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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 Note 5.

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W-BEAM
BURIED-IN-BACKSLOPE END TREATMENT (TYPE A)

STANDARD NO. MD 605.01
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 3/8" 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 AT A-A TO POST 3, BUT NOT INCLUDE 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 NOTE 5.
WELDED OR BOLTED TO POSTS 1, 2 AND 3
BURIED IN BACK SLOPE

\( \frac{1}{2} \) STEEL PLATE

WELDED TO POST

\( \frac{1}{2} \) STEEL PLATE

ATTACHED TO POSTS 1, 2 AND 3

NOTES

1. THE \( \frac{1}{2} \) 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.

\( \frac{1}{2} \) STEEL PLATE

PLA TED

WELDED OR BOLTED TO POSTS 1, 2 AND 3

BURIED IN BACK SLOPE

NOTE 3

W6X8.5 (OR W6X9) POST FOR LENGTH SEE NOTE 3

ELEVATION VIEW (FRONT)

ELEVATION VIEW (SIDE)

BURIED IN BACK SLOPE END TREATMENT

TRAFFIC BARRIER W-BEAM

BOLTED TO POST WITH

FOUR (4) \( \frac{1}{2} \)" DIA. HEX. HEAD BOLTS EACH 1" LONG WITH SQUARE WASHER AND HEX NUT

WELDED TO POST WHEN PLATE IS TO BE FIELD DRILLED IN W-BEAM ELEMENT AND ATTACHED WITH \( \frac{1}{2} \)" DIA. HEX. HEAD BOLTS 1 1/2" LONG EACH WITH ONE SQUARE WASHER AND HEX NUT

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

W-BEAM

1" DIA. HOLES TO BE FIELD DRILLED IN W-BEAM AND THROUGH POST FLANGE. ATTACH W-BEAM WITH \( \frac{1}{2} \)" HEX. HEAD BOLT 2" LONG WITH ONE SQUARE WASHER AND HEX NUT

DRILL EXTRA \( \frac{3}{16} \)" DIA. HOLE IN POST FLANGE. (HOLE NOT NEEDED WHEN PLATE IS TO BE WELDED TO POST)

W6X8.5 (OR W6X9) POST FOR LENGTH SEE NOTE 3

FOR POST 3 WITH BOTTOM RAIL.
NOTES

1. 3:1 GRADING IS ALLOWABLE BEHIND BARRIER ONLY WHEN 4:1 GRADING IS NOT FEASIBLE.

2. FLARED TERMINAL INSTALLATION SHALL ONLY BE USED WHEN THE GRADING IS AS SHOWN AND THE REQUIRED LENGTH OF NEED IS PROVIDED (150' MINIMUM PRIOR TO THE OBSTACLE TO BE SHIELDED).

3. SYSTEM MUST BE INSTALLED AT A HEIGHT OF 31".

4. FOR DELINEATION, SEE STD. MD 605.14.

5. THIS DRAWING IS SCHEMATIC ONLY FOR ILLUSTRATION PURPOSE. SEE MDOT SHA QPL FOR APPROVED SYSTEMS THAT ARE 2016 MASH COMPLIANT.
**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 50:1 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 DRAWING IS SCHEMATIC ONLY FOR ILLUSTRATION PURPOSE. SEE MDOT SHA QPL FOR APPROVED SYSTEMS THAT ARE 2016 MASH COMPLIANT.

**SPECIFICATION 606**

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**STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES**

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

**STANDARD NO.** MD 605.03
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.
OPTION 1 - ANCHORAGE
(OFFSET CONCRETE BLOCK)

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

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

TYPE K TRAFFIC BARRIER END TREATMENT
OPTION 1 ANCHORAGE

STANDARD NO. MD 605.10
NOTES

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

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

STANDARD NO. MD 605.10-01
** SEE MD STD. 605.14

* 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.

NOTES

1. FOR THE ANCHORING PAD DIMENSIONS AND MATERIALS AND TO ANCHOR THE UNIT TO EXISTING PAVEMENT REFER TO THE MANUFACTURERS PRODUCT MANUAL OR INSTRUCTIONS.

2. THE COST OF THE ANCHOR PAD, EXCAVATION, DRILLED HOLES, EPOXY, BOLTS, AND ALL LABOR AND MATERIALS NECESSARY TO ANCHOR THE UNIT SHALL BE INCIDENTAL TO TRAFFIC BARRIER END TREATMENT INSTALLATION.


4. THIS DRAWING IS SCHEMATIC ONLY FOR ILLUSTRATION PURPOSE. SEE MDOT SHA QPL FOR APPROVED SYSTEMS THAT ARE 2016 MASH COMPLIANT.
NOTES

1. APPLICABLE USING OPTION 2 OR 3 ANCHORAGE. LOCATED ON STD MD 605.10-01

2. ALL ITEMS (ANCHOR PLATE, CABLE, ROD, DRILLED HOLES, NUTS, BOLTS, ETC) NECESSARY FOR THE ANCHOR SHALL BE MEASURED AND PAID PER EACH OF "TYPE L TRAFFIC BARRIER ANCHORAGE".

3. THE TYPE L ANCHORAGE IS PERMITTED WITHIN A SINGLE RUN OF TRAFFIC BARRIER AS SHOWN. IF A TYPE L IS USED A TYPE K IS NOT REQUIRED ON THE TRAFFIC BARRIER END.
**TWO SIDED END TREATMENTS**

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**ONE SIDED END TREATMENTS**

**NOTES**

1. **DELINEATION MUST MEET THE REQUIREMENTS IN MUTCD SECTIONS 2C.64 AND 2C.65.**
2. **DELINEATION 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. **DELINEATION WILL BE INCIDENTAL TO THE APPROPRIATE TRAFFIC BARRIER END TREATMENT.**
TRAFFIC BARRIER – END SECTION

TRAFFIC BARRIER–END SECTION

(FOR BARRIER ON BOTH SIDES OF SAME POST)

NOTE: THE END SECTION SHOWN IS INCIDENTAL TO THE PAY ITEMS TRAFFIC BARRIER W BEAM USING 6 FT POSTS OR TRAFFIC BARRIER W BEAM USING 8 FT POSTS.
WOOD OFFSET BLOCK
USING NORMAL W BEAM PANELS FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5

NOTCH FOR POST

W - BEAM

PLAN VIEW

TRAFFIC BARRIER POST AND OFFSET BLOCK
USING NORMAL W BEAM PANELS

OFFSET BLOCK BOLT
1/2" NC2, 11 THREADS/INCH
ALTERNATE-SINGLE RECESS NUTS MAY BE SUBSTITUTED

NUT
1/2" NC2, 11 THREADS/INCH
1/2" DIA. X 3/8" DEEP RECESSION TWO SIDES

NOTES
1. WOOD OFFSET BLOCKS 8x6x14 INCHES TO BE USED ON ALL NEW CONSTRUCTION AND WHEN THE EXISTING TRAFFIC BARRIER WITH METAL OFFSET BLOCKS IS TO BE REMOVED AND RESET.
2. THE CONTRACTOR HAS THE OPTION TO USE SHORTER BOLTS WITH A MINIMUM OF 3/4" PROTRUSION BEYOND NUT.
3. WOOD BLOCKS FOR THREE BEAM PANELS SHALL BE 8x6x22 7/8 INCHES AND NOTCHED AS SHOWN IN THE TOP VIEW.
   TWO BOLTS ARE REQUIRED FOR ATTACHMENT TO THE POSTS.
4. THE 8x6x14 INCH WOOD OFFSET BLOCKS ARE TO BE USED FOR REPAIRS ONLY.
5. WHEN DIRECTED BY THE ENGINEER OR WHEN SPECIFIED IN THE CONTRACT DOCUMENTS, COMPOSITE OFFSET BLOCKS THAT ARE APPROVED BY THE ADMINISTRATION CAN BE USED IN LIEU OF THE WOOD BLOCKS. FOR THE APPROVED SUBSTITUTES LIST SEE SHEET 1 OF 1. APPROVED SUBSTITUTES FOR WOOD OFFSET BLOCKS.

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

TRAFFIC BARRIER W BEAM WITH WOOD OFFSET BLOCK

STANDARD NO. MD 605.21
W BEAM DETAIL
(MATERIAL: 12 GA. STEEL)

NOTES

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

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

TRAFFIC BARRIER W BEAM
SINGLE FACE

STANDARD NO. MD 605.22
FRONT VIEW POST
(SPLICE BOLTS NOT SHOWN)

SIDE VIEW MID-SPAN SPLICE

TRAFFIC BARRIER W BEAM SPLICE JOINTS

FRONT VIEW SIDE VIEW

SIDE VIEW POST SPLICE

WOOD OFFSET BLOCK
6"x8"x14" NOTCHED
SEE STD. MD 605.21

6x8 TRAFFIC BARRIER POST
6' NORMAL LENGTH
8' LONG POST

OPTIONAL HOLE
FOR OFFSET BLOCK
BOLT, ETC. SEE STD. MD 605.21

FOR WELDED OR ROLLED
W6x8.5 POSTS ARE
OPTIONAL SUBSTITUTE
TO W6x9 POST

FRONT VIEW (SPLICE BOLTS NOT SHOWN)

3/4"x2-1/4" SLOTTED
HOLE USED FOR
POST SPLICE ONLY

3/8"x1-1/8" SLOTTED
HOLES

SIDE VIEW

MID-SPAN SPLICE

1-1/4" SPLICE BOLT

1/4" SPLICE BOLT

5/8" NC2, 11 THREADS/INCH

"SPLICE BOLT" W/NUT
(EIGHT (8) PER JOINT)

