIEW

SHOULDER

HEAD

END TREATMENT PER 605.03 ONLY

10' MIN.

VARIABLE 10:1 OR FLATTER SLOPE

EDGE OF SHOULDER

HINGE POINT

5' STANDARD
3' ACCEPTABLE WITH APPROVAL OF THE ENGINEER
6" ABSOLUTE MIN. TO HINGE POINT WITH THE
APPROVAL OF THE ENGINEER
* 50:1 TAPER SHOULD BE PROVIDED IF THE OFFSET
IS LESS THAN 4" FOR TYPE C END TREATMENT

STUB HEIGHT SHALL NOT
PROJECT MORE THAN 4"

VARIABLE 10:1 OR FLATTER SLOPE

HINGE POINT

EXISTING SLOPE

VARIABLE 10:1 OR FLATTER SLOPE

MATERIAL AS SPECIFIED
IN SECTION 901 OF
THE SPECIFICATION BOOK

NOTES

1. SURFACE ADJUSTMENT SHALL BE STABILIZED WITHIN 48 HOURS OR PER STABILIZATION REQUIREMENTS OF CONTRACT DOCUMENTS, WHICHER IS LESS.

2. FOR USE ON RESURFACE, REHABILITATION, AND RESTORATION PROJECTS ONLY.
NOTES

1. ALL W-BEAM AND HARDWARE COMPONENTS ACCORDING TO AASHTO SPEC. M 180.
2. FOUNDATION TUBE SHALL BE MANUFACTURED USING ASTM A500B STEEL AND SHALL CONFORM TO ASTM A500 GRADE B MATERIAL.
3. ONE-SIDED DOWNSTREAM END TREATMENT (TYPE K) NOT TO BE USED WHERE THERE IS OPPOSING TRAFFIC WITHIN 30 FT. OF THE END TREATMENT.

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W-BEAM ONE-SIDED DOWNSTREAM END TREATMENT (TYPE K)

STANDARD NO. MD 605.10
NOTES

1. BCT ANCHOR CABLE IS A 3/8" DIA. 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED. END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123. THREADED STUD SHALL CONFORM TO ASTM A325 OR SAE GRADE 5. MINIMUM BREAKING STRENGTH OF END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED 1. BCT ANCHOR CABLE IS A 3/8" DIA. 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED. END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123. THREADED STUD SHALL CONFORM TO ASTM A325 OR SAE GRADE 5. MINIMUM BREAKING STRENGTH OF END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED.
NOTES

1. ANCHOR PAD MAY BE REQUIRED BASED ON THE SELECTED END TREATMENT, MANUFACTURER’S INSTRUCTIONS, AND THE SITE CONDITIONS. FOR THE ANCHORING PAD DIMENSIONS AND MATERIALS AND TO ANCHOR THE UNIT TO EXISTING PAVEMENT, REFER TO THE MANUFACTURER’S 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 TRAFFIC BARRIER END TREATMENT INSTALLATION.


4. THIS SCHEMATIC DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. SEE MDOT SHA QPL FOR APPROVED SYSTEMS THAT ARE 2016 MASH COMPLIANT.

** SEE MD STD. 605.14

PLAN VIEW
(BI-DIRECTIONAL)

PLAN VIEW
(UNI-DIRECTIONAL)

** THE REQUIRED WIDTH OF THE UNIT VARIES DEPENDING UPON THE SYSTEM AND THE HAZARD TO BE SHIELDED. ATTACH END TREATMENT TO BARRIER ACCORDING TO MANUFACTURER’S SPECIFICATIONS.

TYPE D - GATING
TYPE E - NON-GATING
TYPE J - NON-GATING, SELF-RESTORING

SPECIFICATION

CATEGORY CODE ITEMS

APPROVED

DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL

SHA

REVISIONS

APPROVAL

FEDERAL

HIGHWAY ADMINISTRATION

APPROVAL 9-20-19

APPROVED 8-15-19

REVISED 2-25-20

REVISED 2-24-20

REVISED 3-16-22

REVISED 2-24-22

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER TWO-SIDED END TREATMENT AND CRASH CUSHION
(TYPES D, E, AND J)

STANDARD NO. MD 605.12
1. The use of this anchorage is limited to roadways with posted speeds of 40 MPH or less and AADT less than 10,000.

2. All items (anchor plate, cable, rod, drilled holes, nuts, bolts, etc.) necessary for the anchor shall be measured and paid per each of “Traffic Barrier W-Beam Radius Anchorage Type L.” Traffic Barrier End Section shall be incidental to this pay item.

3. The Type L anchorage is permitted within a single run of traffic barrier as shown. If a Type L anchorage is used, the downstream end treatment is required on the traffic barrier end only if within 30’ of opposite direction traffic.

4. The ground strut as shown in Std. MD 605.10 and MD 605.10-01 is not required in the Type L anchorage.
**TWO SIDED END TREATMENTS**

**LEFT SIDE OF ROADWAY**

**RIGHT SIDE OF ROADWAY**

**ONE SIDED END TREATMENTS**

**NOTES**

1. **DELINÉATION MUST MEET THE REQUIREMENTS IN MUTCD SECTIONS 2C.64 AND 2C.65.**
2. **DELINÉATION SHALL BE TYPE IX OR XI REFLECTIVE SHEETING WITH BLACK STRIPES ON FLUORESCENT YELLOW.**
3. **WHEN PLACING SHEETING ON BARE METAL, METAL SHOULD BE CLEANED AS PER MANUFACTURER’S RECOMMENDATIONS PRIOR TO APPLICATION OF SHEETING.**
4. **SHEETING SHOULD EXTEND TO TOP AND BOTTOM AND FULL WIDTH OF TERMINAL. SIZE MAY BE ADJUSTED AS NECESSARY TO FIT DIFFERENT MANUFACTURER’S TERMINALS.**
5. **DELINÉATION WILL BE INCIDENTAL TO THE APPROPRIATE TRAFFIC BARRIER END TREATMENT.**

---

**SPECIFICATION**

**CATEGORY CODE ITEMS**

**APPROVED**

**DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT**

**APPROVAL**

**SHA**

**REVISED**

**FEDERAL**

**HIGHWAY ADMINISTRATION**

**APPROVAL**

**9-20-19**

**REVIEWED**

**8-15-19**

**REVIEWED**

**REVISED**

**REVISED**

**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

**TRAFFIC BARRIER END TREATMENT AND CRASH CUSHION DELINEATION**

**STANDARD NO.**

**MD 605.14**
NOTES

1. WOOD OFFSET BLOCKS 6"x8"x14" TO BE USED UNLESS OTHERWISE SPECIFIED OR DIRECTED BY THE ENGINEER.
2. FOR BOLT AND BOLT NUT DETAILS, SEE STD. MD 605.23.
3. COMPOSITE OFFSET BLOCKS THAT ARE APPROVED BY THE ADMINISTRATION MAY BE USED IN LIEU OF WOOD OFFSET BLOCKS EITHER DUE TO CONTRACTOR’S CHOICE OR WHEN SPECIFIED IN THE CONTRACT DOCUMENTS). REFER TO QPL FOR APPROVED SUBSTITUTES.

