SECTION 200

CURBS, MEDIANS &

ENTRANCE GUTTERS
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INDEX OF SHEETS
SECTION 200-CURBS AND ENTRANCES
VIRGINIA DEPARTMENT OF TRANSPORTATION
NOTES:

1. This item may be precast or cast in place.

2. Concrete to be Class A3 if cast in place, 4000 psi if precast.

3. Curb having a radius of 300 feet or less (along face of curb) will be paid for as radial curb.

4. The depth of curb may be reduced as much as 3" (15" depth) or increased as much as 3" (21" depth) in order that the bottom of curb will coincide with the top of a course of the pavement substructure. Otherwise, the depth is to be 18" as shown. No adjustment in the price bid is to be made for a decrease or an increase in depth.

5. CG-2 is to be used on roadways meeting the requirements for CG-6 as shown in Appendix A of the VDOT Road Design Manual, in the section on GS Urban Standards.

Acceptable alternative if curb is extruded.
1. This item may be precast or cast in place.
2. Concrete to be class A3 if cast in place, 4000 psi if precast.
3. Curb having a radius of 300 feet or less (along face of curb) will be paid for as radial curb.
4. The depth of curb may be reduced as much as 3" (13" depth) or increased as much as 3" (19" depth) in order that the bottom of the curb will coincide with the top of a course of the pavement substructure. Otherwise, the depth is to be 16" as shown. No adjustment in the price bid is to be made for a decrease or an increase in depth.
5. CG-3 is to be used on roadways meeting the requirements for CG-7 as shown in Appendix A of the VDOT Road Design Manual in the section on GS Urban Standards.
6. When this standard is to be tied into existing barrier curb, the transition is to be made within 10' or the change in standards can be made at regular openings.

NOTES:

STANDARD 4" CURB

VIRGINIA DEPARTMENT OF TRANSPORTATION
NOTES:

1. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.

2. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.

3. COMBINATION CURB & GUTTER HAVING A RADIUS OF 300 FEET OR LESS (ALONG FACE OF CURB) SHALL BE PAID FOR AS RADIAL COMBINATION CURB & GUTTER.

4. FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER, THE BOTTOM OF THE CURB & GUTTER SHALL BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES AND TO THE DEPTH OF THE PAVEMENT.

5. ALLOWABLE CRITERIA FOR THE USE OF CG-6 IS BASED ON ROADWAY CLASSIFICATION AND DESIGN SPEED AS SHOWN IN APPENDIX A OF THE ROAD DESIGN MANUAL IN THE SECTION ON GS URBAN STANDARDS.
COMBINATION 4" CURB AND GUTTER

NOTES:
1. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
2. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
3. COMBINATION CURB & GUTTER HAVING A RADIUS OF 300 FEET OR LESS (ALONG FACE OF CURB) SHALL BE PAID FOR AS RADIAL COMBINATION CURB & GUTTER.
4. FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER, THE BOTTOM OF THE CURB AND GUTTER SHALL BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES AND TO THE DEPTH OF THE PAVEMENT.
5. ALLOWABLE CRITERIA FOR THE USE OF CG-7 IS BASED ON ROADWAY CLASSIFICATION AND DESIGN SPEED AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL IN THE SECTION ON URBAN GS STANDARDS.
6. WHEN THIS STANDARD IS TO BE TIED INTO EXISTING BARRIER CURB, THE TRANSITION IS TO BE MADE WITHIN 10' OR THE CHANGE IN STANDARDS CAN BE MADE AT REGULAR OPENINGS.
7. WHEN COMBINATION MOUNTABLE CURB AND GUTTER IS USED, THE STANDARD ENTRANCE GUTTERS OR STANDARD CONNECTION FOR STREET INTERSECTIONS ARE TO HAVE THE MOUNTABLE CURB CONFIGURATION INCORPORATED.

THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES PROVIDED A MIN. DEPTH OF 7" IS MAINTAINED.

THIS AREA MAY BE CONCRETE AT THE OPTION OF THE CONTRACTOR.
ASPHALT CONCRETE CURB AND MEDIAN

FOR TEMPORARY OR PERMANENT INSTALLATION

MC-3 AND MC-3A ARE TO BE USED ON ROADWAYS MEETING THE REQUIREMENTS FOR CG-6 AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL.