NUT
(EIGHT (8) PER MID-SPAN SPLICE,
9 PER POST SPLICE)

1/4" SPLICE BOLT

1/4" SPLICE BOLT

5/8" NC2, 11 THREADS/INCH

1/4" SPLICE BOLT

PLAN VIEW ALTERNATE
W6x8.5 METAL POST

(WELDED VERSION SHOWN
ON STD MD 605.23-01)

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

NOTES

1. EXCEPT FOR THE DIMENSIONS SHOWN ON THE ALTERNATE WELDED W6x8.5 PLAN VIEW, ALL DIMENSIONS FOR HOLES,
   SPACING, LENGTHS, ETC. WILL REMAIN THE SAME AS THEY ARE FOR THE W6x9 POSTS AND WOOD OFFSET BLOCKS.
2. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21
3. POSTS SHALL BE SPACED 6'-3" C/C, UNLESS OTHERWISE STATED ON THE PLANS OR DIRECTED BY THE ENGINEER.
4. UNLESS OTHERWISE SPECIFIED, SPLICES SHALL BE PLACED AT THE MIDPOINT BETWEEN POSTS
5. FOR ALL SPLICES, LAP W BEAM PANELS IN DIRECTION OF TRAFFIC
6. TRAFFIC BARRIER IS BASED ON A MASH 2016 COMPLIANT DESIGN

SPECIFICATION
CATEGORIES: 605
ITEMS: 105
APPROVED
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

SHA
APPROVAL
REVISED
APPROVAL
FEDERAL
HIGHWAY ADMINISTRATION
5-6-76 APPROVAL 6-30-76
3-29-06 REVISED 10-25-06
12-21-17 REVISED 12-20-17
6-22-18 REVISED 4-30-18

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM,
W BEAM SPLICES, AND
WOOD OFFSET BLOCK

STANDARD NO. MD 605.23
TOP VIEW
ALTERNATE WELDED W6x8.5 METAL POST

NOTE
1. SPLICEING DETAILS FOR TRAFFIC BARRIER W BEAM THE SAME AS SHOWN ON STD. NO. 605.23
NOTES

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

PLAN

SIDE ELEVATION

OFFSET BRACKET

FRONT ELEVATION

TRAFFIC BARRIER W BEAM

OFFSET BLOCK BOLT

SPlice BOLT

NUT

"SPLICE BOLT" & "OFFSET BLOCK BOLT"

(8 PER JOINT) (1 PER BLOCK)

(1'-2" LONG) (2'-0" LONG)

ALTERNATE - SINGLE RECESS NUTS MAY BE SUBSTITUTED

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

STANDARD NO. MD 605.23-02
NOTE

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

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM WITH WOOD OFFSET BLOCK USING 6 FOOT OR 8 FOOT POSTS

STANDARD NO. MD 605.25
3. The traffic barrier W-beam sections shall be lapped in the direction of traffic.

5. The splice on both rails must be coincident.

1. All posts shall be as shown on Standard MD 605.23.

2. Wood offset blocks shall be as shown on Standard MD 605.21.

4. May span 5', 10' & 15' Cog or Cos inlets, low fill box culvert or other object which interferes with normal placement of post.
MINIMUM NUMBER OF SPANS = 2
MINIMUM NUMBER OF POSTS = 3
MAXIMUM SPAN: 12'-6"
LENGTH OF BARRICADE NOTED ON PLANS: CENTER TO CENTER OF END POSTS
ALL SPANS TO BE EQUAL LENGTH,
NO. OF POSTS TO BE NOTED ON PLANS,
ALL POSTS W6x9, 6'-0" LONG
(SEE STD. MD 605.10)

NOTES

DOUBLE FACED BARRIER

NOTE

1. FOR METAL POSTS, WOOD OFFSET BLOCKS, SPLICES, SPLICE BOLTS, AND OTHER DETAILS SEE STANDARD MD 605.23.
2. FOR TRAFFIC BARRIER W BEAM SEE STANDARD MD 605.22.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21.
4. TRAFFIC BARRIER BASED ON A MASH 2016 COMPLIANT DESIGN.

5. HEIGHT OF TRAFFIC BARRIER IS MEASURED TO THE TOP OF W-BEAM.
W BEAM MEDIAN BARRIER

NOTES:

1. FOR METAL POSTS, WOOD OFFSET BLOCKS, SPLICES, SPLICE BOLTS, AND OTHER DETAILS SEE STANDARD MD 605.23.
2. FOR TRAFFIC BARRIER W BEAM SEE STANDARD MD 605.22.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21.
4. THE COST FOR THE SYSTEM INCLUDING W BEAM PANEL, HARDWARE, DRILLED HOLES, LABOR AND TOOLS SHALL BE MEASURED AND PAID FOR PER LINEAR FOOT FOR THE ITEM "TRAFFIC BARRIER W BEAM MEDIAN BARRIER WITH BOTTOM PANEL."
5. USE THIS STANDARD WHEN THE SLOPE IS STeeper THAN 6:1.
6. TRAFFIC BARRIER BASED ON A WASH 2016 COMPLIANT DESIGN.
7. HEIGHT OF TRAFFIC BARRIER IS MEASURED TO THE TOP OF THE W-BEAM.
1. Metal post shall conform to A36 and shall be galvanized in accordance with A123.
WOOD OFFSET BLOCK

SECTION THRU BARRIER

FRONT VIEW

REAR VIEW

WOOD OFFSET BLOCK

NOTES

1. POST SHALL BE GALVANIZED IN ACCORDANCE WITH A123.
2. THRIE BEAM DETAILS AND SPLICE JOINT ARE THE SAME AS STD. MD 605.29.
3. THRIE BEAM RECTANGULAR WASHER SHOWN ON STD. MD 605.41-07.
4. USE WOOD OFFSET BLOCK WITH POST AS SHOWN ON STD. MD 605.29.
TWO SECTIONS OF THRIE BEAM
ONE SET INSIDE THE OTHER
(TYPICAL BOTH SIDES OF BARRIER)
(SEE STD. MD 605.30) FOR POST LAYOUT

FOUR (4) - BOLTS, WASHERS, NUTS. SEE STD. MD 605.21

SECTION THRU BARRIER

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

1. THE MINIMUM DIMENSION SHOWN CAN BE REDUCED BY STIFFENING THE TRAFFIC BARRIER SYSTEM.
2. 8'-0" LONG POSTS ARE TO BE USED WHEN THE DISTANCE FROM THE BACK OF THE W BEAM POST TO THE HINGE POINT IS LESS THAN 2' 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. STIFFEN THE TRAFFIC BARRIER W BEAM WHEN TYPE 'B' COMBINATION CURB/GUTTER OR TYPE 'B' CURB IS USED AT POSTED SPEEDS 45 MPH OR GREATER.
6. SLOPE IN FRONT OF BARRIER INSTALLED 2' OFFSET FROM SHOULDER EDGE MUST BE 10:1 OR SHALLOWER.
7. HEIGHT OF TRAFFIC BARRIER IS MEASURED TO THE TOP OF THE W-BEAM.
### FLARE RATES

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<th>DESIGN SPEED (MPH)</th>
<th>W-BEAM</th>
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<tr>
<td>70</td>
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<tr>
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<td>40</td>
<td>8:1</td>
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<tr>
<td>30</td>
<td>7:1</td>
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</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 contract, 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.
NOTES
1. THREE BEAM TERMINAL CONNECTOR, THREE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
3. SEE STD'S. MD 605.29 & MD 605.41-D2 FOR DETAILS OF THREE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, AND RECTANGULAR PLATE WASHERS.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL FIVE (5) 1/2" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.
5. ALTERNATE ANCHORAGE METHOD "CAST IN CONCRETE" SHOWN ON STD. MD 605.44.

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

STANDARD NO. MD 605.41
NOTES

1. THRIE BEAM TERMINAL CONNECTOR, THRIE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POSTS SHALL BE PLACED ON SLOPES 10:1 OR FLATTER.
3. DETAILS OF THE THRIE BEAM, SPLITTER, TERMINAL CONNECTOR, TRANSITION SECTION, AND RECTANGULAR PLATE WASHERS ARE SHOWN ON STD’S. MD 605.29 & MD 605.41-02.
4. POSTS 'I', '2', '3', '5', AND '7' ARE NOT BOLTED TO HAIL.
5. FURNISH AND INSTALL FIVE (5) 1/2" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SECTION 902.
THREE BEAM TERMINAL CONNECTOR

W BEAM - THREE BEAM TRANSITION SECTION

RECTANGULAR PLATE WASHER

NOTE
THE RECTANGULAR PLATE WASHER SHALL BE MADE OF STEEL MEETING THE REQUIREMENTS OF ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123. HOLE MAY BE PUNCHED OR DRILLED.
TRAFFIC BARRIER W BEAM ANCHORAGE TO VERTICAL FACE

BASIS OF PAYMENT PER EACH

TPW WALL

TWO SECTIONS OF W BEAM (12.5')

ONE SET INSIDE THE OTHER
ON TOP PANEL ONLY

STANDARD TRAFFIC
BARRIER W BEAM (12.5')

TERMINAL CONNECTORS
(SEE STD. MD 605.42-02)
FOR CONNECTOR DETAILS

NOTE: POST 1 & 2 ARE 8' POSTS

ELEVATION

1'-1/4" VERTICAL WALL

4 SPACES AT 1'-61/4"

4 SPACES AT 3'-11/4"

1 SPACE AT 6'-3"

ADD NW10G8-3/4 W-BEAM BACK-UP PLATE
SEE AASHIO'S
"A Guide to Standardized Highway Barrier Hardware"

TRAFFIC DIRECTION

PLAN

THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 1/2" DIA.
HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD
RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS
SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.
(SEE STD. MD 605.41-02 FOR RECTANGULAR PLATE WASHER DETAILS)

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

SECTION A-A

NOTE 1: POSTS 1, 2, 3, 4 & 6
REQUIRE ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR RUBRAIL.