SPECIFICATION 605

CATEGORY CODE ITEMS

APPROVED

DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL SHA REVISIONS

APPROVAL 11-10-99

REVISED 2-24-22

APPROVAL FEDERAL HIGHWAY ADMINISTRATION

APPROVAL 7-2-99

REVISED 12-23-19

REVISED 2-24-20

REVISED 3-14-22

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

OFFSET BLOCK

STANDARD NO. MD 605.21
TRAFFIC BARRIER W-BEAM
SINGLE FACE

3''
3‰
1 ˆ "
25
1˜"
2 Š "
R
R
R
R
5
5
5
5
C
L
R
C
L
R
R
R
R
3 ' "
1 " "
3 ' "
55
55
1 2 ' "
R
R
R
R
5
5
5
5
C
L
SIDES VIEW
(MATERIAL: 12 GA. STEEL)

WOOD OFFSET BLOCK
(SEE STD. MD 605.21)

NOTES

1. W-BEAM RAIL IS FURNISHED SHOP CURVED: CONCAVE OR CONVEX TO RADIUS BETWEEN 20-150'.
2. W-BEAM RAIL SECTIONS SHALL BE 12'-6" OR 25'-0" LENGTHS UNLESS SPECIFIED OTHERWISE.
NOTES
1. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 3 ON STD. MD 605.21.
2. THE CONTRACTOR HAS THE OPTION TO USE SHORTER BOLTS WITH A MINIMUM OF 1/2" PROTRUSION BEYOND NUT.
3. WITH ENGINEER'S APPROVAL, ONE POST CAN BE OMITTED WITHOUT OTHER CHANGES. A MINIMUM OF EIGHT POSTS MUST BE INSTALLED BETWEEN OMITTED POSTS.
AASHTO M 111.

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

1.888" - .015"
3.94" + .015"

.191" MIN. TYP + .014" - .000"

NOTES
1. 8' POST SHALL BE USED ONLY WHEN SPECIFIED.
2. W6X9 POSTS ARE OPTIONAL SUBSTITUTE FOR W6X8.5 POST.

WELDED W6X8.5 STEEL POST

MD 605.23-01
NOTES

1. THE TRAFFIC BARRIER W-BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. FOR OMITTING ONE POST, SEE STD. MD 605.23.
3. AT LEAST 62½ FT OF TRAFFIC BARRIER, INCLUDING END ANCHORAGE, SHALL BE INSTALLED BOTH UPSTREAM AND DOWNSTREAM FROM THE CRT POSTS.
NOTES

NOTES
1. FOR SPLICES, SPLICE BOLTS, AND OTHER DETAILS, SEE STD. MD 605.23.
2. FOR TRAFFIC BARRIER W-BEAM RAIL DETAIL, SEE STD. MD 605.22.
3. THE PAYMENT FOR THE SYSTEM, INCLUDING W-BEAM, HARDWARE, DRILLED HOLES, LABOR AND TOOLS, SHALL BE MEASURED AND PAID FOR PER LINEAR FOOT FOR THE ITEM "TRAFFIC BARRIER W-BEAM MEDIAN BARRIER."

1. FOR SPLICES, SPLICE BOLTS, AND OTHER DETAILS, SEE STD. MD 605.23.
2. FOR TRAFFIC BARRIER W-BEAM RAIL DETAIL, SEE STD. MD 605.22.
3. THE PAYMENT FOR THE SYSTEM, INCLUDING W-BEAM, HARDWARE, DRILLED HOLES, LABOR AND TOOLS, SHALL BE MEASURED AND PAID FOR PER LINEAR FOOT FOR THE ITEM "TRAFFIC BARRIER W-BEAM MEDIAN BARRIER."
NOTES
1. FOR SPLICES, SPLICE BOLTS AND OTHER DETAILS, SEE STD. MD 605.23.
2. FOR TRAFFIC BARRIER W-BEAM RAIL DETAIL, SEE STD. MD 605.22.
3. THE PAYMENT FOR THE SYSTEM, INCLUDING W-BEAM, 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 RAIL.”

**ELEVATION VIEW (SIDE)**

WOOD OFFSET BLOCK
SEE STD. 605.21

SHOULDER
SEE STD. MD. 605.31

STEEPER THAN 10:1 TO 4:1

TRAFFIC BARRIER POST
W6X8.5 (W6X9) 6'-0" LONG
SEE STD. MD 605.23-01

HINGE POINT
VARIES

18° MAX.

2' MIN.
1. Steel post shall conform to A36 and shall be galvanized in accordance with A123.
DOUBLE FACED BARRIER

NOTES
1. FOR STEEL POSTS, WOOD OFFSET BLOCKS, SPLICES, THRIE-BEAM, AND RECTANGULAR PLATE WASHERS, SEE STD. MD 605.29.
**NOTES**

1. The minimum offset dimension shown can be reduced by stiffening the traffic barrier system. See STD MD 605.31-01.
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' and the slope beyond the hinge is steeper than 4:1.
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 31".
4. When slope is steeper than 6:1, the face of the barrier must be aligned with the edge of shoulder.
5. Slope in front of barrier installed 2' offset from shoulder edge must be 10:1 or shallower.

**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

**TRAFFIC BARRIER W-BEAM PLACEMENT DETAILS**

**STANDARD NO.** MD 605.31
1. The traffic barrier W-beam sections shall be lapped in the direction of traffic.
### FLARE RATES

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<th>W-BEAM</th>
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<tbody>
<tr>
<td>70</td>
<td>15:1</td>
</tr>
<tr>
<td>60</td>
<td>14:1</td>
</tr>
<tr>
<td>55</td>
<td>12:1</td>
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<td>11:1</td>
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<tr>
<td>45</td>
<td>10:1</td>
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<tr>
<td>40</td>
<td>8:1</td>
</tr>
<tr>
<td>30</td>
<td>7:1</td>
</tr>
</tbody>
</table>

**NOTE**

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.

---

**ELEVATION VIEW W-BEAM HEIGHT TRANSITION**

**NOTE**

1. For changes in W-beam installation height, when tying in to existing, undamaged traffic barrier that is not being replaced as part of the compact, use a maximum transition of 2 inches in height per 12’ 6" panel of W-beam installed.

2. For transitions to barrier configurations with splices at the post rather than the mid-span, delete final post as shown.

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**SPECIFICATION**

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**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

**TRAFFIC BARRIER W BEAM FLARE RATES AND HEIGHT TRANSITION**
1. ALL BLOCKOUTS TO BE EITHER 6"x12"x19" (THREE-BEAM) OR 6"x12"x14" (W-BEAM).

2. THRESHOLD TERMINAL CONNECTORS, THREE-BEAM SECTIONS, AND W-BEAM SECTIONS, SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.

3. FOR THREE-BEAM DETAILS, INCLUDING STEEL POSTS, OFFSET BLOCKS, AND SPLICES, SEE MDD-605.29.

4. A CURB MAY BE USED BELOW THE TRAFFIC BARrier THREE-BEAM SYSTEM. IF A CURB IS USED, PLACE DOUBLE NESTED W-BEAM IN THIS SECTION.