★ ASPHALT TOP FOR MEDIAN TO BE SAME MIX AS CURB.
RIGID PAVEMENT
FLEXIBLE PAVEMENT OR RIGID BASE WITH ASPHALT SURFACE
SHOULDER STABILIZATION AS SHOWN ON PLANS.

ASPHALT CURB

FLEXIBLE PAVEMENT OR RIGID BASE WITH ASPHALT SURFACE

ASPHALT CURB

TEMPORARY ASPHALT CURB (FOR TEMPORARY SLOPE EROSION CONTROL ONLY)

ASPHALT MEDIAN

ASPHALT MEDIAN

MC-3B AND MC-3C ARE TO BE USED ON ROADWAYS MEETING THE REQUIREMENTS FOR CG-7 AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL IN THE SECTION ON GS STANDARDS.

* ASPHALT TOP FOR MEDIAN TO BE SAME MIX AS CURB.
NOTES

1. STANDARD MC-3B REQUIRES THE PAVED SHOULDER TO EXTEND TO THE BACK OF CURB.
2. PAVED SHOULDER WIDTHS TO BE IN ACCORDANCE WITH THE PLANS, VDOT POLICY, OR AS DIRECTED BY THE ENGINEER.
3. THE PAVED SHOULDER AND THE EXTENDED PAVED SHOULDER SHALL BE PLACED SIMULTANEOUSLY.
4. FACE OF GUARDRAIL SHALL BE ALIGNED WITH FACE OF THE CURB.
5. DISTANCE FROM THE FACE OF RAIL TO THE HINGE POINT IN ACCORDANCE WITH THE GUARDRAIL STANDARD USED.
6. MC-3B CURB NOT PERMITTED WITHIN THE LIMITS OF ANY GUARDRAIL TERMINAL.

TO CALCULATE THE ASPHALT BACKUP MATERIAL

1. MULTIPLY THE LENGTH OF MC-3B BY THE END AREA WHICH RESULTS IN CUBIC FEET.
2. MULTIPLY CUBIC FEET BY 0.0733 TONS / CUBIC FOOT WHICH RESULTS IN TONS OF ASPHALT CONCRETE BACKUP MATERIAL.

STANDARD GUARDRAIL & MC-3B ASPHALT CURB INSTALLATION

1. ST'D. MC-3B
2. BACK-UP MATERIAL

ASPHALT CONCRETE CURB BACK-UP MATERIAL

MC-3B
ASPHALT PAVING UNDER GUARDRAIL

(FOR USE WHERE ASPHALT CURB IS NOT REQUIRED)

NOTES:

1. CONSTRUCTED WITH THE SAME MATERIAL AND TO THE SAME DEPTH AS THE ROADWAY PAVED SHOULDER.

2. CONSTRUCTED WITH THE SAME ASPHALT MATERIALS AS THE PAVED SHOULDER FROM THE FACE OF RAIL TO THE SHOULDER HINGE POINT AT FOLLOWING DEPTHS:
   - ALLOWABLE DEPTHS OF ASPHALT MATERIAL
     - SM-9.5A OR SM-12.5D 1.5"
     - IM-19.0A OR IM-19.0D 2"

3. MAXIMUM ALLOWABLE DEPTH FOR PAVING UNDER GUARDRAIL IS 2 INCHES.

4. DISTANCE FROM THE FACE OF RAIL TO THE HINGE POINT IN ACCORDANCE WITH THE GUARDRAIL STANDARD USED.

5. SEE GUARDRAIL OR GUARDRAIL TERMINAL STANDARD FOR INSTALLATION AND SITE PREPARATION REQUIREMENTS.

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

ASPHALT PAVING UNDER GUARDRAIL

METHODS FOR BEGINNING & ENDING ASPHALT PAVING UNDER GUARDRAIL AND GUARDRAIL TERMINALS.
CONCRETE MEDIAN CURB

The depth of curb may be reduced as much as 3" (15" depth) or increased as much as 3" (21" depth) in order that the bottom of curb will coincide with the top of a course of the pavement substructure. Otherwise, the depth is to be 18" as shown. No adjustment in the price bid is to be made for a decrease or an increase in depth.