NOTE 2: FOR THE WOOD SPACER USE AN
8" BOLT FOR POST 1; 6" FOR POSTS 2
AND 3; AND 4" FOR POST 4.

NOTE 3: DO NOT ATTACH W-BEAM TO POSTS
1, 2, 3, 5 OR 7; BOLT BLOCKS DIRECTLY
TO POSTS.

WOOD BLOCKOUT SPACER

WOOD BLOCKOUT SPACER (W.B.S.)

DIMENSIONS

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<tr>
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<th>D</th>
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<tr>
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PLANNING
SIDE
FRONT

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

TRAFFIC BARRIER W BEAM
ANCHORAGE TO VERTICAL FACE

STANDARD NO. MD 605.42

Kirk O. McCabe
DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

SHA
State Highway Administration

APPROVAL + SHA
REV 11-10-99
APPROVAL 7-2-99
REVISED 8-16-12
REVISED 8-13-12
REVISED
REVISED
REVISED
NOTES

1. POST 1 AND 2 ARE 8’ LONG

2. ALL METAL POST SHALL BE 6x9. POSTS 1, 2, 3, 4 AND 5 REQUIRE AN ADDITIONAL HOLE IN THE FLANGE TO ATTACH THE LOWER WOOD BLOCKOUTS AND/OR RUB RAIL. FOR WOOD BLOCKOUT LOCATED ON POSTS 1 THRU 4 SEE DETAILS ON STD. MD 605.43-01.

3. POSTS 6, 7 AND 8 REQUIRE THE W BEAM BACKUP PLATE SHOWN ON STD. 605.43-03. THE W BEAM BACKUP PLATE ON POSTS 6, 7 AND 8 ARE BOLTED DIRECTLY TO THE OFFSET BLOCK WITH 5/8” DIA. BUTTON HEAD BOLT AND RECESS NUT. THE W BEAM USING THE OFFSET BLOCK IS BOLTED TO POSTS 1, 5, 7 AND 9 WITH 5/8” DIA. BUTTON HEAD BOLT AND RECESS NUT.
THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 3/4" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. (SEE Std. MD 605.44) FOR ALTERNATE ANCHORAGE METHOD "CAST IN CONCRETE".

RECTANGULAR PLATE WASHERS (SEE Std. MD 605.44)

RUB RAIL (SEE Std. MD 605.43-02)

FINISHED ROADWAY

THREE (3) 3/4" DIA. EXPANSION ANCHOR BOLTS 6" LONG W/ WASHERS BETWEEN BOLT HEADS AND RUB RAIL. DRILL HOLES AS REQUIRED.

TYPICAL POSTS 2 & 4
(BUTTON HEAD BOLT NOT REQUIRED AT POSTS 2 & 4)
NOTE: FOR WOOD OFFSET BLOCKS, BOLTS, NUTS, WASHERS SEE Std. MD 605.21

W6x9 POST

2 6 x 9

3/8" DIA. BUTTON HEAD BOLT & RECESS NUT REQUIRED AT POST 1 ONLY

SEE NOTE

WOOD BLOCK BOLTED TO POST W/ 5/8" CARRIAGE BOLT

7" x 4"
WOOD BLOCKOUTS

POST 1 & 3

2 3/4"

1 4 1/2"

3/4" DIA. HOLE

(TAPERED WOOD BLOCKOUT (1 REQUIRED—SEE SECTION B-B))

WOOD BLOCKOUTS (4 REQUIRED)

POST 5

BOLT HEAD BOLT NOT REQUIRED

RUB RAIL

WOOD BLOCK & RUB RAIL BOLTED TO POST W/ 5/8" CARRIAGE BOLT

RUB RAIL BOLTED DIRECTLY TO POST W/ 5/8" CARRIAGE BOLT

3/8" DIA. BUTTON HEAD BOLT & RECESS NUT

STATE HIGHWAY ADMINISTRATION

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TRAFFIC BARRIER W BEAM ANCHORAGE WITH RUB RAIL TO JERSEY SHAPE OR F SHAPE

STANDARD NO. MD 605.43-01
W BEAM TERMINAL CONNECTOR

SLOPE TO MATCH VERTICAL REAR WALL OF SAFETY SHAPED BARRIER

FOR USE WITH SLOPED FACE OF SAFETY SHAPED BARRIER

SQUARE PLATE WASHER

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM ANCHORAGE WITH RUB RAIL TO JERSEY SHAPE OR F SHAPE

STANDARD NO. MD 605.43-03
NOTES

1. THIS TYPE OF ANCHORAGE SHALL APPLY TO TRAIL ENDS ON A HIGHWAY WITH DIRECTIONAL ONE WAY TRAFFIC.
2. USE NORMAL POST SPACING, WHERE NECESSARY, AN ADDITIONAL OFFSET BLOCK MAY BE INSTALLED TO AVOID CONFLICT WITH DRAINAGE INLETS.
3. ADDITIONAL OFFSET BLOCKS SHALL NOT EXCEED A MAXIMUM OF TWO PER POST IN ALL CASES.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 5/8" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX. HEAD Recessed Nuts and Rectangular Plate Washers. Anchor Rods shall be anchored with Epoxy Grout as specified in SPEC. 902.
NOTES

1. THIS TYPE OF ANCHORAGE SHALL APPLY TO TRAIL ENDS ON A HIGHWAY WITH DIRECTIONAL ONE WAY TRAFFIC.

2. USE NORMAL POST SPACING. WHERE NECESSARY, AN ADDITIONAL OFFSET BLOCK MAY BE INSTALLED TO AVOID CONFLICT WITH DRAINAGE INLETS.

3. ADDITIONAL OFFSET BLOCKS SHALL NOT EXCEED A MAXIMUM OF TWO PER POST IN ALL CASES.

4. THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (4) 3/4" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHER. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.
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"

5 - 7/8" HEX BOLTS (THROUGH BARRIER) AND NUTS WITH 5 RECTANGULAR WASHERS

ELEVATION

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

SECTION C-C

SECTION D-D

CONSTRUCTION joint (Typ.)

CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END

TRAFFIC BARRIER THREE BEAM ANCHORAGE AT JERSEY SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END

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 605.46-01
NOTES

1. APPROACH END: FIRST 25'-0" OF TRAFFIC BARRIER AFFIXED TO BRIDGE STRUCTURE SHALL HAVE THE FIRST POST PLACED AT A MAXIMUM OF 1'-9" FROM THE BRIDGE AND THE NEXT SEVEN POSTS SPACED AT 3'-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 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 (14½") Ø HEAVY HEX. HEAD GALV. BOLTS WITH GALV. HEX. HEAD NUT AND GALV. RECTANGULAR WASHER CAST IN BRIDGE END POST. ATTACH BEAM WITH GALV. RECTANGULAR WASHER AND HEX. NUT OR AS ALTERNATE THE CONTRACTOR SHALL FURNISH AND INSTALL FOUR (14") GALV. THREADED STUDS WITH GALV. RECTANGULAR WASHER AND TWO (2) GALV. HEX. NUTS CAST IN BRIDGE END POST. ATTACH BEAM WITH GALV. RECTANGULAR WASHER AND GALV. HEX. NUT AS SHOWN IN ALTERNATE ANCHORAGE STUD DETAIL. STEEL SHALL CONFORM TO ASTM-A307 AND IS NOT DIPPED GALV. TO ASTM-A123 AFTER FABRICATION.

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

TRAFFIC BARRIER W BEAM
ANCHORAGE AT STRUCTURES

STANDARD NO. MD-605.47
NOTES

1. THREE BEAM TERMINAL CONNECTOR. THREE 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 THREE BEAM TERMINAL CONNECTOR.

4. SEE STD. MD 605.51-01 FOR DETAILS OF THREE BEAM, SPLICE TERMINAL CONNECTOR, TRANSITION SECTIONS, SQUARE PLATE AND RECTANGULAR WASHERS.

5. THE 12" - 8" CONCRETE SINGLE FACE END IS PAIRED FOR EACH JERSEY SHAPE 10 VERTICAL CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END.

WOOD POST & BLOCK DIMENSIONS

- 10" x 10" x 8'-0"
- 8" x 8" x 6'-0"
- 6" x 8" x 22'-2"
- 6" x 8" x 14"

BEGIN STANDARD TRAFFIC BARRIER W BEAM

SE,const. 605.22 FOR DETAILS

PLAN

ELEVATION

CONCRETE JERSEY
SHAPE TRAFFIC BARRIER SINGLE FACE TYPE 1, 2, OR 3

SEE STDS. MD 648.01, 02, 03, AND 04

THREE BEAM TERMINAL CONNECTOR SEE NOTE 4
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 MD 605.49 FOR POST LAYOUT.

4. FOR PAYMENT SEE NOTE 5 ON MD 605.49.

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRE BEAM ANCHORAGE AT F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END
STANDARD NO. MD 605.49-01
PLAN

(Shown without thrie beam anchorage)

END A

12'-8" TERMINAL END AND FOOTER
1'-0" 7'-6" 2'-8" 1'-0" 11'-5"

END B

POST AND OFFSET BRACKETS SEE
STD. WD 605.23.01
& 605.30

VIEW-END A

ELEVATION

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 WD 605.50 for thrie beam and W beam post layout.