5. FOR TERMINAL CONNECTOR AND TRANSITION SECTIONS, SEE MDD-605.41-02.

6. ALL BLOCKOUTS TO BE EITHER 6"x12"x19" (THREE-BEAM) OR 6"x12"x14" (W-BEAM).

7. FOR THREE-BEAM DETAILS, INCLUDING STEEL POSTS, OFFSET BLOCKS, AND SPLICES, SEE MDD-605.29.
NOTES
1. ALL BLOCKOUTS TO BE EITHER 6"x12"x19" (THREE-BEAM) OR 6"x12"x14" (W-BEAM).
2. THREE-BEAM TERMINAL CONNECTOR, THREE-BEAM SECTIONS, AND W-BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
3. THE TRAFFIC BARRIER THREE-BEAM ANCHORAGE AT BRIDGE END POSTS SHALL BE PLACED ON SLOPES 10:1 OR FLATTER.
4. FOR THREE-BEAM DETAILS, INCLUDING STEEL POSTS, OFFSET BLOCKS, AND SPLICES, SEE STD. MD 605.29.
5. FOR TERMINAL CONNECTOR AND TRANSITION SECTION, SEE STD. MD 605.41-02.
6. A 4" CURB MAY BE ADDED BELOW THE TRAFFIC BARRIER THREE-BEAM SYSTEM. IF A CURB IS USED, PLACE DOUBLE (NESTED) W-BEAM IN THIS SECTION.
7. FOR THIS OVERLAY STANDARD, AN ASYMMETRIC TRANSITION REPLACES THE SYMMETRIC TRANSITION AND THE ADJACENT W-BEAM IS RAISED 3" ON THE POSTS TO MAINTAIN A 31" TOP MOUNTING HEIGHT.
8. OVERLAY SHALL EXTEND LATERALLY AT LEAST TO THE FACE OF THE RAIL. OVERLAY SHALL NOT EXTEND BEYOND FACE OF POSTS.
NOTE

1. 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. Hole may be punched or drilled.
NOTES
1. THIS TYPE OF ANCHORAGE IS TO BE USED ONLY ON THE TRAILING ENDS OF A STRUCTURE 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 CORE FOUR (4) 1" DIA. HOLES THROUGH CONCRETE BARRIER, FURNISH AND INSTALL FOUR (4) 7/8" DIA. HEAVY DUTY GALVANIZED HEX BOLTS AND NUTS WITH FOUR (4) RECTANGULAR PLATE WASHERS.
NOTES

1. THIS TYPE OF ANCHORAGE IS TO BE USED ONLY ON THE TRAILING END OF A STRUCTURE ON A HIGHWAY WITH DIRECTIONAL ONE WAY TRAFFIC.
2. THRIE-BEAM TERMINAL CONNECTOR, SYMMETRIC TRANSITION SECTION, AND W-BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
3. THE TRAFFIC BARRIER THRIE-BEAM ANCHORAGE AT BRIDGE END POSTS SHALL BE PLACED ON SLOPES 10:1 OR FLATTER.
4. FOR TERMINAL CONNECTOR AND TRANSITION SECTION, SEE STD. MD 605.41-02.
5. FOR END TREATMENT, SEE STD. MD 605.10.
6. "TRAFFIC BARRIER THRIE-BEAM ANCHORAGE TO VERTICAL FACE DOWNSTREAM" PAID FOR BY EACH. SEE STD. MD 605.10 FOR PAYMENT OF THE END TREATMENT.

ELEVATION VIEW
CONNECTING TO W-BEAM

ELEVATION VIEW
CONNECTING TO END TREATMENT

SPECIFICATION
605

CATEGORY CODE ITEMS

APPROVED
1

DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL
SHA
REVISIONS

APPROVAL FEDERAL
HIGHWAY ADMINISTRATION

APPROVAL 3-16-22
APPROVAL 2-24-22

REVISED

REVISED

REVISED

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE-BEAM
ANCHORAGE TO VERTICAL FACE
DOWNSTREAM

STANDARD NO. 605.45
TRAFFIC BARRIER W BEAM PLACEMENT OR APPROPRIATE END TREATMENT OR W BEAM TO BARRIER CONNECTION

LIMIT OF PAYMENT
LONG WOOD BREAKAWAY POSTS

AREA BEHIND TRAFFIC BARRIER W BEAM TO BE MAINTAINED FREE OF FIXED OBJECTS OR OTHER HAZARDS.

SECTION A-A

TRAFFIC BARRIER W BEAM PLACEMENT, AFTER ENTRANCE SPECIAL END ANCHORAGE.

PLAN

SLOPE = 15:1 OR FLATTER

4' ROUNDING

LONG WOOD BREAKAWAY POST

RADIUS

MIN. REQUIRED AREA FREE OF FIXED OBJECTS

<table>
<thead>
<tr>
<th>RADIUS</th>
<th>L x W</th>
</tr>
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<tbody>
<tr>
<td>8'-6&quot;</td>
<td>25' x 15'</td>
</tr>
<tr>
<td>11'-0&quot;</td>
<td>30' x 15'</td>
</tr>
<tr>
<td>25'-6&quot;</td>
<td>40' x 20'</td>
</tr>
<tr>
<td>35'-0&quot;</td>
<td>50' x 20'</td>
</tr>
</tbody>
</table>

8" x 8" POST & OFFSET BLOCK

SEE ANCHOR PLATE DETAIL

2'-6" x 2'-6" x 2'-6" CONCRETE ANCHOR

SECURE CABLE LOOP WITH 5 CABLE CLIPS

1'/2 x 7'-3" GALVANIZED ROD W/ WELDED EYE

6" HOOK OR 5" DIA. WASHER & NUT.

NOTES:
1. NO WASHERS ARE USED ON THE RAIL SIDE OF THE LONG WOOD BREAKAWAY POSTS.
2. THE CURVED TRAFFIC BARRIER W BEAM SECTION SHALL BE SHAPED.
3. PLACE TRAFFIC BARRIER IN CONJUNCTION WITH CURVED TRAFFIC BARRIER W BEAM SECTION. THE CURB CANNOT BE HIGHER THAN 2'.
4. IN THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE RAIL IS NOT TO BE BOLTED TO THE CENTER POST.

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

TRAFFIC BARRIER W BEAM, SHORT RADIUS

STANDARD NO. MD 605.52
NOTES
1. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
2. ALL WOOD SIZES ARE NOMINAL DIMENSIONS.
3. POSTS SHOULD BE PLACED SO THE BREAKAWAY HOLES ARE NO LOWER THAN GROUND LEVEL
   AND NO HIGHER THAN 4" ABOVE GROUND LEVEL.
4. LOWER BREAKAWAY HOLE ONLY NEEDED ON BURIED END SECTION.
SWAGED CABLE ASSEMBLAGE AND RELATED HARDWARE ASSEMBLY

POST SLEEVE

ANCHOR PLATE TO W-BEAM CONNECTION DETAIL

TIMBER BEARING PLATE

END PLATE

SECTION A-A

NOTES
1. TO ENSURE THAT THE TIMBER BEARING PLATE REMAINS IN POSITION, 2-10G GALVANIZED STEEL NAILS SHALL BE DRIVEN IN THE SHORT TIMBER BREAKAWAY POST, AND BENT OVER BEARING PLATE.
2. TIGHTEN ASSEMBLY UNTIL CABLE IS TIGHT.
3. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
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 TIED AT THE ROADWAY PAVEMENT CONSTRUCTION JOINT. REFER TO STANDARD MD 572.61 FOR METHOD OF 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 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.

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

1. SLOPE GUTTER PAN 1/8" PER FOOT TOWARD FLOW LINE ON ALL ROADWAYS INCLUDING SUPERELEVATED SECTIONS, EXCEPT INTERCHANGE RAMPS.
2. ROADWAY PAVEMENT SLOPE.
3. ROADWAY PAVEMENT CONSTRUCTION JOINT.
4. PROVIDE LONGITUDINAL TIE DEVICE "J" BAR MODIFIED. REFER TO STANDARD MD 572.61.
5. FLOW LINE.

**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 TIED AT THE ROADWAY PAVEMENT CONSTRUCTION JOINT. REFER TO STANDARD MD 572.61 FOR METHOD OF 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 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 IN APPROPRIATE INLET STANDARDS.
SLOPE GUTTER PANS 1/8" PER FOOT TOWARDS FLOW LINE ON ALL ROADWAYS INCLUDING SUPERELEVATED SECTIONS, EXCEPT INTERCHANGE RAMPS.

ROADWAY PAVEMENT SLOPE.

ROADWAY PAVEMENT CONSTRUCTION JOINT.