When roadway design meets the criteria for CG-7 as shown in Appendix A of the road design manual in the section on GS Urban Standards, median curb is to be in accordance with CG-3.

FOR USE WITH CONCRETE PAVEMENT

INTEGRAL

FOR USE WITH CONCRETE WITH ASPHALT TOP COURSE

INDEPENDENT
NOTES:
1. THOROUGHLY COMPACTED
   AREA TO CONSIST OF THE
   FOLLOWING:
   - IN FILLS - REGULAR FILL MATERIAL
   - IN CUTS - UNDISTURBED EARTH
     AND REGULAR FILL
     MATERIAL AS REQUIRED.

SUGGESTED CONSTRUCTION METHOD IF
TOP SLAB IS Poured SEPARATELY

ALTERNATE CONSTRUCTION METHOD IF
TOP SLAB IS Poured SEPARATELY

WHEN ROADWAY DESIGN MEETS THE
CRITERIA FOR CG-7 AS SHOWN IN
APPENDIX A OF THE ROAD DESIGN
MANUAL, MEDIAN CURB IS TO BE
IN ACCORDANCE WITH STANDARD CG-3.

THE DEPTH OF CURB MAY BE REDUCED AS
MUCH AS 3" (9" DEPTH) OR INCREASED AS
MUCH AS 3" (15" DEPTH) IN ORDER THAT THE
BOTTOM OF CURB WILL COINCIDE WITH THE
TOP OF A COURSE OF THE PAVEMENT STRUCTURE.
OTHERWISE, THE DEPTH IS TO BE 12" AS SHOWN.
NO ADJUSTMENT IN THE PRICE BID IS TO BE MADE
FOR A DECREASE OR AN INCREASE IN DEPTH.

ALTERNATE WITH
EXTRUDED CURB

WHEN MEDIUM WIDTH IS 3 FEET OR GREATER,
A LONGITUDINAL CONTRACTION JOINT SHALL
BE PROVIDED ALONG ξ OF MEDIUM STRIP.

CIRCULAR NOSE

NON-SYMMETRICAL NOSE

ADDITIONAL HOLES OF ADEQUATE SIZE TO BE
PROVIDED FOR SIGN POSTS, DELINEATOR POSTS,
ETC. AS SHOWN ON THE PLANS OR DIRECTED
BY THE ENGINEER.

STANDARD SOLID CONCRETE RAISED MEDIUM STRIP

2016 ROAD & BRIDGE STANDARDS
STANDARD RAISED GRASS MEDIAN STRIPS

HALF SECTION WITH PROP. CONCRETE PAVEMENT
- FOR DETAILS OF INTEGRAL CURB SEE STANDARD MC-1 OR CG-3
- 1/4" 1' SLOPE
- 2" TOP SOIL
- WHEN ROADWAY DESIGN MEETS THE CRITERIA FOR CG-7 AS SHOWN IN APPENDIX A OF THE ROAD DESIGN MANUAL IN SECTION ON GS STANDARDS, MEDIAN CURB IS TO BE IN ACCORDANCE WITH CG-3

HALF SECTION WITH PROP. CONCRETE BASE WITH ASPHALT TOP
- FOR DETAILS OF INDEPENDENT CURB SEE STANDARD MC-1 OR CG-3
- 1/4" 1' SLOPE
- 2" TOP SOIL

HALF SECTION WITH PROP. CONCRETE OR FLEXIBLE PAVEMENT
- FOR DETAILS OF INDEPENDENT CURB SEE STANDARD MC-1 OR CG-3
- 1/4" 1' SLOPE
- 2" TOP SOIL
- (1) THOROUGHLY COMPACTED AREA TO CONSIST OF THE FOLLOWING:
  - IN FILLS: REGULAR FILL MATERIAL
  - IN CUTS: UNDISTURBED EARTH AND REGULAR FILL MATERIAL, AS REQUIRED.
- (2) THOROUGHLY COMPACTED AREA TO CONSIST OF REGULAR FILL MATERIAL.