VIEW-END B

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

TRAFFIC BARRIER THRIE BEAM MEDIAN BARRIER
ANCHORAGE AT JERSEY SHAPE CONCRETE
MEDIAN TRAFFIC BARRIER TERMINAL END

STANDARD NO. MD 605.49-02
VERTICAL NO. 5 BARS SPACED AT 1'-0" C/C

2" CL. HORIZONTAL NO. 5 BARS TYPICAL BOTH ENDS

PLAN
(SHOWN WITHOUT THRIE BEAM ANCHORAGE)

END A
12'-8"
TERMINAL END AND FOOTER
7'-6"
1'-0"
2'-8" 1'-6" 11'-2"

END B

POST AND OFFSET BRACKETS SEE
STD. MD 605.23.01 & 605.30

1' - 6"

5-7/8" HEX BOLTS (THROUGH BARRIER)
AND NUTS WITH 5 RECTANGULAR WASHERS
ON EACH SIDE

ELEVATION

NOTES

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

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

TRAFFIC BARRIER THRIE BEAM MEDIAN BARRIER ANCHORAGE AT F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER TERMINAL END

STANDARD NO. MD 605.49-03
NOTES

1. Metal posts shall conform to ASTM A 36 and shall be galvanized in accordance with ASTM A 123.

2. See Standard MD 605.28 for details of traffic barrier W beam median barrier which shall be used at posts 8 and beyond.

3. Nested thrie beam (one panel set inside the other) to be installed on traffic direction 2 side from terminal connector to post 7. If traffic is equal in each direction, include nested thrie beam on both sides of barrier, traffic direction 1 & 2.

4. See Std's. MD 605.29 & MD 605.41-02 for details of thrie beam, splice, terminal connector, transition section, and rectangular plate washers.
NOTES

1. THREE BEAM TERMINAL CONNECTOR, THREE 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 THREE BEAM TERMINAL CONNECTOR.

4. SEE STD. MD 605.51-01 FOR DETAILS OF THREE BEAM, SPICE, TERMINAL CONNECTOR, TRANSITION SECTIONS, SQUARE PLATE AND RECTANGULAR WASHERS.

5. THE 12'-8" CONCRETE SINGLE FACE END IS PAID FOR EACH FOR JERSEY SHAPE TO VERTICAL CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END.

WOOD POST & BLOCK DIMENSIONS

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

BEGIN STANDARD TRAFFIC BARRIER W BEAM See STD. MD 605-22 for details.

PLAN

CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE

TYPE 1, 2, OR 3, SEE STD. MD 648.01, 02, 03, AND 04

THREE BEAM TERMINAL CONNECTOR See NOTE 4
ONE SET INSIDE THE OTHER

ELEVATION

SLOPE 1:1 OR FLATTER

1/4" x 9" x 16" LIP CURB

SECURE BLOCK FROM ROTATION WITH 10d GALVANIZED NAIL

SQUARE PLATE WASHERS See NOTE 4

THREE SECTIONS OF THREE BEAM 'NESTED'

CONSTRUCTION JOINT

SLOT IN THREE BEAM & TERMINAL CONNECTION

1 1/2"

5 SPACES AT 1'-6"
3 SPACES AT 3'-1 1/2"
6'-3"

TRAFFIC DIRECTION

12'-8"

1/2" x 9" x 15'-3" LIP CURB

SEE STD. NO 615.01 FOR DETAIL.
THREE BEAM SPLICE

THREE BEAM TERMINAL CONNECTOR

RECTANGULAR PLATE WASHER (GALVANIZED)

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

THREE BEAM TERMINAL CONNECTOR

SQUARE PLATE WASHERS

NOTE

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 SHOP BENT.
3. PLACE TRAFFIC BARRIER W BEAM DELINEATORS AT THE INTERVALS SPECIFIED IN THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. IF CURB [5 INCH] IN CONJUNCTION WITH CURVED TRAFFIC BARRIER W BEAM SECTION, THE CURB CANNOT BE HIGHER THAN 2".
5. ON THE 8' 6" RADIUS SYSTEM ONLY, THE RAIL IS NOT TO BE BOLTED TO THE CENTER POST.
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 8" 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, 2-10D 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.
EDGE OF ROADWAY
SEE PLANS

FOR FUTURE PAVING

TOP OF EXISTING OR PROPOSED BASE SEE PLANS

FRONT FACE

2° R.

10'

7 1/2'

47°

9'
TYPE 'A'
COMBINATION CURB & GUTTER
DESIGN SPEED ≤ 45 MPH

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

1. SLOPE GUTTER PAN 1/4" 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 NO. 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 NO. 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

3 PLY ROOFING PAPER
SEE STANDARD MD 655.01
5' - 0" OR AS DIRECTED (TYP.)
SLOPE 1/4" 1' (TYP.)
SIDEWALK IF SPECIFIED
IN THE CONTRACT DOCUMENTS

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

1. SLOPE GUTTER PAN 1/2" 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 NO 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
   NO 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 ON APPROPRIATE INLET STANDARDS.
Depressed Curb for Combination Concrete Curb & Gutter for Sidewalk Ramps

1. Slope gutter pan ½" per foot toward flow line on all roadways including superelevated sections, except interchange ramps.
2. Roadway pavement slope.
4. Provide longitudinal tie device "J" bar modified. Refer to Standard No. 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 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 bid per linear foot for the item concrete curb or combination concrete curb and gutter, as specified in the contract documents.

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

STANDARD NO. MD 620.03

SPECIFICATION 602
CATEGORY CODE ITEMS
APPROVED

Director - Office of Highway Development
SHA
State Highway Administration

APPROVAL • SHA REVIEWS
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 2-10-04 APPROVAL 3-31-04
REVISED 2-25-16 REVISED 2-23-16
REVISED REVISED
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 CAN NOT BE PROVIDED, 36" 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 C COMBINATION CURB AND GUTTER SHALL BE DEPRESSED AS SHOWN ON STD. 620.02-01 TYPE C. PAYMENT FOR DEPRESSING THE CURB SHALL BE AS SPECIFIED ON STD. 620.03 NOTE C.

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.
ENFORCE WIDTH 20' MIN.

FOR EXISTING ENTRANCE SEE NOTE NO. 2

ENTRANCE TIE-IN

SIDEWALK

SIDEWALK

60" DESIRABLE

36" MIN.

NOTE 4)

EXPANSION

JOINT

MATERIAL

BACK OF CURB

FACE OF CURB

GRASS OR

HARDSCAPE

BUFFER

LIMIT OF PAYMENT FOR PLAIN CEMENT CONCRETE PAVEMENT

PLAN

A

*H - 3) x 12 - B

ENTRANCE WIDTH 20' MIN.

ENTRANCE TIE-IN

BACK OF SIDEWALK

BACK OF DEPRESSED CURB

FLOOR LINE

A

ELEVATION

SUBSURFACE COMBINATION CONCRETE CURB & GUTTER

VARIABLES

BACK OF CURB

FACE OF CURB

60" DESIRABLE

36" MIN.

(SEE NOTE 4)

EXPANSION JOINT MATERIAL

ENTRANCE TIE-IN

MATCH TOP OF CURB ELEV.

VARIES

VARIES

VARIES

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

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

SECTION A-A

NOTES

1. FOR USE IN AREAS WHERE THERE IS SIDEWALK SEPARATED FROM THE BACK OF CURB BY 24" OR MORE, OR WHERE IT IS EXPECTED THAT SIDEWALK WILL BE ADDED IN THE FUTURE.

2. WHEN AN EXISTING ENTRANCE IS LESS THAN 20' IN WIDTH A UNIFORM TAPER SHALL BE CONSTRUCTED TO TIE INTO THE EXISTING ENTRANCE AS DIRECTED BY THE ENGINEER.

3. EXPANSION JOINT MATERIAL TO BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.

4. WHERE 60" SIDEWALK CAN NOT BE PROVIDED, 36" MIN. MAY BE USED AS LONG AS PASSING ZONES ARE PROVIDED IN ACCORDANCE WITH STD. MD-655.02.

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

6. 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. 2

STANDARD NO. MD 630.02

SPECIFICATION
APPROVAL

CATEGORY CODE ITEMS

APPRAISAL

DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL • FHA REVISED

APPROVAL • FHA ADMINISTRATION

APPROVAL 3-31-84

REVISED 6-14-86

APPROVAL 1-10-84

REVISED 6-14-86

APPROVAL 4-17-87

REVISED 6-14-86
**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)

2" COVER (TYP.)
1'0" 1'0"
1'-8" 1'-8"
1'-0" 1'-0"

ELEVATION
TYPE II
(AUTOMOBILE)

2" COVER (TYP.)
1'0" 1'0"
1'-8" 1'-8"
1'-2" 1'-2"

ELEVATION
TYPE III-A
(TRUCK)

1" DIA. HOLE (TYP.)

1" R.(TYP.)

1" DIA. HOLE (TYP.)

1" R.(TYP.)

ELEVATION
TYPE III-B
(TRUCK)

2" COVER (TYP.)
2'-9" 2'-9"
1'-6" 1'-6"

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

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

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
The cost of the concrete gutter & sod will be incidental to the contract unit price per each standard curb opening.

NOTE

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.

SHA
State Highway Administration

Maryland Department of Transportation

Standard curb opening details for concrete curb

Standard No. MD 640.01
NOTE
THE COST OF THE CONCRETE GUTTER & SOD WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH STD. CURB OPENING.