PROVIDE LONGITUDINAL TIE DEVICE "J" BAR MODIFIED. REFER TO STANDARD NO. MD 572.61.

FLOW LINE.

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 NO. 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 AND PER LINEAR FOOT FOR THE ITEM CONCRETE CURB OR COMBINATION CONCRETE CURB AND GUTTER, AS SPECIFIED IN THE CONTRACT DOCUMENTS.
NOTES

1. 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.

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 CANNOT BE PROVIDED, 36" MIN. MAY BE USED AS LONG AS PASSING ZONES ARE PROVIDED IN ACCORDANCE WITH STD. MD-655.02.

5. 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. MD-60.02-01 TYPE C. PAYMENT FOR DEPRESSING THE CURB SHALL BE AS SPECIFIED ON STD. MD-60.03 NOTE C.

6. TRANSITION PANELS TO TIE INTO EXISTING SIDEWALK MUST BE A MINIMUM OF 5" IN LENGTH.


8. USE MIX 9 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

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
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 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 MD-655.02.

5. TRANSITION PANELS TO TIE INTO EXISTING SIDEWALK MUST BE A MINIMUM OF 6' IN LENGTH.

6. USE MIX 9 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

PLAN

A

*H x 12

ENTRANCE WIDTH 20' MIN.

*H x 12

BACK OF DEPRESSED CURB

FLOW LINE

SUBSURFACE COMBINATION CONCRETE CURB AND GUTTER

*H

3'

A

ELEVATION

*H x 12

BACK OF CURB

FACE OF CURB

EXPANSION JOINT MATERIAL

ENTRANCE TIE-IN MATCH TOP OF CURB ELEV.

VARIES

SEE PLANS FOR ENTRANCE PAVING SECTION

VARIES

6" GRADED AGGREGATE BASE

SEE NOTE 5 ON STD. MD-630.01

6" PLAIN CEMENT CONCRETE PAVEMENT (RESIDENTIAL). (SEE NOTE 4)
8" PLAIN CEMENT CONCRETE PAVEMENT (COMMERCIAL). (SEE NOTE 4)

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.
4. USE MIX 9 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
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 STOP.

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

SPECIFICATION 608

CATEGORY CODE ITEMS

APPROVED

DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

MARYLAND DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE WHEEL STOPS

STANDARD NO. MD 634.04
SHELF

PLATFORM

ANTI-TWIST PLATE

CLAMP

BRACKET

SINGLE MAILBOX ASSEMBLY

DOUBLE MAILBOX ASSEMBLY

1. NOTE THAT EITHER POST MAY BE USED. MIXING OF POSTS NOT ALLOWED IN MULTIPLE ASSEMBLIES.

SPACING FOR MULTIPLE POST INSTALLATION

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

ON GRADE

AT LOW POINT

SECTION A-A

SECTION B-B

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

GUTTER LENGTH MAY BE VARIED AS DIRECTED.
NOTE

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

AT LOW POINT

NOTE

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

SECTION A-A

SECTION B-B
**NOTES**

1. UNLESS OTHERWISE SPECIFIED, LONITUDINAL 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” HOLES IN MEDIAN FOR SIGNS, SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
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 MO 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" @ HOLES IN MEDIAN FOR SIGNS, SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
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.
   SOLID BAR AND SLEEVE MAY BE REPLACE BY TUBE WITH INTERNAL THREAD.

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.

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.
7. Tolerances in dimensions shown shall be within 1/2".
8. Conduit: If required refer to Std. MD 648.06 for location.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

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 ¼".

8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.06 FOR PROPOSED LOCATION.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

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 EXTRAS DIAGNOL NO. 4 BARS ARE REQUIRED. SEE STD. MD 648.05 FOR THE DIAGNOL BAR DETAILS.

1. 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.

2. THE VERTICAL WALL FOR THE FOOTER MAY BE FORMED TO PROVIDE A NEAT VERTICAL FACE FOR THE FOOTER. ONLY PERIODIC WALL MAY BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL WALL SIDE IS APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE FOOTER 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.
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

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.
4. TIE BARS TOGETHER. VERTICAL NO. 4 BARS SHALL GRADE 40.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. 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.
7. TO BE USED AS FREE STANDING BARRIER ONLY (NO BACKING).
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4”.
9. CONDUIT: IF REQUIRED REFER TO STD. NO. 648.06 FOR LOCATION.

**JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY**

**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**
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

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
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.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

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
REINFORCEMENT:
VERTICAL REINFORCEMENT SHALL BE NO. 4 BARS BENT, 16" LENGTH OF ENDS BENT VERTICALLY PLUMB TO ACHIEVE 1" C/C AND SPACED AT 18" C/C THROUGHOUT LENGTH OF NEED. HORIZONTAL REINFORCEMENT SHALL BE 3 CONTINUOUS NO. 5 BARS SPACED AS SHOWN. SEE NOTE 4.

RIGID PAVEMENT SURFACE

FLEXIBLE PAVEMENT SURFACE

ROUGHEN CONSTRUCTION JOINT

FLEXIBLE PAVEMENT SURFACE

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

NEW CONSTRUCTION

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST USING THE SLIP FORM OR THE FIXED 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. 11 BAR 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

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
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

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.
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 BARS SHALL 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 MEDIUM 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 MEDIUM TRAFFIC BARRIER TYPE C.
9. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN ¹⁄₄"
DIAGONAL NO. 4 BARS PLACED AND TIED FOR THE LENGTH OF THE BARRIER.

CONVINS NO. 5 BARS

TIE

TIE

TIE

VARIÉS MAX. 18" C/C
MIN. 2" CL.

BEGINNING OR END OF BARRIER

Q OF BARRIER

VARIES

IN ELEVATION

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

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
NORMAL MEDIAN BARRIER
SEE STD. NO 648.12

BARRIER END
TRANSITION

ISOMETRIC

PLAN

END TRANSITION
TOE

ISOMETRIC

PLAN

END VIEW

ELEVATION

NOTES

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. NO 648.13 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 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 4".

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. NO 648.13 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 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 4".

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

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER END TRANSITION

STANDARD NO. MD 648.18
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 \( \pm \frac{1}{8} \) INCH.

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

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
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, GAGE TEXTILE 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".

NOTES

TYPICAL SECTION

JERSEY SHAPE - FOR REPLACEMENT PURPOSES ONLY

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
NOTES

1. Expansion joints shall be placed at the end of each day's 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 MD 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

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
**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. MD 648.44-04.

4. 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.

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 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".

**SPECIFICATION**

**CATEGORY CODE ITEMS**

**APPROVED**

**STATE HIGHWAY ADMINISTRATION**

**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

**34 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER**

**STANDARD NO. MD 648.33**
TYPICAL SECTION

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR SLIP FROM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 (4500 PSI).

2. THE BARRIER FOOTER 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 BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. 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 CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED FROM 0 INCH 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 PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.

8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/8".

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 0 INCH TO 1 FOOT 6 INCHES
STANDARD NO. MD 648.33-01
NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 (4500 PSI).
2. THE BARRIER AND FOOTER 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 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.
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 MEDIAN TRAFFIC BARRIER BIFURCATED FROM 1 FOOT 6 INCHES TO 4 FEET 0 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 PER LINEAR LINEAL FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4"
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.
4. SEE STANDARD NO. 648.44-05 FOR CONTRACTION AND EXPANSION JOINTS.
5. COST OF THE CONCRETE FOOTER, REINFORCEMENT, DRAINAGE APPURTEANCES, GEOTEXTILE, LABOR, TOOLS, EQUIPMENT, JOINT MATERIAL, EXCAVATION, BACKFILL, AND ALL INCIDENTALS SHALL BE INCUDED IN THE CONTRACT UNIT PRICE PER LINEAR FOOT.
6. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4'.