HALF SECTION WITH PROP. CONCRETE OR FLEXIBLE BASE WITH ASPHALT TOP
- FOR DETAILS OF INDEPENDENT CURB SEE STANDARD MC-1 OR CG-3
- 1/4" 1' SLOPE
- 2" TOP SOIL

HALF SECTION WITH EXISTING FLEXIBLE PAVEMENT
- FOR DETAILS OF INDEPENDENT CURB SEE STANDARD MC-1 OR CG-3
- 1/4" 1' SLOPE
- 2" TOP SOIL
- EXIST. FLEXIBLE PAVEMENT
- PAVEMENT UNDER MEDIAN TO BE REMOVED

HALF SECTION WITH EXIST. FLEXIBLE BASE WITH ASPHALT TOP
- EXIST. FLEXIBLE PAVEMENT
- PAVEMENT UNDER MEDIAN TO BE REMOVED
2016 ROAD & BRIDGE STANDARDS

2" ASPHALT CONCRETE TYPE SM-9.5 A OR D
FOR DETAILS OF INTEGRAL CURB
SEE STANDARD MC-1 OR CG-3

HALF SECTION WITH PROPOSED
CONCRETE PAVEMENT

2" ASPHALT CONCRETE TYPE SM-9.5 A OR D
FOR DETAILS OF INDEPENDENT CURB
SEE STANDARD MC-1 OR CG-3

HALF SECTION WITH PROP. CONCRETE
OR FLEXIBLE PAVEMENT

2" ASPHALT CONCRETE TYPE SM-9.5 A OR D
FOR DETAILS OF INDEPENDENT CURB
SEE STANDARD MC-1 OR CG-3

HALF SECTION WITH EXISTING FLEXIBLE PAVEMENT

NOTE: THE ASPHALT CONCRETE SURFACE SLAB IS TO CONFORM TO THE CURRENT ROAD & BRIDGE SPECIFICATIONS FOR SM-9.5 A OR D MATERIAL EXCEPT THAT THE MINIMUM BITUMEN CONTENT IS TO BE 6.5%
STANDARD ENTRANCE GUTTER WITH FLARED OPENING

FOR USE ACROSS SIDEWALK

NOTE: ENTRANCE SYMMETRICAL ABOUT C

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.

** FOR SIDEWALK, CURB AND GUTTER - BUILT CONCURRENTLY.
** FOR INITIAL CURB AND GUTTER ONLY.
** FOR INITIAL SIDEWALK ONLY - 7" SIDEWALK TO BE DIPPED.
** FOR PEDESTRIAN ACCESS ROUTE - MINIMUM 4'-0" TRAVERSABLE WIDTH IS REQUIRED WITH A MAXIMUM 2% CROSS SLOPE.
** FOR CURB AND GUTTER ONLY - AFTER INITIAL SIDEWALK.
** FOR CURB AND SIDEWALK ONLY - WITHOUT GUTTER.
△ INDICATES POINT OF GRADE CHANGE.

2016 ROAD & BRIDGE STANDARDS
STANDARD ENTRANCE GUTTER

EXISTING OR PROPOSED SIDEWALK OR SIDEWALK SPACE

EXPANSION JOINT

UNPAVED SPACE

FLOW LINE

UNPAVED SPACE

EXPANSION JOINT

Curb included in entrance gutter

Entrance width: desirable minimum 15', absolute minimum 12'

Entrance center line: note entrance symmetrical about C

1/2 Width of entrance

2'-0"

Edge of pavement

Half Plan

SECTION C-C

SECTION D-D

SECTION E-E

SECTION F-F

6" AGGR. BASE TYPE I SIZE 21B

5'-0"

12% MAX. SLOPE FOR CURB AND GUTTER ONLY

FOR SIDEWALK, CURB AND GUTTER BUILT CONCURRENTLY

0% TO 10% CHANGE

CLASS A3 (H.E.S.) CONC.

Point of grade change

1% - 3" ACCESS ROUTE

LIMITS OF PED. ACCESS ROUTE

UNPAVED SPACE

NON-TRAVERSABLE SLOPE

PEDESTRIAN ACCESS ROUTE DETAIL WITH & WITHOUT UNPAVED SPACE

ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF-WAY.

* PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND NON-TRAVERSABLE PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS IF ACCESS ROUTE IS ADJACENT TO BACK OF CURB, MINIMUM WIDTH SHOULD BE 6'.

* IF PEDESTRIAN ACCESS ROUTES ARE BEING PROVIDED, A MINIMUM 4' TRAVERSABLE WIDTH IS REQUIRED WITH A MAX. 2% CROSS SLOPE.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.

