VIRGINIA DEPARTMENT OF TRANSPORTATION

LOCATION AND DESIGN DIVISION

INSTRUCTIONAL AND INFORMATIONAL MEMORANDUM

GENERAL SUBJECT: CURB RAMPS AND SIDEWALKS	NUMBER: IIM-LD-55.12
SPECIFIC SUBJECT: GUIDELINES FOR THE PLACEMENT OF CURB RAMPS FOR PEDESTRIAN ACCESS ROUTES	DATE: JULY 29, 2009
	SUPERSEDES: IIM-LD-55.11
DIVISION ADMINISTRATOR APPROVAL:	Mohammad Mirshahi, P.E. State Location and Design Engineer Approved July 29, 2009

Changes are shaded.

CURRENT REVISION

- Definitions for “Alterations” and “Technically Feasible” have been expanded; the definition for Buffer Strip has been added. Also, clarified when CG-12’s can be constructed in the center of a curved section of curb, revised height restriction for signs, clarified “No” on-street parking and on-street parking situations when sidewalk is placed adjacent to the curb, clarified construction of single parallel curb ramp, CG-12, Type B with an enlarged landing area, added dates to References and revised Special Provisions and Insertable Sheets.

EFFECTIVE DATE

- This memorandum is effective on all projects that have not been approved for Right of Way or prior to the PAC Meeting if construction is within existing Right of Way. Implementation on projects that have gone to Right of Way is encouraged where feasible.

CRITERIA

- The Americans with Disabilities Act (ADA) became effective January 26, 1992. Additional regulations to be adopted by the Access Board include specific provisions

for compliance within "Public Rights-of-Way". These additional regulations are the "Final Report of the Public Rights-of-Way Access Advisory Committee" dated January 2001, the "Draft Guidelines for Accessible Public Rights-of-Way" dated June 17, 2002 and the "Revised Draft Guidelines for Accessible Public Rights-of-Way" dated November 23, 2005 as per the U.S. DOT FHWA Memorandum dated January 23, 2006. The Access Board and the Federal Highway Administration are in agreement with VDOT's policy to adhere to these revised draft guidelines. VDOT is also guided by the Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities dated July 23, 2004 and amended August 5, 2005.

(1) The minimum requirements for curb ramps differ for new construction and alterations (See Definitions and Guidelines for Alterations).

(2) The types of curb ramps, identified by the direction the user is traversing the ramp in relation to the vehicular path of travel, are Perpendicular Design (CG-12, Type A), Parallel Design (CG-12, Type B), Combination Design (CG-12, Type C), and Diagonal Designs.

(3) Whenever new construction or an alteration activity is conducted, curb ramp access must be evaluated as part of the project design.

(4) New sidewalks should be a minimum of 60" (1525 mm) wide. However, in unique situations where this is not feasible, a minimum clear width of 48" (1220 mm) shall be provided excluding the width of curb and will be considered when appropriately documented and submitted as a Design Waiver (See IIM-LD-227).

New sidewalks less than 60" (1525 mm) in continuous width shall provide a pedestrian passing area a minimum of 60"x 60" (1525 mm x 1525 mm) at reasonable intervals not to exceed 200' (61 m). These passing areas can be provided at driveways with cross slopes no greater than 48:1 (2%), entrances or street intersections.

(5) Gutter slopes at curb ramp locations should not exceed 20:1 for new construction. Therefore, VDOT's standard curb and gutter design should be modified for use adjacent to curb ramps to ensure proper slope and adequate drainage.

(6) Pedestrian access routes that cross medians and refuge islands shall be a minimum of 72" (1830 mm) in length and include a break or cut-through a minimum of 60" (1525 mm) wide and include detectable warning surfaces.

In situations where a break or cut-through 72" (1830 mm) in length is not feasible due to existing conditions, detectable warning surfaces shall be provided (i.e. 48" (1220 mm) medians)).

Appropriate ramps and landings shall be provided as necessary. The designer shall ensure medians and refuge islands are graphically depicted accurately on plans, drawn to scale, and annotated to denote the Type of Median (M1 or M2) or Refuge Island (RI1 or RI2). See Road and Bridge Standards.

(7) Detectable warning surfaces shall be truncated domes.

(8) If on-street parking is provided, accessible spaces shall be provided in accordance with ADA regulations. See Road Design Manual, Appendix C, Parking Spaces at: http://www.extranet.vdot.state.va.us/locdes/Electronic%20Pubs/2005%20RDM/RoadDesignCoverVol.1.pdf.

DEFINITIONS

Accessible Route

A continuous unobstructed path connecting all accessible elements and spaces of a building or facility. This term applies only to individual sites (see "Pedestrian Access Route" for routes in the public right-of-way). Accessible route surfaces shall be firm, stable, and slip-resistant.