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
34 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED
4 FEET 0 INCHES TO 8 FEET 0 INCHES
STANDARD NO. MD 648.33-03
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, 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".

NOTES
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.


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 LINEAL 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 PAVERMENT SHALL BE SAW CUT FULL DEPTH. THE WIDTH FOR THE CONCRETE FOOTER SHALL BE AS INDICATED. THE COST FOR ALL SAW CUTS, PAVERMENT REMOVAL, AND ALL INCIDENTALS AND LABOR SHALL BE INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
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 1/16.”

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE MEDIUM TRAFFIC BARRIER BIFURCATED
0 INCH TO 1 FOOT 6 INCHES

STANDARD NO. MD 648.44-01

SPECIFICATION 604
CATEGORY CODE ITEMS
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 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 1 FOOT 6 INCHES TO 4 FEET 0 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 PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED
1 FOOT 6 INCHES TO 4 FEET 0 INCHES
STANDARD NO. MD 648.44-02
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 BAR LAPS TO BE 30 INCH Diameters. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615, GRADE 60.
4. SEE STANDARD MD 648.44-05 FOR EXPANSION JOINTS.
5. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, DRAINAGE APPURTENANCES, GEOTEXTILE, JOINT MATERIAL, EXCAVATION, BACKFILL, LABOR, TOOLS, EQUIPMENT, ETC., AND ALL INCIDENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER BIFURCATED 4 FEET 0 INCHES TO 8 FEET 0 INCHES.
6. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

TYPICAL SECTION

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
STANDARD NO. MD 648.44-03
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.
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.
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.
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.
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.

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 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2.

7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/8".

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.
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.


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. CONDUITS, 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.
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 ¼".

4. FOR LIMITS OF EXCAVATION REFER TO STD. MD 648.47 NOTE 5.
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.

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
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.
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 B-B FOR CONDUIT, ETC.
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 1/8."
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 FORM METHOD DIAGONAL NO.4 BARS ARE REQUIRED. SEE STD. MD 648.49.

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.
1. SEE STD. MD 648.52 FOR 42" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES
2. 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 FOOTERS, 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 ±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.
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.

RIGID OR
FLEXIBLE
Pavement
Surface

1'-3"
3'-5"
2'-0"
5"
3½"
6½"
4½ R.
TYP.
10-0
84"
7"
6"
1-9"
1-9"
3'-1" BARRIER FOOTER

EXCAVATION AND BACKFILL
SEE NOTE 5

SEE STD. MD 648.47-01 FOR
ALTERNATE DRAINAGE DETAILS
NO. 57 AGGREGATE

4" @ PVC DRAINS
15'-0" MAX. SPACING - NOTE A
NO. 57 AGGREGATE

4" @ PERFORATED PVC
DRAIN PIPE

CLASS SD TYPE II GEOTEXTILE

ROUGHEN CONSTRUCTION JOINT

TO BE USED WHEN THE BARRIER IS FUNCTIONING AS A RETAINING WALL AT THE BOTTOM OF THE CUT OR FILL SLOPES.
(SEE STD. MD 648.52 FOR 42° F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES)
(SEE STD. MD 648.53 FOR 42° 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 TAPS 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.
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 42 Inch F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 4".
9. CONDUITS, 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.
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 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 1/8".
8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.55 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO. 4 BARS ARE REQUIRED. SEE STD. MD 648.49.
NOTES
1. WHERE THE CONTINUOUS WIDTH FOR TRAVEL IS LESS THAN 60\(^\circ\), SIDEWALK PASSING ZONES SHALL BE PROVIDED AT AN INTERVAL NOT TO EXCEED 200\(^\circ\). 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 (4\(^\circ\):1 MAX.).

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

STANDARD NO. MD 655.02
NOTES

1. TO BE USED ON WIDE SIDEWALKS OR SIDEWALKS WITH SIGNIFICANT SEPARATION FROM THE ROADSIDE WHERE THE GEOMETRY SPECIFIED IN THE DETAILS ABOVE CAN BE SATISFIED. 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 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.

6. TRANSITION PANELS TO THE INTO EXISTING SIDEWALK MUST BE A MINIMUM OF 5' IN LENGTH.

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SIDEWALK RAMPS PERPENDICULAR

STANDARD NO. MD 655.11
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. THE CROSS-SLOPE OF THE LANDING AREA CANNOT EXCEED GRADE OF ROADWAY.
4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
5. 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.
6. TRANSITION PANELS TO TIE INTO EXISTING SIDEWALK MUST BE A MINIMUM OF 5' IN LENGTH.

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 AT LEAST 7'-6" EXISTS BETWEEN THE BACK OF CURB AND THE BACK OF SIDEWALK. 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 12:11 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 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 RAMPS VARY FROM STANDARD CASES.

6. FOR BUFFER WIDTHS LESS THAN 24", WIDEN SIDEWALK TO BACK OF CURB AS SHOWN FOR THE SPECIAL CASE, THEN BUILD PARALLEL RAMP USING STANDARD MD-655.12.

7. TRANSITION PANELS TO TIE INTO EXISTING SIDEWALK MUST BE A MINIMUM OF 5' IN LENGTH.

8. IF THE BUFFER AREA IS GREATER THAN OR EQUAL TO 4', THE LANDING AREA MUST BE 2% X 2%. IF THE BUFFER AREA IS LESS THAN 4', THE LANDING AREA CROSS-SLOPE CANNOT EXCEED THE GRADE OF THE ROAD.

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**Maryland Department of Transportation**

**STATE HIGHWAY ADMINISTRATION**

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**SIDEWALK RAMPS COMBINATION**

**STANDARD NO.** MD 655.13
NOTES

1. TO BE USED WHERE A STREET-LEVEL PEDESTRIAN CROSSING IS REQUIRED THROUGH RAISED MEDIAN OR RAISED ISLANDS AND THERE IS INSUFFICIENT WIDTH TO PROVIDE A RAMPS MEDIAN OR ISLAND OPENING (STD. MD-655.22).

2. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD MD-655.01.

3. 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.

4. WHERE 60° CUT THROUGHS CAN NOT BE PROVIDED A DESIGN WAIVER MUST BE REQUESTED.

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

CUT-THROUGH MEDIAN AND ISLAND OPENINGS

STANDARD NO. MD 655.21
NOTES

1. TO BE USED WHERE A PEDESTRIAN ACCESS ROUTE CROSSES RAISED MEDIAN 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 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.

4. WHERE 60" OPENINGS CAN NOT BE USED A DESIGN WAIVER MUST BE REQUESTED.
SURFACE OF RAMP AND ALL WALKS TO BE BROOMED CONCRETE

1/8" NON-EXTRUDING EXPANSION JOINT AROUND ENTIRE DEPRESSED AREA

STD. TYPE 'D' COMB. CURB & GUTTER SEE STD. NO 620-02-01.

EXPANSION JOINT

10'-0" NORMAL STALL
15'-0" HANDICAPPED STALL
16'-0" PARKING STALL

4" PAINTED STRIPE & PARKING STALL

PLAN

SECTION A-A

12:1 MAX
48:1 MAX

STD. TYPE 'D' COMB. CURB & GUTTER

PARKING AREA

'1/8" NON-EXTRUDING EXPANSION JOINT

COMPACTED SUBGRADE

TRANSITION CURB FROM 6" REVEAL TO PAVEMENT GRADE

ELEVATION

NOTES
1. RAMP SLOPES MUST BE CALCULATED USING THE HORIZONTAL PLANE. USING ONLY THE RISE-OVER-RUN METHOD IS INSUFFICIENT FOR DETERMINING SLOPE ANY VARIANCE FROM THE HORIZONTAL PLANE OF THE SURROUNDING FACILITY MUST ALSO BE DETERMINED AND ACCOUNTED FOR.