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

SECTION B-B
GUTTER LENGTH MAY BE VARIED AS DIRECTED

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

1. UNLESS OTHERWISE SPECIFIED, LONGITUDINAL TIE BAR DEVICE, TYPE 'A' OR TYPE 'B', PLACED AT MIDDLE OF KEYWAY & SPACED ACCORDING TO SPECIFICATIONS FOR CONCRETE PAVEMENT SHALL BE USED AT CONSTRUCTION JOINT BETWEEN MONOLITHIC CONCRETE MEDIAN OR GUTTER PAN AND CONCRETE PAVEMENT. SEE STANDARD MD 572.61.

2. JOINT SPACING WILL BE A MAXIMUM OF 10'-0" APART. SEE SPECIFICATIONS FOR LOCATION AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED. CONCRETE PAVEMENT JOINTS SHALL MATCH PAVEMENT JOINTS.

3. ALLOW 4" Ø HOLES IN MEDIAN FOR SIGNS, SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
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 'B'

STANDARD NO. MD 645.02
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 574.61. 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.
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. 6 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 construction joints shall be 20 feet regardless of construction method.
6. Cost of the excavation and concrete for the footer (formed or non-formed) and all reinforcement shall be incidental to the contract unit price per linear foot for concrete traffic barrier single face type 1. Fill material in back of the barrier is included in the embankment quantity.
7. Tolerances in dimensions shown shall be within 1/8".
8. Conduit: If required refer to Std. MD 648.06 for location.

Jersey Shape – For Replacement Purposes Only
TYPICAL SECTION

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

NOTES

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

THIS BARRIER IS TO BE USED WHEN THE BARRIER IS FUNCTIONING AS A RETAINING WALL AT THE BOTTOM OF THE CUT OR THE TOE OF FILL SLOPES.

(SEE STD. MD 648.01 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 WITH EARTH BACKING AT TOP OF FILL SLOPES)

(SEE STD. MD 648.02 FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2 FREE STANDING AT TOP OF FILL SLOPES)

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD. IN EITHER CASE THE FOOTER AND THE BARRIER SHALL BE CAST SEPARATELY.

2. THE BARRIER AND FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO. 6 (4500 PSI) CONTINUOUSLY PLACED.

3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO. 4 BARS SHALL BE GRADE 40.

4. THE VERTICAL WALL FOR THE FOOTER ADJACENT TO THE PAVEMENT SHALL BE FORMED TO PROVIDE A NEAT VERTICAL FACE FOR THE PAVEMENT. THE FOOTER REAR VERTICAL WALL MAY BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH WALL. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.


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 BORROW EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3.

8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 3/4".

9. CONDUITS: 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 3
(BOTTOM OF CUT OR TOE OF FILL)

STANDARD NO. MD 648.03
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 1/2".

4. FOR LIMITS OF EXCAVATION REFER TO STD. MD 648.03 NOTE 5.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY
NOTES

1. THE BARRIER SHALL BE CONSTRUCTED USING CONCRETE MIX NO. 6 CONTINUOUSLY PLACED.
2. THE BARRIER SHALL BE CAST USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS.
   TIE BARS TOGETHER. VERTICAL NO. 4 BARS SHALL GRADE 40.
4. SPACING OF 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 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 648.06 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
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 B 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
PLAN

NORMAL BARRIER
SEE STDS. MD 648.01, MD 648.02,
MD 648.03, AND MD 648.04

ISOMETRIC

END TRANSITION TOE

TRAFFIC BARRIER END TRANSITION TOE
(Poured Monolithic With The
TRAFFIC BARRIER END TRANSITION)

TOP OF BARRIER FOOTER

BARRIER FOOTER (SEE NOTE 1)

ELEVATION

SEE STANDARD
FOR SPACING

PAYMENT PER EACH FOR CONCRETE TRAFFIC BARRIER SINGLE FACE END TRANSITION

VERTICAL BARS

38-VERTICAL NO. 5 BARS
SPACED AT 18" C/C

NOTES

1. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING THE FIXED FORM METHOD. SEE STDS. MD 648.01, MD 648.02, AND MD 648.03 FOR BARRIER FOOTER DETAILS. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.

2. THE TRAFFIC BARRIER END TRANSITION AND BARRIER FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO. 6 (4500 PSI).

3. ALL REINFORCEMENT BARS, INCLUDING ENDS, AND TIES SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS.

4. THIS TRAFFIC BARRIER END TRANSITION IS PROHIBITED WHEN THE DESIGN SPEED IS 45 MPH OR GREATER. THE ENGINEER MUST DETERMINE THE TYPE OF END TREATMENT REQUIRED FOR DESIGN SPEEDS OVER 45 MPH.

5. THE COST OF THE BARRIER END TRANSITION TOE, REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR THE CONCRETE TRAFFIC BARRIER SINGLE FACE END TRANSITION.

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

REINFORCEMENT STEEL DETAIL

9" FOOTER DEPTH - VERTICAL BARS TO EXTEND 6" INTO FOOTER
24" FOOTER DEPTH - VERTICAL BARS TO EXTEND 21" INTO FOOTER

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 END TRANSITION

STANDARD NO. MD 648.10
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 PAVING
(HALF SECTION)

FLEXIBLE PAVING
(HALF SECTION)

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

JERSEY SHAPE — FOR REPLACEMENT PURPOSES ONLY

SPECIFICATION
604

CATEGORIES

ITEMS

APPROVED

DIRECTIONS

STATE HIGHWAY ADMINISTRATION

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE A

STANDARD NO. MD 648.12

MARYLAND DEPARTMENT OF TRANSPORTATION

DIRECTIONS

STATE HIGHWAY ADMINISTRATION

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE A

STANDARD NO. MD 648.12

MARYLAND DEPARTMENT OF TRANSPORTATION

DIRECTIONS

STATE HIGHWAY ADMINISTRATION

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE A

STANDARD NO. MD 648.12

MARYLAND DEPARTMENT OF TRANSPORTATION

DIRECTIONS

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 (4000 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 PALING PAVEMENT.

4. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD EXTRA DIAGONAL NO.4 REINFORCEMENT BARS ARE REQUIRED. SEE STD. MD 648.15 FOR THE DIAGONAL BAR ARRANGEMENT DETAILS.

5. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. VERTICAL NO.4 BARS SHALL BE GRADE 40.

6. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.

7. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE C.

8. WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ALL REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE C.

9. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4"
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
This end transition is applicable to all median barrier beginning or ending with the 34-inch concrete median traffic barrier.

**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. MD 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 for each for the item specified in note 5.

7. Tolerances in dimensions shown shall be within 4/".

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY

**PLAN VIEW**

**END TRANSITION BAR LAYOUT**

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONCRETE JERSEY SHAPE MEDIUM 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 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 D

STANDARD NO. MD 648.20
NOTES

1. BARRIER SHALL BE CONSTRUCTED USING CONCRETE MIX NO. 6 (4500 PSI) AND THE FOOTER SHALL BE CONSTRUCTED USING CONCRETE MIX NO. 2 (3000 PSI). BARRIER AND FOOTER SHALL BE CAST SEPARATELY. MONOLITHIC PLACEMENT NOT PERMITTED.

2. ALL LONGITUDINAL BARS SHOWN WITHOUT SIZE SPECIFIED SHALL BE NO. 4 BARS AT 1'-6" C/C.

3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BARS SHALL BE BENT BEFORE APPLYING EPOXY COATING. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615, GRADE 60.

4. SEE STANDARD NO. MD 648.26 FOR CONTRACTION AND EXPANSION JOINTS.

5. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, DRAINAGE APPURTENANCES, JOINT MATERIAL, EXCAVATION, GEOTEXTILE AND BACKFILLING SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAL FOOT FOR CONCRETE MEDIAN TRAFFIC BARRIER TYPE E.

6. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

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 DAYS CONCRETE PLACEMENT REGARDLESS OF LENGTH AND REGARDLESS OF THE CONSTRUCTION METHOD.

2. HORIZONTAL REINFORCEMENT SHALL NOT PASS THROUGH CONTRACTION OR EXPANSION JOINTS.

3. SEE STANDARD NO 648.24 FOR DETAILS OF CONCRETE MEDIAN TRAFFIC BARRIER TYPE E.

4. JOINT MATERIAL SHALL BE HELD IN PLACE BY NAILS, WATERPROOF ADHESIVE OR OTHER MEANS, AS APPROVED BY THE ENGINEER.

JERSEY SHAPE – FOR REPLACEMENT PURPOSES ONLY
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 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, 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".
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 FOOTER FORMS SHALL BE REMOVED BEFORE PLACING PAVEMENT.

3. WHEN THE BARRIER IS CONSTRUCTED USING THE SLIP FOM 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 3/8".
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 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 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 (3200 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 APPURTENANCES, GEOTEXTILE, LABOR, TOOLS, EQUIPMENT, JOINT MATERIAL, EXCAVATION, BACKFILL, AND ALL INCIDENTALS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 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".

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
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.

2. The traffic barrier end transition and barrier footer shall be constructed using concrete mix No. 6 (4500 psi).

3. All reinforcement bars, including ends and ties, shall be epoxy coated. All bar laps to be 30 bar diameters. Tie bars together.

4. This traffic barrier end transition is prohibited when the design speed is 45 mph or greater. The engineer must determine the type of end treatment for design speeds over 45 mph.

5. Cost of the concrete barrier footer (if required) shall be incidental to the contract unit price per each for the 34 inch or 42 inch F shape concrete median traffic barrier end transition.