* * * 12% MAXIMUM INCREASE IN SLOPE AT MINIMUM 10' INTERVALS

* * * * 3% MAXIMUM DECREASE IN SLOPE FOR FIRST 10' INTERVAL AND 8% MAXIMUM DECREASE FOR SUCCEEDING MINIMUM 10' INTERVALS
PEDESTRIAN ACCESS ROUTE DETAILS WITH & WITHOUT UPAVED SPACE

ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF-WAY.

PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSERVED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.

* IF PEDESTRIAN ACCESS ROUTES ARE BEING PROVIDED, A MINIMUM 4' TRAVERSABLE WIDTH IS REQUIRED WITH A MAX. 2% CROSS SLOPE.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.

NOTE: ENTRANCE SYMMETRICAL ABOUT Q.

EDGE OF PAVEMENT

HALF PLAN

ROAD AND BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS
**GENERAL NOTES**

1. When used in conjunction with Standard CG-3 or CG-7, the curb face on this standard is to be adjusted to match the mountable curb configuration.

2. See standard CG-12 for curb ramp design to be used with this standard.

3. Mainline pavement shall be constructed to the R/W line (except any subgrade stabilization required for mainline pavement which can be omitted in the entrance.)

4. Radial curb or combination curb and gutter shall not be constructed beyond the R/W line except for replacement purposes.

**ENTRANCE NOTES**

5. When the entrance radii cannot accommodate the turning requirements of anticipated heavy truck traffic, the depth for sidewalk & curb ramps within the limits of the radii should be increased to 7" (see CG-13)

6. Plans are to indicate when construction of a flow line is required to provide positive drainage across the entrance.

7. The desirable and maximum entrance grade changes (D) are listed in the allowable entrance grade table. These values are not applicable to street connections.

**INTERSECTION NOTES**

8. When CG-11 is used for street connections, the connection must be designed in accordance with AASHTO policy and the applicable requirements of the VDOT Road Design Manual, including stopping sight distance and k value requirements.

9. Optional flowline may require warping of a portion of gutter to provide positive drainage across the intersection.

**ALLOWABLE ENTRANCE GRADE CHANGES**

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<th>ENTRANCE VOLUME</th>
<th>GRADE CHANGE ALLOWABLE ENTRANCE GRADE CHANGES</th>
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<tr>
<td>High</td>
<td>More than 1500 VPD</td>
</tr>
<tr>
<td></td>
<td>Desirable 0% Maximum 3%</td>
</tr>
<tr>
<td>Medium</td>
<td>500-1500 VPD</td>
</tr>
<tr>
<td></td>
<td>≤ 3% Maximum 6%</td>
</tr>
<tr>
<td>Low</td>
<td>Less than 500 VPD</td>
</tr>
<tr>
<td></td>
<td>≤ 6% Maximum 8%</td>
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Note: Allowable entrance grade table is not applicable to street connections.

**METHOD OF TREATMENT**

(CONNECTION FOR STREET INTERSECTIONS AND COMMERCIAL ENTRANCES)

VIRGINIA DEPARTMENT OF TRANSPORTATION

2016 ROAD & BRIDGE STANDARDS
EXPANSION JOINT

WIDTH OF ENTRANCE

EXPANSION JOINT

MAIN ROADWAY

FLOW LINE

PAY LINE

EXPANSION JOINT

C OF ENTRANCE

NOTES:

2'-0" 15"

5 X 8" BARS @ 12" C-C
MIN. CONC. COVER 1/2"

PERMISSIBLE CONSTRUCTION JOINT

PERMISSIBLE CONSTRUCTION JOINT

3 - 1/2" MINIMUM CONCRETE COVER

Proposed 7" Sidewalk to be Class A-3 Concrete.

If PeDESTRIAN ACCESS ROUTES are being provided, a minimum 4'-TRAVERSABLE WIDTH is required with Max. 2% CROSS SLOPE.

1. Proposed 7" Sidewalk is to be poured monolithically with entrance or by using permissible construction joint with required bars.

2. Proposed 7" Sidewalk to be Class A-3 concrete.

3. Required bars are to be No. 5x8" placed 1" center to center along back of curb, mid-depth of sidewalk. Minimum concrete cover 1/2".