Alterations

A change to a building or facility that affects or could affect the usability of the building or facility, or portion thereof, that is in the scope of the project and is technically feasible, without regard to cost. Alterations include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, and resurfacing of circulation paths or vehicular ways.

Alterations shall incorporate accessibility improvements to existing pedestrian facilities to the extent that those improvements are in the scope of the project and are technically feasible, without regard to cost. Projects altering the usability of the roadway must incorporate accessible pedestrian improvements concurrent with the alterations to the roadway.

The FHWA has determined that alterations are projects that could affect the structure, grade, function, and use of the roadway. Alteration projects include reconstruction, major rehabilitation, structural resurfacing, widening, signal installation, pedestrian signal installation, and projects of similar scale and effect.

(Source: FHWA Office of Civil Rights Memorandum dated September 12, 2006, which can be accessed at: www.fhwa.dot.gov/civilrights/ada_memo_clarificationa.htm).

For additional information, also see Special Report: Accessible Public Right-of-Way Planning and Designing for Alterations dated August 31, 2007, which can be accessed at: http://www.access-board.gov/news/rowalterations-guide.htm.

Buffer Strip

The space provided between the back of curb and the sidewalk to place all lateral obstructions (landscaping, fire hydrants, street lights, parking meters, signal control boxes, signal, sign and utility poles, etc.) to ensure that the pedestrian access route is free of obstacles.

Combined (Parallel & Perpendicular) Curb Ramp (CG-12, Type C)

This alternative is typically used when public pedestrian right of way width established by local or state regulation, guideline, or practice will not accommodate a perpendicular curb ramp. A segment of the sidewalk is ramped or depressed to a relatively level landing to accomplish part of the level change and the balance is achieved by a short perpendicular curb ramp. They may be installed for new construction in the center of a curved section of curb when the radius is less than 25 feet and for

alterations when the distance between two CG-12, Type B's is insufficient to install a separate landing for each. **One curb ramp is to be provided for each direction of crossing, where feasible.** (See Standard CG-12, Type C in the Road and Bridge Standards.)

Curb Ramp — A ramp cutting through a curb or built up to it. A curb ramp consists of a ramp, with a maximum running slope of 12:1 and its accompanying landing(s), with flares where appropriate.

Diagonal Curb Ramp — Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a clear space 48" (1220 mm) minimum outside active traffic lanes of the roadway.

Diagonal curb ramps provided at marked crosswalks shall provide the 48" (1220 mm) minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of curb 24" (610 mm) long minimum located on each side of the curb ramp and within the marked crossing. See Road and Bridge Standards.

CG-12's Type A, B and C can be constructed as Diagonal Curb Ramps.

Landing — A level area of a curb ramp with a cross slope of less than 48:1. For perpendicular curb ramps, the landing allows pedestrians to bypass the flares and ramp and provides a level maneuvering space for persons using wheelchairs entering or exiting the ramp. For parallel curb ramps, the landing is between the ramps. See Road and Bridge Standards.

New Construction — All areas of newly designed and newly constructed facilities in public rights of way are subject to these guidelines. This applies to work such as the extension of roadways and sidewalks into undeveloped areas, new subdivisions, and similar types of projects. Full compliance is generally easier in these types of projects because the scope of work is usually extensive enough to allow necessary grading and acquisition of sufficient right of way.

Parallel Curb Ramp (CG-12, Type B) — Parallel ramps are especially suited to narrow rights-of-way where there is insufficient space for the top landing of a perpendicular curb ramp. In this case, the bottom landing usually serves as the direct connection to the street crossing and shall be located within the crosswalk. Criteria for parallel curb ramps address the running slope (grade) (12:1 maximum and 48:1 minimum), cross slope (48:1 maximum), level landings at the bottom at least 60" by 60" (1525 mm X 1525 mm), and barriers at drop-offs. The running slope (grade) of parallel curb ramps will be affected by the slope of the sidewalk, which is permitted to be as steep as the adjacent roadway. Thus, a maximum slope of 12:1 may not be

achievable due to the road grade. In recognition of this, an exception limits the required length of a parallel ramp to 15' (4.6 m), regardless of the slope. The landing required at the bottom of the ramp is not permitted to slope more than 48:1 in any direction. They may be installed for new construction in the center of a curved section of curb when the radius is less than 25 feet and for alterations when the distance between two CG-12, Type B's is insufficient to install a separate landing for each. **One curb ramp is to be provided for each direction of crossing, where feasible.** (See Standard CG-12, Type B in the Road and Bridge Standards.)