6. When the barrier end transition is constructed on existing rigid pavement the cost of roughening the pavement surface, excavation for transition toe, reinforcement, drilled holes, grout, labor, tools, equipment, etc., shall be incidental to the contract unit price per each for the item specified in note 5.

7. Tolerances in dimensions shown shall be within "4".

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

42 Inch F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER END TRANSITION

STANDARD NO. MD 648.33-04
RIGID PAVING  
(HALF SECTION)  

FLEXIBLE PAVING  
(HALF SECTION; SEE NOTE 9)  

NEW CONSTRUCTION  
(DR CONSTRUCTION ON EXISTING FLEXIBLE PAVEMENT)  

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

NOTES
1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 (4500 PSI).
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF USED, SHALL BE REMOVED IF THE BARRIER AND FOOTER ARE CONSTRUCTED BEFORE THE PAVEMENT.
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. SPAECING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42 INCH F SHAPE CONCRETE MEDIAN TRAFFIC BARRIER.
7. WHEN THE BARRIER IS CONSTRUCTED ON EXISTING RIGID PAVEMENT THE COST OF ALL REINFORCEMENT, DRILLED HOLES, GROUT, LABOR, TOOLS, EQUIPMENT, ETC., SHALL BE INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN ±1/8".
9. WHEN THE BARRIER IS TO BE CONSTRUCTED ON EXISTING FLEXIBLE PAVEMENT THE PAVEMENT SHALL BE SAW CUT FULL DEPTH. THE WIDTH FOR THE CONCRETE FOOTER SHALL BE AS INDICATED. THE COST FOR ALL SAW CUTS, PAVEMENT REMOVAL, AND ALL INCIDENTALS AND LABOR SHALL BE INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM SPECIFIED IN NOTE 6.
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 ENDS 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, CRUT, 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 1/8"
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 1/8".

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 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615, GRADE 60.

4. SEE STANDARD MD 648.44-05 FOR CONTRACTION AND EXPANSION JOINTS.

5. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT, DRAINAGE APPLIANCES, 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 1/8".

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

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 CONTINUOUSLY PLACED.
2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORM AT THE PAVEMENT EDGE SHALL BE REMOVED BEFORE PLACING PAVEMENT.
3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.
4. THE FOOTER REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.
5. SPACING OF CONTRACTION JOINTS SHALL BE 20 FEET REGARDLESS OF CONSTRUCTION METHOD.
6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1. FILL MATERIAL IN BACK OF THE BARRIER IS INCLUDED IN THE EMBANKMENT QUANTITY.
7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN ±\(\frac{1}{4}\)".
8. CONDUITS, IF REQUIRED, REFER TO STD. MD 648.50 FOR LOCATION.
9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD, 12A 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. 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 3D 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 1/4".

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 TYPE 2 (FREE STANDING IN FILL)

STANDARD NO. MD 648.46
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 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 CONSTRUCTION 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 ¼".
9. CONDUIT IF REQUIRED REFER TO STD. MD 648.50.
10. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO. 4 BARS ARE REQUIRED. SEE STD. MD 648.49.
NOTES

1. THE PREFABRICATED LONGITUDINAL EDGE DRAIN MAY BE USED AS AN ALTERNATE DRAINAGE SYSTEM IN LIEU OF THE DRAINAGE SHOWN ON STD. MD 648.47 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 (BOTTOM OF CUT OR TOE OF FILL).

2. COST OF THE PREFABRICATED LONGITUDINAL EDGE DRAIN IS INCIDENTAL TO THE PRICE PER LINEAR FOOT FOR THE ITEM IN NOTE 7 STD. MD 648.47.

3. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

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

NOTES

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

1. THE JUNCTION BOX 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 TIE, 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 1/16."
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.
TYPICAL SECTION

TO BE USED WHEN THE BARRIER IS FREE STANDING (NO BACKING) AT THE TOP OF FILL SLOPES.

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

(SEE STD. MD 648.54 FOR 42" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3 FUNCTIONING AS A RETAINING WALL)

NOTES

1. THE BARRIER AND FOOTER SHALL BE CAST SEPARATELY USING THE FIXED FORM OR THE SLIP FORM CONSTRUCTION METHOD USING CONCRETE MIX NO. 6 CONTINUOUSLY PLACED.

2. THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BARRIER FOOTER AND BARRIER AFTER CONSTRUCTION OF THE PAVEMENT. THE FOOTER FORMS, IF USED, SHALL BE REMOVED BEFORE PLACING PAVEMENT.

3. ALL REINFORCEMENT BARS, INCLUDING ENDS, SHALL BE EPOXY COATED. ALL BAR LAPS TO BE 30 BAR DIAMETERS. TIE BARS TOGETHER. ALL BARS SHALL BE ASTM A 615 GRADE 60.

4. THE REAR VERTICAL WALL SHALL BE FORMED OR THE CONCRETE PLACED AGAINST THE VERTICAL EARTH SIDE IF APPROVED BY THE ENGINEER. NO ADDITIONAL COMPENSATION FOR ADDITIONAL CONCRETE WILL BE PAID IF CONCRETE IS PLACED AGAINST THE EARTH. THE BARRIER FOOTER SHALL HAVE CONSTRUCTION JOINTS TO COINCIDE WITH THE BARRIER JOINTS.

5. SPACING OF CONSTRUCTION JOINTS SHALL BE 20 FEET REGARDLESS OF THE CONSTRUCTION METHOD.

6. COST OF THE CONCRETE FOOTER, ALL REINFORCEMENT AND EXCAVATION SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR 42" F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2.

7. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/4".

8. CONDUIT: IF REQUIRED REFER TO STD. MD 648.50 FOR LOCATION.

9. WHEN BARRIER IS CONSTRUCTED USING THE SLIP FORM METHOD DIAGONAL NO. 4 BARS ARE REQUIRED. SEE STD. MD 648.49.
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 648.52 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 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 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3.

8. TOLERANCES IN DIMENSIONS SHOWN SHALL BE WITHIN 1/16".

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.

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3
(BOTTOM OF CUT OR TOE OF FILL)
STANDARD NO. MD 648.54
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.

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

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT
STANDARD NO. MD 648.55
NOTES
1. WHERE THE CONTINUOUS WIDTH FOR TRAVEL IS LESS THAN 60", SIDEWALK PASSING ZONES SHALL BE PROVIDED AT AN INTERVAL NOT TO EXCEED 200'. USE OF ENTRANCES AND LEADER WALKS AS PASSING ZONES IS ACCEPTABLE PROVIDED THAT THE GEOMETRY MEETS THE REQUIREMENTS OF THIS STANDARD.
2. SIDEWALK PASSING ZONES SHALL BE LOCATED AS INDICATED ON DRAWINGS; HOWEVER EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. MAY AFFECT PLACEMENT.
NOTES
1. TO BE USED ON WIDE SIDEWALKS OR SIDEWALKS WITH SIGNIFICANT SEPARATION FROM THE ROADWAY 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 EXISTING SIDEWALK MUST BE A MINIMUM OF 5' IN LENGTH.

SPECIFICATION
603 & 611

CATEGORY CODE ITEMS

APPROVED

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 1:12 IN THE DIRECTION OF PEDESTRIAN TRAVEL, OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL. THE CROSS-SLOPE OF THE LANDNG 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 VARIERS 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 12:1 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. FOR BUFFER WIDTHS LESS THAN 24", WIDEN SIDEWALK TO BACK OF CURB AS SHOWN FOR THE SPECIAL CASE, THEN BUILD PARALLEL RAMPS 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.
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 (STO. 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 VARIATES FROM STANDARD METHODS.

4. WHERE 60° CUT THROUGHS CAN NOT BE PROVIDED A DESIGN WAIVER MUST BE REQUESTED.
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. RAMPS 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.
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).
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 0.9" 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" TYP.

ELEVATION
RISER DETAIL

FRONT VIEW

STANDARD SLOPES, DIMENSIONS & FORMULAS

<table>
<thead>
<tr>
<th>SLOPE RATIO</th>
<th>S:1</th>
<th>VALUES OF S</th>
<th>R</th>
<th>T</th>
<th>F</th>
<th>H1</th>
<th>X</th>
<th>Y</th>
<th>H1</th>
<th>V1</th>
<th>V2</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
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<tbody>
<tr>
<td>1/2</td>
<td>3</td>
<td>7</td>
<td>17</td>
<td>11</td>
<td>12</td>
<td>3.61</td>
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<td>14.91</td>
<td>7.21</td>
<td>8</td>
<td>3.79</td>
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<tr>
<td>2</td>
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<td>12</td>
<td>5</td>
<td>12</td>
<td>12</td>
<td>3.36</td>
<td>13.44</td>
<td>5.36</td>
<td>14.36</td>
<td>6.72</td>
<td>6</td>
<td>5.28</td>
<td>11.28</td>
<td>5.28</td>
<td>11.28</td>
</tr>
</tbody>
</table>

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>VOLUMES PER STAIRWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/2:1 2:1 4:1</td>
<td></td>
</tr>
<tr>
<td>VOL. OF 1 STEP + BOTTOM SLAB PER 1&quot; WIDTH OF W</td>
<td>0.065 0.067 0.0643</td>
<td></td>
</tr>
<tr>
<td>VOL. OF 2 SIDEWALLS PER STEP OR TREAD</td>
<td>1.7317 1.7870 1.6596</td>
<td></td>
</tr>
<tr>
<td>VOL. OF UPPER &amp; LOWER FOOTINGS PER 1&quot; OF TOTAL WIDTH</td>
<td>0.1012 0.1150 0.1397</td>
<td></td>
</tr>
<tr>
<td>VOL. OF 2 UPPER SIDE WALL CUT-OFFS TO DEDUCT</td>
<td>0.3403 0.3333 0.2269</td>
<td></td>
</tr>
</tbody>
</table>

CONCRETE=MIX NO. 2 (VOLUMES SHOWN IN TABLE ABOVE ARE IN CUBIC FEET) NUMBER OF STEPS OR TREADS=N TOTAL VOLUME IN CUBIC YARDS/STAIRWAY= A+B+C-D/27

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.