4. All details and dimensions not shown are the same as standard CG-9D.

5. This design may also be applied to other entrance standards as the need arises.

6. When used in conjunction with standard CG-3 or CG-7, the curb face on this standard is to be adjusted to match the mountable curb configuration.

7. See standard CG-12 for Detectable Warning details.
GENERAL NOTES:

1. The detectable warning shall be provided by truncated domes.

2. All detectable warning surface products shall meet the requirements of Section 504 of the specifications for CG-12 detectable warning surface. Detectable warning surface products used shall be from the materials approved product list number 72.

3. Sloping sides of curb ramp may be poured monolithically with ramp floor or by using permissible construction joint with required bars.

4. Required bars are to be No. 5 x 8" placed "center to center along both sides of the ramp floor, mid-depth of ramp floor. Minimum concrete cover 1/4".

5. Roadway curb / curb and gutter slope transitions adjacent to curb ramps are included in payment for curb / curb and gutter.

6. Curb ramps are required for sidewalks and shared use paths. The width of the curb ramp shall match sidewalk width when curb ramps are used in conjunction with a shared use path, the minimum width shall be the width of the shared use path.

7. Detectable warnings shall extend the full width of the curb ramp landing floor.

8. Curb ramps will be installed and located within pedestrian crosswalks as shown on plans or as directed by the engineer. Curb ramps should not be located behind vehicle stop lines, light poles, fire hydrants, drop inlets, etc.

9. Ramps may be placed on radial or tangential sections provided that the curb opening is placed within the limits of the crosswalk and that the slope at the connection of the curb opening is perpendicular to the curb.

10. Detectable warning surface panels shall be installed flush with the back of curb.

11. Where curb ramps intersect a radial section of curb at entrances or street connections, the detectable warning surface shall have a factory radius or be field-modified as recommended by the manufacturer to match the back of curb. See CG-12-INS pages 204.06 and 204.07 for methods of installing detectable warnings on a radius.

NOTE: Components of curb ramps consist of the following:

- Hydraulic cement sidewalk (depth in inches, area in square yards)
- Curb when required (CG-2 or CG-3 in linear feet)
- Detectable warning surface (area in square yards)

Each of the above items is a separate pay item and should be summarized for each curb cut ramp.

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<th>DETAIL</th>
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<tr>
<td>Top Diameter</td>
<td>0.9&quot;-1.4&quot;</td>
</tr>
<tr>
<td>Base Diameter</td>
<td>0.5&quot;-0.65&quot;</td>
</tr>
<tr>
<td>12:1 MAX</td>
<td>48:1 MAX</td>
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</tbody>
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VIRGINIA DEPARTMENT OF TRANSPORTATION

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

CG-12 DETECTABLE WARNING SURFACE

(GENERAL NOTES)

SPECIFICATION REFERENCE

<table>
<thead>
<tr>
<th>SHEET 1 OF 5</th>
<th>REVISION DATE</th>
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<tr>
<td>204.01</td>
<td>04/19</td>
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ROAD AND BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS
CG-12 DETECTABLE WARNING SURFACE
TYPE A (PERPENDICULAR) APPLICATION

NOTES:

1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
2. THIS DESIGN TO BE USED FOR CONSTRUCTION THAT INCORPORATES WIDER SIDEWALK, LANDING (4' WIDE) REQUIRED AT TOP OF CURB RAMP. MINIMUM CURB RAMP LENGTH 8 FEET FOR NEW CONSTRUCTION.
3. GUTTER PAN SHALL BE A MAXIMUM SLOPE OF 20:1 AT THE RAMP OPENING.
4. DIAGONAL PLACEMENT IS NOT PERMITTED.
CG-12 DETECTABLE WARNING SURFACE

**TYPE B (PARALLEL) APPLICATION**

<table>
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<th>ROADWAY GRADE IN PERCENT</th>
<th>MINIMUM RAMP LENGTH IN FEET</th>
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<tr>
<td></td>
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<tr>
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**NOTES:**
1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
2. THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.
3. GUTTER PAN SHALL BE A MAXIMUM SLOPE OF 20:1 AT THE RAMP OPENING.
4. DIAGONAL PLACEMENT IS NOT PERMITTED.