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
REST AREA PARKING FOR PERSONS WITH DISABILITIES

STANDARD NO. MD 655.30
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.
NOTE: ALL REINFORCING TO BE #4 BARS, CONFORMING TO A.S.T.M. DESIGNATION A-615 GRADE 40. 1" COVER. (1 TP)

ELEVATION

RISER DETAIL

FRONT VIEW

STANDARD SLOPES, DIMENSIONS & FORMULAS

<table>
<thead>
<tr>
<th>SLOPE RATIO</th>
<th>H</th>
<th>T</th>
<th>F</th>
<th>H1</th>
<th>X</th>
<th>Y</th>
<th>H</th>
<th>V1</th>
<th>V2</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
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</thead>
<tbody>
<tr>
<td>1 1/2</td>
<td>7&quot;</td>
<td>11&quot;</td>
<td>3.61&quot;</td>
<td>13.04&quot;</td>
<td>5.91&quot;</td>
<td>14.81&quot;</td>
<td>7.21&quot;</td>
<td>8&quot;</td>
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<td>11.79&quot;</td>
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<tr>
<td>2</td>
<td>6&quot;</td>
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<td>3 1/2&quot;</td>
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</tbody>
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CONCRETE REQUIRED FOR STANDARD STAIRWAYS

TABLE OF UNIT QUANTITIES

<table>
<thead>
<tr>
<th>ITEM - UNIT OF STAIRWAY</th>
<th>SLOPE RATIO &amp; T:R</th>
<th>VOL. PER STAIRWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
<td>11:7</td>
<td>12:16</td>
</tr>
<tr>
<td>2</td>
<td>11:7</td>
<td>12:16</td>
</tr>
</tbody>
</table>

VOL. OF 1 STEP + BOTTOM SLAB PER 1" WIDTH OF W = .0657
VOL. OF 2 SIDEWALLS PER STEP OR TREAD = 1.7317
VOL. OF UPPER & LOWER FOOTINGS PER 1" OF TOTAL WIDTH = .1012
VOL. OF 2 UPPER SIDE WALL CUT-OFFS TO DEDUCT = -.3403

CONCRETE=MIX NO. 2 (VOLUMES SHOWN IN TABLE ABOVE ARE IN CUBIC FEET)
TOTAL VOLUME IN CUBIC YARDS/STAIRWAY = A+B+C+D

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

STANDARD STAIRWAYS

STANDARD NO. MD 657.00
**NOTES**

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

**PLAN**

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

STD. SPLICE & OFFSET BRACKET NUTS & BOLTS SEE STD. MD 660.03

**SIDE ELEVATION**

TRAFFIC BARRIER W BEAM

6" 'C' SHAPE OFFSET BRACKET

**OFFSET BRACKET**

**FRONT ELEVATION**

TRAFFIC BARRIER W BEAM

6" 'C' SHAPE POST

**SPECIFICATION**

**CATEGORY CODE ITEMS**

**APPROVED**

**STATE HIGHWAY ADMINISTRATION**

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W BEAM

ALTERNATE 'C' SHAPE STRONG POST

**STANDARD NO. MD 660.04**
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURES

STANDARD NO. MD 660.41

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'-1½" 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 A 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) 1¾" O 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 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-A36 AND IS NOT DIPPED GALV. TO ASTM-A123 AFTER FABRICATION.
6 LOCATION OF ¹/₁₆" x 2¾" SLOTS IN THE W BEAM AND TERMINAL CONNECTOR
6' - 3" 6 SPACES AT 3' - 1½" = 18' - 9"
6' - 3"

4' - 1½"

1' - 9" MAX.

12' - 8"

W BEAM TERMINAL CONNECTOR SEE STD. MD 104.87-05

TRAFFIC DIRECTION

PRECAST TEMPORARY CONCRETE TRAFFIC BARRIER TERMINAL END SEE STD. MD 104.87-03

PLAN

PRECAST TEMPORARY CONCRETE TRAFFIC BARRIER SEE STDS. MD 104.87-10 & MD 104.87-11

26' - 10½" BASIS OF PAYMENT PER EACH FOR TRAFFIC BARRIER W BEAM ANCHORAGE AT PRECAST TEMPORARY CONCRETE TRAFFIC BARRIER TERMINAL END (RECTANGULAR WASHERS REQUIRED ON THIS SECTION)

PIN AND LOOP JOINT SEE STD. MD 104.87-10 & MD 104.87-11 FOR DETAILS

ELEVATION

4 SQUARE STEEL PLATE WASHERS SEE STD. MD 104.87-05

4-⅜" (GALV.) HEX HEAD BOLTS, NUTS AND 4 RECTANGULAR WASHERS SEE STD. MD 661.01-01 FOR RECTANGULAR WASHER DETAIL

SECTION A-A

NOTES

1. ALL POSTS AND OFFSET BRACKETS SHALL BE W6x9 AS SHOWN ON STANDARDS MD 605.22 AND MD 605.23.

2. THE W BEAM TERMINAL CONNECTOR AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.

3. THE COST FOR THE PRECAST TEMPORARY CONCRETE TRAFFIC BARRIER TERMINAL END IS INCIDENTAL TO THE CONTRACT PRICE PER LINEAR FOOT FOR THE PRECAST TEMPORARY CONCRETE TRAFFIC BARRIER.
NOTES

1. THE TRAFFIC BARRIER THREE 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 THREE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, SQUARE PLATE WASHERS, RECTANGULAR PLATE WASHERS AND SECTION C-C ARE SHOWN ON STD. MD 661.02.

SECTION A-A

PORTION OF THREE BEAM FASTENED W/ 3/4" GALV. BUTTON HEAD BOLT, RECTANGULAR WASHER, 1/2" O.D. WASHER & NUT.

SECTION B-B

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

LOCATION OF 3/4" X 2 1/2" SLOTS IN THREE BEAM & TERMINAL CONNECTOR.

SQUARE PLATE WASHERS SEE NOTE 5.

RECTANGULAR PLATE WASHERS SEE NOTE 5.

THREE BEAM TERMINAL CONNECTOR WITH 5-3/4" H.S. (GALV) THROUGH BOLTS, NUTS AND SQUARE & RECTANGULAR PLATE WASHERS. HOLES IN BRIDGE END POST SHALL BE CORED BY THE BRIDGE CONTRACTOR.

BASIS OF PAYMENT PER EACH FOR TRAFFIC BARRIER THREE BEAM ANCHORAGE AT BRIDGE END POSTS.

ELEVATION
THREE BEAM

THREE BEAM TERMINAL CONNECTOR

SQUARE PLATE WASHERS

NOTE


END VIEW
STANDARD THREE BEAM SECTION

W BEAM - THREE BEAM TRANSITION SECTION

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER THREE BEAM ANCHORAGE AT BRIDGE END POSTS DETAILS

STANDARD NO. MD 661.01-01
NOTES

1. THRE BEAM TERMINAL CONNECTOR. THRE 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 THRE BEAM TERMINAL CONNECTOR AND POSTS A THROUGH F.

4. SEE STD. MD 661.01-01 FOR DETAILS OF THRE BEAM SPLICE, TERMINAL CONNECTOR, TRANSITION SECTIONS, SQUARE PLATE AND RECTANGULAR WASHERS.