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

STANDARD NO. MD 660.04
1. Approach end: First 25° - 0' of traffic barrier affixed to bridge structure shall have the first post placed at a maximum of 1" - 9" from the bridge and the next seven posts spaced at 3' - 1/2" C/C. Where necessary, an additional offset bracket may be installed at the fourth and fifth posts from the bridge to avoid conflict with the drainage inlets. This type of "anchorage at structures" shall be applied to all four corners of the bridge structure wherever there is two-way traffic, undivided section, or narrow divided section whereby an errant vehicle may reach the opposite corner of the bridge structure. Wherever there is a barrier-divided section or wide divided section whereby an errant vehicle could not reach the opposite corner of the bridge structure, this type of "anchorage at structures" shall be applied only at the approach end with the trailing ends to be treated as designated in the following note.

2. Trailing end: Use normal post spacing. Where necessary an additional offset bracket may be installed at the second post to avoid conflict with drainage inlets.

3. Additional offset brackets shall not exceed a maximum of two per post in all cases.

4. Cost of additional offsets 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 1 1/4" O. Heavy hex, head GALV. bolts with GALV. HEAD NUT and GALV. FLAT WASHER cast in bridge end post. Attach W BEAM with GALV. RECTANGULAR WASHER and HEX. NUT or as alternate the contractor shall furnish and install four (4) GALV. threaded studs with GALV. RECTANGULAR WASHER and two (2) GALV. HEX. NUTS cast in bridge end post. Attach W BEAM with GALV. RECTANGULAR WASHER and GALV. HEX. NUT or as shown in alternate anchorage stud detail. Steel shall conform to ASTM A360 and is not dipped GALV. to ASTM A123 after fabrication.
LOCATION OF \( \frac{1}{4}'' \times 2\frac{1}{2}'' \) SLOTS IN THE W BEAM AND TERMINAL CONNECTOR

6' - 3''

6 SPACES AT 3' - 1\frac{1}{2}'' = 18' - 9''

6' - 3''

12' - 8''

W BEAM TERMINAL CONNECTOR SEE STD. MD 104.87-05

TRAFFIC DIRECTION

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

PRECAST temporary concrete traffic barrier see stds. MD 104.87-10 & MD 104.87-11

25' - 10\frac{1}{4}'' 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

NOTES

1. ALL POSTS AND OFFSET BRACKETS SHALL BE W6x9 AS SHOWN ON STANDARDS NO 605.22 AND 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.

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

1' - 6''

4 - \( \frac{5}{8}'' \) (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 METAL POSTS AND WOOD OFFSET BLOCKS SHALL BE AS SHOWN ON STANDARD MD 605.23.

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

3. THE TRAFFIC BARRIER W BEAM SHALL BE AS SHOWN ON STANDARD 605.22.
TWO SECTIONS OF THRIE BEAM FASTENED W/ 5/8" GALV. BUTTON HEAD BOLTS, RECTANGULAR WASHERS, 1/2" O.D. WASHERS & NUTS.

SECURE BLOCK FROM ROTATION WITH 100 GALVANIZED NAIL

SECTION A-A

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 7/8" SLOTS IN THRIE BEAM & TERMINAL CONNECTOR.

SQUARE PLATE WASHERS SEE NOTE 5

RECTANGULAR PLATE WASHERS SEE NOTE 5

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

1. THE TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POSTS SHALL BE PLACED ON SLOPES 10:1 OR FLATTER.
2. THIS TYPE OF ANCHORAGE SHALL APPLY TO ALL FOUR CORNERS OF THE BRIDGE WHERE APPLICABLE.
3. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
4. RECTANGULAR WASHERS SHALL BE USED AT THE TERMINAL CONNECTOR AND POSTS A THROUGH E.
5. DETAILS OF THE THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, SQUARE PLATE WASHERS, RECTANGULAR PLATE WASHERS AND SECTION C-C ARE SHOWN ON STD. MD 661.02.

PLAN

ELEVATION

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

ONE SET INSIDE THE OTHER

TRANSITION SECTION SEE NOTE 5

STD. W BEAM
TWO SECTIONS OF THRE BEAM FASTENED W/ TWO 5/8" GALV. BUTTON HEAD BOLTS, RECTANGULAR WASHERS, 1¾" O.D. WASHERS & NUTS.

SECURE BLOCK FROM ROTATION WITH 100 GALVANIZED NAIL

SECTION A-A

SECURE BLOCK FROM ROTATION WITH 100 GALVANIZED NAIL

SECTION B-B

ONE SECTION OF W BEAM FASTENED W/ 5/8" GALV. BUTTON HEAD BOLT, RECTANGULAR WASHERS, 1¾" O.D. WASHER & NUT

NOTES

1. THRE BEAM TERMINAL CONNECTOR, THRE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE BLOCK 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 8" x 22½"
4. 6" x 8" x 14"

BEGIN STANDARD TRAFFIC BARRIER W BEAM

SEE STD. MD 605.22 FOR DETAILS (DO NOT USE RECTANGULAR WASHERS)

CONCRETE JERSEY SHAPE TRAFFIC BARRIER SINGLE FACE TERMINAL END & FOOTER – SEE STD. MD 648.01, 02, 03, AND .04

INCIDENTAL TO THE COST OF CONCRETE

TRAFFIC BARRIER SINGLE FACE TERMINAL END & FOOTER – SEE STD. MD 661.21 DETAILS

32' -9½" BASIS OF PAYMENT PER EACH FOR

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

CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END & FOOTER – SEE STD. MD 661.21-01 FOR DETAILS

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

PLAN
(SHOWN WITHOUT THRIE BEAM ANCHORAGE)

CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END

5 - 5/8" O HIX BOLTS (THROUGH BARRIER)
AND NUTS WITH 5 TECTANGULAR WASHERS

ELEVATION

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.

SECTION C-C

CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1, 2, OR 3 SEE STD. MD 648.61-02, 03 AND 04

SECTION D-D

CONSTRUCTION JOINT

CONCRETE TRAFFIC BARRIER SINGLE FACE TERMINAL END

THRIE BEAM TERMINAL CONNECTOR SEE STD. MD 661.01-01

TRAFFIC DIRECTION

ISOMETRIC

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

STANDARD NO. MD 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 THREE BEAM AND W BEAM POST LAYOUT.

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THREE BEAM MEDIAN BARRIER ANCHORAGE AT CONCRETE MEDIAN TRAFFIC BARRIER TERMINAL END
STANDARD NO. MD 661.42
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.
- Reflectoration 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).
1. BARRIER MARKERS SHALL BE YELLOW IN COLOR WHEN PLACED ON LEFT MEDIAN-SIDE BARRIER, WHITE WHEN PLACED ON RIGHT SHOULDER-SIDE BARRIER.
2. SEE S.H.A. LIST FOR APPROVED MODELS AND NEEDED PARTS.
3. REFER TO STDS. 665.03 THRU 665.06 FOR PLACEMENT, SPACING AND MOUNTING HEIGHT.

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

### BARRIER WALL AND W-BEAM BARRIER MARKERS

#### BARRIER WALL MARKER (TYPICAL)

#### W-BEAM MARKER (TYPICAL)

**NOTES**

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

**BARRIER MARKERS**

**STANDARD NO.** MD 665.02
DELINEATION PLACEMENT

TYPICAL SPACING FOR POST MOUNTED DELINEATORS

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

TYPICAL SPACING FOR PERMANENT BARRIER WALL MOUNTED MARKERS

(FOR ALL BARRIER WALLS WITHIN 15' OF THE TRAVEL LANE
MAINLINE - 100'
NOTE: SPACING SHOULD BE REDUCED TO 75' IN CURVES WITH A RADIUS LESS THAN 1000' AND 50' IN CURVES WITH A RADIUS LESS THAN 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).

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

PLACEMENT OF DELINEATORS

STANDARD NO. MD 665.03
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)

BIFURCATED BARRIER WALL

TOP OF MARKER

VARIES

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

PLACEMENT OF POST MOUNTED DELINEATORS

OPEN SECTION

EDGE OF PAVED SHOULDER
2'-8"

ABOVE NEAREST PAVEMENT EDGE, (SEE NOTE 1)

AS PER MANUFACTURERS SPECIFICATIONS

CURBED SECTION

CURB

2'-8"

ABOVE NEAREST PAVEMENT EDGE, (SEE NOTE 1)

AS PER MANUFACTURERS SPECIFICATIONS

PLACEMENT OF W-BEAM & WOOD POST DELINEATORS

TRAFFIC BARRIER (SEE NOTE 1)

32" (SEE NOTE 1)

TRAFFIC BARRIER

41" (SEE NOTE 3)

WOOD SNOW GUIDE STAKE

EDGE OF PAVEMENT SHOULDER

2'-0"

ABOVE NEAREST PAVEMENT EDGE (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

**NOTE** MILEPOST MARKERS ARE SUBSTITUTED FOR DELINEATORS IN TYPICAL SPACING.

**SPACING**
- MAINLINE - 264'
- ACCEL/DECEL - 100'

**LEGEND**
- O - SINGLE WHITE
- D - DOUBLE WHITE
- * - SINGLE YELLOW

Refer to STD MD 665.06 for spacing and continuation.