**EXAMPLE INSTALLATION METHODS - SEE PLANS FOR LAYOUT**

**SECTION A-A**

**SECTION B-B**

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

2016 ROAD & BRIDGE STANDARDS
The required length of a parallel ramp is limited to 15 feet, regardless of the slope.
MEDIAN WITH CUT-THROUGH
TYPE M2

MEDIAN WITH RAMP
TYPE M1

SECTION A-A
SEE NOTE 5

SECTION C-C
SEE NOTE 5

SECTION B-B
SEE NOTE 5

SECTION D-D
SEE NOTE 5

NOTES:
1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE,
SEE SHEET 1 OF 5.
2. CURB SHALL BE SHAPED TO MATCH THE FACE OF ROADWAY CURB.
3. SEE ROADWAY PLANS FOR MEDIAN AND REFUGE ISLAND DIMENSIONS
4. RAMPS AND CUT THROUGH'S SHALL BE ALIGNED WITH CROSSWALKS.
5. THE RAMPS AND CUT THROUGH'S SHALL BE INSTALLED AND PAID FOR AS
4" HYDRAULIC CEMENT CONCRETE SIDEWALK IN ACCORDANCE WITH SECTION
504 OF THE ROAD & BRIDGE SPECIFICATIONS. EXCAVATION OF MATERIAL FOR
THE INSTALLATION OF THE SIDEWALK SHALL BE INCLUDED IN THE PRICE BID
FOR 4" HYDRAULIC CEMENT CONCRETE SIDEWALK.
6. CUT THROUGH'S LESS THAN 6' IN WIDTH SHALL NOT HAVE DETECTABLE
WARNINGS INSTALLED.
TYPICAL INSTALLATION FOR SHARED-USE PATH WITH SHOULDER

NOTES

1. THE OFFSET OF THE DETECTABLE WARNING PANEL AT THE LANDING CENTER IS 2" MAXIMUM WITH A 0" OFFSET AT EACH END. OFFSETS GREATER THAN 2" ARE NOT PERMITTED AND REQUIRE THE DETECTABLE WARNING PANELS TO BE CUT TO MATCH THE BACK OF CURB RADIUS.

2. JOINTS BETWEEN DETECTABLE WARNING PANELS SHALL BE FACTORY EDGES. CUT SIDES OF PANELS ARE NOT PERMITTED TO ABUT ADJACENT PANELS.

3. ALIGNMENT OF DOMES ON ADJACENT PANELS THAT WILL BE MODIFIED TO FIT A RADIUS SHALL BE MAINTAINED WHEN FIELD MODIFYING DETECTABLE WARNING PANELS.

4. PARTIAL DETECTABLE WARNING DOMES THAT ARE THE RESULT OF CUTTING PANELS SHOULD BE GROUND FLUSH WITH THE PANEL SURFACE.

5. GAPS BETWEEN ADJACENT DETECTABLE WARNING PANELS ARE NOT PERMITTED.

6. SEE PLANS FOR CROSSWALK MARKINGS, TURNING AREAS, ROUTE WIDTHS, GRADE CHANGES AND RAMP CONFIGURATIONS.
**NOTES**

1. **Locations where the Detectable Warning Cannot be Installed with a Maximum 2" Offset from the Back of Curb** shall have a radius to match radius of the curb. Detectable warning panels shall have a factory radius or if approved by the engineer may be field modified as recommended by the manufacturer to match the back of curb.

2. **Joins between detectable warning panels shall be factory edges. Cut sides of panels are not permitted to abut adjacent panels.**

3. **Alignment of domes on adjacent panels that will be modified to fit a radius shall be maintained when field modifying detectable warning panels.**

4. **Detectable warning panel sizes shown are for example purposes. Other panel sizes may be used in order to maintain consistent alignment of the domes for each curb ramp location.**

5. **Blended transition curb ramps are for alteration situations where standard directional curb ramps are not feasible due to site constraints. Blended transition curb ramps are not permitted for new construction.**

6. Partial detectable warning domes that are the result of cutting panels should be ground flush with the panel surface.

7. **Gaps between adjacent detectable warning panels are not permitted.**

8. **See plans for crosswalk markings, turning areas, route widths, grade changes, and ramp configurations.**