WOOD POST & BLOCK DIMENSIONS

1. 10" X 10" X 6'-0"
2. 8" X 8" X 6'-0"
3. 6" X 6" X 22'-0"
4. 6" X 8" X 14"

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

PLAN

TRAFFIC DIRECTION

CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TERMINAL END & FOOTER - SEE STD. MD 661.21-01 DETAILS 32'-9½" BASIS OF PAYMENT PER EACH FOR

TRAFFIC BARRIER THRE BEAM ANCHORAGE AT CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END

ELEVATION
VERTICAL NO. 5 BARS SPACED AT 1'-0" C/C
2" CL. HORIZONTAL NO. 5 BARS
TYPICAL BOTH ENDS

PLAN
(SHOWN WITHOUT THREE BEAM ANCHORAGE)

CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END
1'-0" 7'-6" 2'-8" 1'-6"

ELEVATION

5 - 1/4" Ø HEX BOLTS
(THROUGH BARRIER)
AND NUTS WITH 5
RECTANGULAR WASHERS

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 661.21 FOR POST LAYOUT.

CONCRETE TRAFFIC BARRIER
SINGLE FACE TYPE 1; 2,
OR 3 SEE STD. MD 648.01. .02, .03 AND .04

CONSTRUCTION JOINT

SQUARE WASHERS
SEE STD. MD 661.01-01

ROUGHEN CONSTRUCTION JOINT (TYP.)

CONCRETE TRAFFIC BARRIER
SINGLE FACE TERMINAL END

THREE BEAM TERMINAL CONNECTOR
SEE STD. MD 661.01-01

2 SECTIONS OF
THREE BEAM ONE SET
INSIDE THE OTHER

TRAFFIC DIRECTION

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

STANDARD NO. MD 661.21-01
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 661.41 FOR THRIE BEAM AND W BEAM POST LAYOUT.
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).

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

SPECIFICATION CATEGORY CODE ITEMS
604, 605

APPROVED

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

POST MOUNTED Delineators

STANDARD NO. MD 665.01
PLASTIC POSTS

WOOD SNOW GUIDE STAKE

- See SHA list for approved models and needed parts.

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. 665.01 thru 665.06 for placement, spacing and mounting height.

BARRIER WALL AND W-BEAM BARRIER MARKERS

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. 665.01 thru 665.06 for placement, spacing and mounting height.
# Delineation Placement

## MAINLINE

<table>
<thead>
<tr>
<th>Shld</th>
<th>Concrete Median Barrier or W-Beam Barrier</th>
<th>Shld</th>
</tr>
</thead>
</table>

## Post Mounted Delineator

- BARRIER WALL / W-BEAM MOUNTED MARKER (YELLOW)
- BARRIER WALL / W-BEAM MOUNTED MARKER (WHITE)
- POST MOUNTED Delineator

## 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 500'.

- **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).
PLACEMENT OF BARRIER WALL MOUNTED MARKERS

SINGLE FACE BARRIER WALL

TOP OF MARKER

2'-8" REFLECTIVE FACE PERPENDICULAR TO TOP OF BARRIER WALL (SEE NOTE 1)

BIPURCATED BARRIER WALL

TOP OF MARKER

2'-8" (SEE NOTES 1 & 2)

PLACEMENT OF POST MOUNTED DELINEATORS

OPEN SECTION

EDGE OF PAVED SHOULDER

2'-8"

ABOVE NEAREST EDGE OF PAVED SHOULDER (SEE NOTE 1)

AS PER MANUFACTURERS SPECIFICATIONS

CURBED SECTION

ABOVE NEAREST PAVEMENT EDGE (SEE NOTE 1)

AS PER MANUFACTURERS SPECIFICATIONS

PLACEMENT OF W-BEAM & WOOD POST DELINEATORS

TRAFFIC BARRIER (SEE NOTE 1)

TRAFFIC BARRIER

32" (SEE NOTE 1)

WOOD SNOW GUIDE STAKE

W-0" (SEE NOTE 3)

EDGE OF PAVEMENT (SEE NOTE 1)

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.
ACCEL/DECEL LANE DELINEATION

MILEPOST MARKERS ARE SUBSTITUTED FOR DELINEATORS IN TYPICAL SPACING.

SINGLE WHITE

DOUBLE WHITE

SINGLE YELLOW

NOTE DOUBLE DELINEATOR INSTALLATIONS CONTINUE THREE INSTALLATIONS BEYOND PHYSICAL GORE.

LEGEND

SPACING
MAINLINE - 264'
ACCEL/DECEL - 100'
REFER TO STD MD 665.06 FOR SPACING AND CONTINUATION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
ACCEL/DECEL LANE DELINEATION

STANDARD NO. MD 665.05
RAMP DELINEATION

REFER TO STD 665.05

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 III-1.
INSIDE SHOULDER  TRAVEL LANE(S)  OUTSIDE SHOULDER

CROSS-SECTION VIEW – INTERSTATES AND EXPRESSWAYS

A. 6" TO 12", OFFSET FROM PAVEMENT MARKING OR PAVEMENT JOINT TO EDGE OF RUMBLE STRIP. REFER TO STANDARDS FOR DETAILS.

B. RUMBLE STRIP WIDTH. REFER TO STANDARDS FOR DETAILS.

C. OFFSET FROM RUMBLE STRIP TO EDGE OF SHOULDER/PAVEMENT. REFER TO STANDARDS FOR DETAILS.

D. EDGELINE OR PAVEMENT JOINT.

OUTSIDE SHOULDER

EDGELINE PAVEMENT MARKING

DIRECTION OF TRAVEL

TRAVEL LANE(S)

EDGELINE PAVEMENT MARKING

INSIDE SHOULDER

PLAN VIEW – INTERSTATES AND EXPRESSWAYS

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 WILLED OR GROUNDED 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.
NOTES

1. SEE STANDARDS 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 PHYSICAL GORE 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.
NOTES
1. SEE SHOULDER RUMBLE STRIP AND RUMBLE STRIPE STANDARDS FOR MORE INFORMATION.
NOTES
1. SEE SHOULDER RUMBLE STRIP AND RUMBLE STRIPE STANDARDS FOR MORE INFORMATION.

Pavement Joint
Edgeline Pavement Marking

ISOMETRIC VIEW

SECTION B-B
R = 12" MAX.

SECTION A-A

PLAN VIEW
NOTES

1. REFER TO INSIDE/OUTSIDE SHOULDER RUMBLE STRIP DETAILS TYPICAL LAYOUT FOR RUMBLE STRIP DEPTH AND SECTION DETAILS.

2. EFFECTIVE LANE WIDTH IS MEASURED AS CLEAR DISTANCE BETWEEN OUTSIDE RUMBLE STRIP (TRAFFIC SIDE EDGE) AND INSIDE PAVEMENT MARKING (TRAFFIC SIDE EDGE) OR RUMBLE STRIP (TRAFFIC SIDE EDGE).

3. G = PAVEMENT MARKING WIDTH (TYPICALLY 5" OR 10"). RUMBLE STRIP WIDTH (B) VARIES ACCORDINGLY 16" FOR 5" MARKINGS, 12" FOR 10" MARKINGS). SEE SHOULDER RUMBLE STRIP AND RUMBLE STRIPE DETAILS FOR MORE INFORMATION.