Pedestrian Access Route

A key term that refers to the portion of the public right of way that serves as an accessible route. Since the technical requirements for this route are unique to public rights of way, the Access Board's advisory committee wanted to use a term distinct from "accessible route," which is used by Americans with Disabilities Act Accessibility Guidelines (ADAAG) in referring to routes on sites. The pedestrian access route provides a continuous accessible means of passage. The minimum clear width for a pedestrian access route is 48" (1220 mm), excluding the width of curbs. The grade of the pedestrian access route within a sidewalk shall be no more than 20:1; however, it is permitted to be as steep as the grade of the adjoining roadway.

The pedestrian access route surfaces shall be firm, stable, and slip resistant and openings that are more than 1/2" (13 mm) in one dimension are prohibited. The pedestrian access route is permitted level changes up to 1/4" (6 mm) without treatment and level changes between 1/4" (6 mm) and 1/2" (13 mm) that are beveled with a slope no greater than 2:1.

Perpendicular Curb Ramp (CG-12, Type A)

A curb ramp, normally perpendicular to the curb at the street crossing, with a maximum running slope of 12:1 and a 48:1 maximum level landing (48" x 48" minimum) (1220 mm x 1220 mm minimum) at the top. The bottom of the ramp run, exclusive of flared sides (10:1 maximum slope), shall be located within the crosswalk**.** The cross slope shall be 48:1 maximum. Sidewalks are permitted to follow the running slope of the adjacent roadway, which determines the cross slope of perpendicular ramps and landings at mid-block crossings. They may be installed for new construction in the center of a curved section of curb when the radius is less than 25 feet and for alterations when the distance between two CG-12, Type A's is insufficient to install a separate landing for each. **One curb ramp is to be provided for each direction of crossing, where feasible.** The perpendicular curb ramp (CG-12, Type A) is the **preferred** design for new construction. However, sidewalk width or right of way limitations may warrant a CG-12, Type B or CG-12, Type C. (See Standard CG-12, Type A in the Road and Bridge Standards.)

Public Right of Way	Land or property, usually in a corridor, that is acquired for or devoted to transportation purposes.
Sidewalk	That portion of a public right of way between the curb line or lateral line of a roadway and the adjacent property line that is improved for use by pedestrians.
Technically Infeasible	Existing physical or site development conditions that prohibit the modification or incorporation of elements, spaces, or features which are in full and strict compliance with the minimum requirements for new construction in the public right of way and which are necessary for pedestrian access, circulation, and use (the basis used for exceptions and special technical provisions allowed in alterations). (Source: FHWA Office of Civil Rights Memorandum dated September 12, 2006). When an alteration meets accessibility requirements but is technically infeasible, the public agency must ensure that the alteration provides accessibility to the "maximum extent feasible".

POLICY

- VDOT's policy is to provide facilities for persons with disabilities in accordance with the Code of Virginia, Section 15.2 –2021:

  http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+15.2-2021 .

- Curb ramps shall be provided wherever a pedestrian access route crosses a curb regardless of whether sidewalk is existing, proposed, or non-existent.

- The width of curb ramps for shared use paths should be the same as the width of the shared use path.

- Each location under consideration for requiring curb ramps should be reviewed to determine if a pedestrian access route exists. Curb ramps are required only when a pedestrian access route is to be provided connecting pedestrian areas, elements and facilities. Do not install a curb ramp just because there is an intersection along a curb and gutter section of roadway. Use engineering judgment in evaluating the location. Do not install a curb ramp if it would direct the pedestrian into a wall, fence or drainage structure instead of along a pedestrian access route.

- Curb ramps shall conform to the Road and Bridge Standard CG-12, Type A, B or C and Sections 502 and 504 of the Road and Bridge Specifications. Each curb ramp location shall be evaluated. The designer shall ensure curb ramps are graphically depicted accurately on plans, drawn to scale, and annotated to denote the Type of Curb Ramp (CG-12, Type A, B or C). Curb ramps shall be stable, firm, slip-resistant and constructed of hydraulic cement concrete with a detectable warning surface in accordance with the Special Provision "CG-12 Detectable Warning Surface."

- **One curb ramp is to be provided for each direction of crossing, where feasible.**

- Construction of the entire Standard CG-12, Type A, B or C is required. Construction of the wiped down section of curb only, with intentions of installing the curb ramp when/if a sidewalk is installed along the continuous passage, is not acceptable.

- The Project Manager is to coordinate, early in the design process, with the State Bicycle and Pedestrian Coordinator concerning a pedestrian movement plan and the project traffic engineer concerning crosswalk locations to determine the most desirable road crossing locations. Proposed curb ramp locations, the pedestrian access route, and sidewalks are to be reviewed with the Location & Design Traffic Engineering Design Section early in the design process and throughout the plan development process to determine any possible conflicts with traffic control devices, signs, signals, signal boxes, lighting, crosswalks, and stop bars and other pavement markings. Proposed curb ramp locations also are to be reviewed also by the Hydraulics Section and any other affected disciplines (such as utilities) to avoid potential drainage problems or other conflicts.