*NOTE* DOUBLE DELINEATOR INSTALLATIONS CONTINUE THREE INSTALLATIONS BEYOND PHYSICAL GORE.

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

ACCEL/DECEL LANE DELINEATION

STANDARD NO. MD 665.05
RAMP DELINEATOR SPACING

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.
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.

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 WILTED 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.
ENTRANCE TERMINALS

PLACE PERPENDICULAR TO EDGE LINE

DIRECTION OF TRAVEL

PLACE RADIAL TO EDGE LINE

100'

PHYSICAL GORE

PLACE PERPENDICULAR TO EDGE LINE

DIRECTION OF TRAVEL

SEE NOTE 2

EXIT TERMINALS

250' FOR DESIGN SPEEDS OF 50, 55 OR 65 MPH.

300' FOR DESIGN SPEEDS OF 70 OR 75 MPH.

50'

RUMBLE STRIP PATTERN

DIRECTION OF TRAVEL

SEE NOTE 3

RUMBLE STRIPS IN ADVANCE OF CRITICAL LOCATIONS

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.
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 PAVERS 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

<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>Interstate or Expressways (Posted Speed 40 MPH or Greater)</td>
<td>6&quot; Min. 12&quot; Max.</td>
<td>6&quot; Min. 12&quot; Std.</td>
<td>6&quot; Absolute Min. 12&quot; Pref. Min.</td>
<td>7&quot;</td>
<td>1/2&quot; Min. 3/8&quot; Max.</td>
<td>1&quot; Min. 2&quot; Std.</td>
<td>25&quot;</td>
</tr>
<tr>
<td>All Other Highways (Posted Speed 40 MPH or Greater)</td>
<td>6&quot; Min. 12&quot; Max.</td>
<td>6&quot; Min. 12&quot; Std.</td>
<td>48&quot; Min. Required</td>
<td>5&quot; Min. 7&quot; Std.</td>
<td>3/8&quot; Min. For 5&quot; Length</td>
<td>1/2&quot; Min. - 3/8&quot; Max. For 7&quot; Length</td>
<td>24&quot;</td>
</tr>
</tbody>
</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>Interstate or Expressways (Posted Speed 40 MPH or Greater)</td>
<td>6&quot; Min. 12&quot; Max.</td>
<td>6&quot; Min. 12&quot; Std.</td>
<td>6&quot; Absolute Min. 12&quot; Pref. Min.</td>
<td>7&quot;</td>
<td>1/2&quot; Min. 3/8&quot; Max.</td>
<td>1&quot; Min. 2&quot; Std.</td>
<td>30&quot;</td>
</tr>
<tr>
<td>All Other Highways (Posted Speed 40 MPH or Greater)</td>
<td>6&quot; Min. 12&quot; Max.</td>
<td>6&quot; Min. 12&quot; Std.</td>
<td>6&quot; Absolute Min. 12&quot; Pref. Min.</td>
<td>5&quot; Min. 7&quot; Std.</td>
<td>3/8&quot; Min. For 5&quot; Length</td>
<td>1/2&quot; Min. - 3/8&quot; Max. For 7&quot; Length</td>
<td>24&quot;</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>Interstate or Expressways (Posted Speed 40 MPH or Greater)</td>
<td>6&quot; Std.</td>
<td>6&quot; For Markings 12&quot; For 10&quot; Markings</td>
<td>7&quot;</td>
<td>1/2&quot; Min. 3/8&quot; Max.</td>
<td>Typically 5&quot; or 10&quot;</td>
<td>9-4&quot; Min. Required</td>
</tr>
<tr>
<td>All Other Highways (Posted Speed 40 MPH or Greater)</td>
<td>6&quot; Std.</td>
<td>6&quot; For Markings 12&quot; For 10&quot; Markings</td>
<td>5&quot; Min. 7&quot; Std.</td>
<td>3/8&quot; Min. For 5&quot; Length</td>
<td>1/2&quot; Min. - 3/8&quot; Max. For 7&quot; Length</td>
<td>9-4&quot; Min. Required</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.
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

Rumble strip length not shown for clarity (see typical spacing detail above)

** - 18" from edge of skip to centerline of first rumble strip (typical)

No rumble strips within 10' skip line

6 sets of rumble strips within 30' gap
**NOTES**

1. ALL ROUND LINE POSTS TO BE CAPPED WITH LOOP CAPS. TENSION WIRE TO RUN THROUGH LOOPS. CAPS TO BE FASTENED TO ALL TERMINAL POSTS WITH TENSION BANDS.

2. FASTEN FABRIC TO TENSION WIRE WITH HOG RINGS #18.2 C/C. HOG RINGS TO BE 12½ GAUGE GALVANIZED STEEL WIRE.

3. MATERIALS TO MEET REQUIREMENTS OF AASHO 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

PLATE POSTS (11.33 LB/FT) U OR T SHAPE
(9.32 LB MIN. INCLUDING ANCHOR PLATE)

A.S.T.M. A-116 (16), DESIGN NO. 1047-6-9
NO. 9 GA. GALV. WIRE, CLASS III, COATING

ANCHOR & PIVETED OR WELDED TO THE
BACK OF POSTS
MIN. THICKNESS = 0.187
MIN. WEIGHT = 0.67 LB
MIN. SURFACE AREA = 15.5

12'-0" MAX.

12'-0" OPENING DOUBLE-GATE

PIPE 1" NPS
1.90" O.D. SCH40 2.12 LB/FT OR
1.90" O.D. SS40 2.28 LB/FT

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

GRATE FRAMES & POSTS SHALL BE A.S.T.M. A-120 HOT DIPPED GALV. PIPE.

DOUBLE SWING GATE

4" O TIE ROD W/TURNBUCKLE

2 NPS (2.375" O.D.) 3.65 LB/FT
OR 3.12 LB/FT

2 DBL. STRAND NO. 9 GA. WIRES

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

SINGLE GATE

NOMINAL PIPE SIZE (NPS)

POSTS IN ROCK - WHERE SUBSTANTIAL ROCK IS ENCOUNTERED A HOLE ONE (1") INCH LARGER IN DIAMETER THAN THE POST AND OF
12" MINIMUM DEPTH FOR LINE POSTS AN 18" MINIMUM DEPTH FOR TERMINAL POSTS, SHALL BE MADE AFTER INSERTING THE POSTS.
THE HOLES SHALL BE BACK FILLED WITH A HAND MIXED 1:2 MORTAR CONSISTING OF ONE PART PORTLAND CEMENT AND TWO PARTS
FINISH AGGREGATES MIXED TO A PLASTIC CONSISTENCY SHOWING NO SIGNS OF FREE WATER. THE HAND MIXING AND CONSOLIDATION
OF THE MORTAR SHALL BE PERFORMED IN A MANNER APPROVED BY THE ENGINEER.

THE WEIGHT OF STEEL PIPE CALLED FOR ON THIS STANDARD SHALL NOT VARY MORE THAN 5% FROM THE INDICATED WEIGHT.
BUT MAY EXCEED SUCH INDICATED WEIGHT. THE WEIGHT OF STEEL SHAPES CALLED FOR ON THIS STANDARD SHALL NOT VARY MORE
THAN 2.5% FROM THE INDICATED WEIGHT. BUT MAY EXCEED SUCH INDICATED WEIGHT.

NOTE

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

4'-0" FARM TYPE FENCE

STANDARD NO. MD 690.03
TRUSS BRACE ATTACHMENT FOR ROUND CONSTRUCTION

BRACE BANDS
\( \frac{1}{8}" \times 1" \) GALVANIZED STEEL

\( \frac{1}{2}" \) DIA. GALVANIZED CARRIAGE BOLT & NUT

TERMINAL POST

GALVANIZED MALLEABLE IRON

LINE POST

BRACE RAIL ATTACHMENT FOR ROUND CONSTRUCTION

CHAIN LINK BANDS
\( \frac{1}{8}" \times 1" \) GALVANIZED STEEL

\( \frac{3}{8}" \) DIA. \( x \frac{1}{2}" \) GALVANIZED CARRIAGE BOLT & NUT

STRETCHER BAR
\( \frac{1}{2}"	imes\frac{1}{4}" \) GALVANIZED STEEL

STRETCHER ROD ATTACHMENT

ATTACHMENT FOR BARB WIRE OR TENSION WIRE

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

STANDARD NO. MD 690.11
ALTERNATE TRUSS BRACE ATTACHMENT FOR SQUARE CONSTRUCTION

STRETCHER BAR
\( \frac{5}{4}" \times \frac{1}{4}" \) GALVANIZED STEEL

STRETCHER ROD CLIP
\( \frac{3}{16}" \) DIA. GALVANIZED WIRE

\( \frac{5}{16}" \) DIA. GALVANIZED STEEL THREADED ONE END HOOK BOLT

GALVANIZED MALLEABLE IRON

ALTERNATE STRETCHER ROD ATTACHMENT

ALTERNATE ATTACHMENT
FOR BARE WIRE OR TENSION WIRE

ALTERNATE BRACE RAIL ATTACHMENT
FOR SQUARE CONSTRUCTION

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

STANDARD NO. MD 690.12
'C' POST OR 'ROUND' POST

'‘H' POST

TIE WIRE ATTACHMENT FOR LINE POST

DRIVE ANCHOR FOR LINE POST
ALTERNATE TO CONCRETE FOOTING

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

NOTE

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

ELEVATION

ANCHOR SHOE DETAILS

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