4. SEE SHOULDER RUMBLE STRIP AND RUMBLE STRIPE DETAILS FOR MORE INFORMATION.

ISOMETRIC VIEW

PLAN VIEW
### Outside Shoulder Rumble Strip Application

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<th>Offset from Pavement Marking to Rumble Strip</th>
<th>Rumble Strip Width</th>
<th>Offset from Rumble Strip to Edge of Shoulder/Pavement</th>
<th>Rumble Strip Length</th>
<th>Rumble Strip Depth</th>
<th>Offset from Pavement Joint to Pavement Marking</th>
<th>Minimum Shoulder Pavement Width</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>See Notes Below</em></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Interstates or Expressways <em>(Posted Speed 40 MPH or Greater)</em></td>
<td>5&quot; Min.</td>
<td>12&quot; Max.</td>
<td>12&quot; Min.</td>
<td>16&quot; Std.</td>
<td>6&quot; Absolute Min.</td>
<td>12&quot; Pref. Min.</td>
<td>7&quot;</td>
</tr>
<tr>
<td>All Other Highways <em>(Posted Speed 40 MPH or Greater)</em></td>
<td>6&quot; Min.</td>
<td>12&quot; Max.</td>
<td>6&quot; Min.</td>
<td>12&quot; Std.</td>
<td>48&quot; Min. Required</td>
<td>5&quot; Min.</td>
<td>7&quot; Std.</td>
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</table>

### Inside Shoulder Rumble Strip Application

<table>
<thead>
<tr>
<th>Roadway Type</th>
<th>Offset from Pavement Marking to Rumble Strip</th>
<th>Rumble Strip Width</th>
<th>Offset from Rumble Strip to Edge of Shoulder/Pavement</th>
<th>Rumble Strip Length</th>
<th>Rumble Strip Depth</th>
<th>Offset from Pavement Joint to Pavement Marking</th>
<th>Minimum Shoulder Pavement Width</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>See Notes Below</em></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Interstates or Expressways <em>(Posted Speed 40 MPH or Greater)</em></td>
<td>6&quot; Min.</td>
<td>12&quot; Max.</td>
<td>12&quot; Min.</td>
<td>16&quot; Std.</td>
<td>6&quot; Absolute Min.</td>
<td>12&quot; Pref. Min.</td>
<td>7&quot;</td>
</tr>
<tr>
<td>All Other Highways <em>(Posted Speed 40 MPH or Greater)</em></td>
<td>6&quot; Min.</td>
<td>12&quot; Max.</td>
<td>6&quot; Min.</td>
<td>12&quot; Std.</td>
<td>6&quot; Absolute Min.</td>
<td>12&quot; Pref. Min.</td>
<td>5&quot; Min.</td>
</tr>
</tbody>
</table>

### Rumble Stripe Application

<table>
<thead>
<tr>
<th>Roadway Type</th>
<th>Offset from Pavement Marking to Rumble Strip</th>
<th>Rumble Strip Width</th>
<th>Rumble Strip Length</th>
<th>Rumble Strip Depth</th>
<th>Pavement Marking Width</th>
<th>Minimum Effective Lane Width</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>See Notes Below</em></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>G</td>
</tr>
<tr>
<td>Interstates or Expressways <em>(Posted Speed 40 MPH or Greater)</em></td>
<td>6&quot; Std.</td>
<td>6&quot; For Markings</td>
<td>5&quot; For Markings</td>
<td>7&quot;</td>
<td>1/2&quot; Min.</td>
<td>5/8&quot; Max.</td>
</tr>
<tr>
<td>All Other Highways <em>(Posted Speed 40 MPH or Greater)</em></td>
<td>6&quot; Std.</td>
<td>6&quot; For Markings</td>
<td>5&quot; For Markings</td>
<td>5&quot; Min.</td>
<td>7&quot; Std.</td>
<td>3/8&quot; Min. for 5&quot; Length</td>
</tr>
</tbody>
</table>

**Notes**

1. Bicycles are assumed to be prohibited from all interstate and expressways as per MD vehicle law.
2. If bicycles are permitted on segments of interstates and expressways, regardless of posted speed, rumble strips shall be installed as per the ‘all other highways’ requirements.

**Maryland Department of Transportation**

**STATE HIGHWAY ADMINISTRATION**

**Standards for Highways and Incidental Structures**

**Shoulder Rumble Strip and Rumble Stripe Details**

**Standard No.** MD 670.05
** - RUMBLE STRIP WIDTH MAY BE REDUCED TO 12" FOR ROADWAYS THAT HAVE ADJACENT TRAVEL LANES THAT ARE LESS THAN 12' IN WIDTH TO PROVIDE MORE EFFECTIVE LANE WIDTH

TYPICAL SPACING DETAIL
(PLAN VIEW)

Non-Passing Layout with RPM Spacing

Single Direction Passing Zone Layout with RPM Spacing

Two-Way Passing Zone Layout with RPM Spacing

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

CENTERLINE RUMBLE STRIP DETAILS AND TYPICAL LAYOUT

STANDARD NO. MD 670.06
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 @ 1/8" C/C. HOG RINGS TO BE 12 GUAGE 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.
GENERAL DETAILS

12'-0" OPENING DOUBLE-GATE

PIE 1" NPS
1.90" O.D. SCH40 2.72 LB/FT OR
1.90" O.D. SS40 2.28 LB/FT

PIE 3" NPS 4" O.D. SCH40 9.11 LB/FT

GROUND LINE

CONC. BLOCK

1.66" O.D. SCH40 2.27 LB/FT OR
1.66" O.D. SS40 1.84 LB/FT

2 OBL. STRAND NO. 9 GA. WIRES

MAX. SPACING OF LINE POSTS
SHALL BE 12'-0"

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 THEN BE FILLED WITH A HAND MIXED 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% OF 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.

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

4'-0" FARM TYPE FENCE

STANDARD NO. MD 690.03
ALTERNATE TRUSS BRACE ATTACHMENT FOR SQUARE CONSTRUCTION

STRETCHER ROD CLIP
.3125" DIA. GALVANIZED WIRE

STRETCHER BAR
.50" x .50" GALVANIZED STEEL

.50" DIA. GALVANIZED STEEL THREADED ONE END HOOK BOLT

ALTERNATE STRETCHER ROD ATTACHMENT
FOR BARE WIRE OR TENSION WIRE

ALTERNATE ATTACHMENT
ALTERNATE BRACE RAIL ATTACHMENT
FOR SQUARE CONSTRUCTION
‘C’ POST OR ‘ROUND’ POST

‘H’ POST

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

LINE POST TIES ON 12" ± C/C
#9 GAUGE GALVANIZED STEEL CLIP

TIE WIRE ATTACHMENT FOR LINE POST

DRIVE ANCHOR BLADE
Galvanized Steel Angle
1½" x 1½" x 30" Long OR
1¼" x 1¼" 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

OUTSIDE

INSIDE

3" APPROX.

5'-3" (5 FT. FENCE)
6'-3" (6 FT. FENCE)
8'-3" (8 FT. FENCE)

2½" X 3" X 3" X 3" LG ANGLE CLIP

½" X 1¼" BAND

1/4" Ø CARRIAGE BOLT & NUT

⅜" Ø CONCRETE EXPANSION ANCHOR OR APPROVED EQUIVALENT IN ⅜" DRILLED HOLE WITH ⅜" Ø HEAVY HEX. HEAD BOLT 2½" LONG; UNC. CLASS 2A & 2B WITH WASHER AND NUT.

ALTERNATE POST ATTACHMENT AT BRIDGE END

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

FENCE TREATMENT AT CONCRETE DITCHES

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
**ANCHOR SHOE DETAILS**

- **Drive Anchor Blades**
  - Galvanized Steel Angle
  - 1½"x1½"x30" Long OR
  - 1½"x1⅛"x36" Long OR 1"x1"x30" Long
  - Driven parallel OR perpendicular to fence line

- **H-Beam**
  - Plan

- **Line Post Guide**
  - Recess Nipples

- **Line Post**

- **End Elevation**

**NOTE**

- This shoe assembly may be used in place of the assembly shown on standard plate MD-690.21

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**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