GOALS AND OBJECTIVES

- A curb ramp is required to provide access to and from sidewalks or pedestrian access routes for all users. This access is beneficial to pedestrians, users of wheelchairs, canes, crutches, walkers, braces, lower-limb prostheses, persons with gait balance and stamina disabilities, the elderly, and persons with visual disabilities (such as depth perception difficulties).

- There are four objectives related to this goal:

  1. Provide a curb ramp design and placement that is usable by persons with disabilities.
  2. Provide design and placement alternatives for a range of sidewalk and street conditions.
  3. Provide minimal negative impact to all pedestrians.
  4. Place curb ramps in uniform and consistent locations.

- Pedestrians with disabilities will benefit most from design approaches that minimize physical barriers to travel and maneuverability. Pedestrians who use crutches are particularly susceptible to cross slope when they are traveling downhill. Pedestrians with cognitive and sensory disabilities, particularly those who have limited vision and

those who are blind, should have access to information on the pedestrian environment that is necessary for independent travel. Children, including those with disabilities and those using bicycles and other wheeled toys, are significant users of sidewalks and are significantly less able to compensate for cross slope than adults.

BUFFER STRIP

The space provided between the back of curb and the sidewalk to place all lateral obstructions (landscaping, fire hydrants, street lights, parking meters, signal control boxes, signal, sign and utility poles, etc.) to ensure that the pedestrian access route is free of obstacles.

Width

Buffer strip shall be 48” (1220 mm) wide to provide the minimum lateral offset for the placement of conventional signs in accordance with the MUTCD, Part 2. Buffer strip less than 48” (1220 mm) wide may be utilized; however, additional right of way shall be acquired behind the sidewalk for the placement of lateral obstructions (landscaping, fire hydrants, street lights, parking meters, signal control boxes, signal, sign and utility poles, etc.) as well as proposed drainage structures. The Roadway Design should coordinate with the Traffic Engineering Designer to determine the amount of right of way necessary.

In unique situations where **no** buffer strip is provided and a 60” (1525 mm) sidewalk (or sidewalk space) is placed adjacent to the curb, a Design Waiver will be considered when appropriately documented and submitted (See IIM-LD-227). All lateral obstructions (landscaping, fire hydrants, street lights, parking meters, signal control boxes, signal, sign and utility poles, etc.) shall be placed behind the sidewalk so as not to encroach on the pedestrian access route. Therefore, additional right of way shall be acquired behind the sidewalk to place all lateral obstructions as mentioned above. The Roadway Designer should coordinate with the Traffic Engineering Designer to determine the amount of right of way necessary.

If trees are to be planted in the buffer strip it shall be a minimum 72” (1830 mm) wide and the trees should be planted so that the center of the trees are 36” (914 mm) minimum behind the back of curb.

SIDEWALKS

Sidewalks are that portion of a public right of way between the curb line or lateral line of a roadway and the adjacent property line that is improved for use by pedestrians. Sidewalks shall have the following elements:

Height Restrictions

The vertical clearance from the top of the sidewalk to the bottom of any sign shall be 84” (2134 mm) minimum in accordance with the MUTCD, Part 2. Guy wires and utility tie-downs should not be located in or across sidewalks at heights below 96” (2440 mm).

The passage along or within a sidewalk should be clear of obstructions underfoot, overhead, or between. Objects with leading edges above the standard sweep of canes (27” (685 mm)) from the ground and below the standard head clearance (80” (2030 mm)) from the ground shall protrude no more than 4” (100mm) maximum horizontally into the accessible route.

Width

New sidewalks should be a minimum of 60” (1525 mm) wide. However, in unique situations where this is not feasible, a minimum clear width of 48” (1220 mm) shall be provided excluding the width of curb and will be considered when appropriately documented and submitted as a Design Waiver (See IIM-LD-227).

New sidewalks less than 60” (1525 mm) in continuous width shall provide a pedestrian passing area a minimum of 60”x 60” (1525 mm x 1525 mm) at reasonable intervals not to exceed 200’ (61 m). These passing areas can be provided at driveways with cross slopes no greater than 48:1 (2%), entrances, or street intersections.

For **“NO”** on-street parking situations where sidewalk is placed adjacent to the curb, the width should be 24” (600 mm) wider than normal [60”+24”=84” (2134 mm)], but shall not be less than 60” (1525 mm) wide and requires the submission of a Design Waiver (See IIM-LD-227). All lateral obstructions (landscaping, fire hydrants, street lights, parking meters, signal control boxes, signal, sign and utility poles, etc.) shall be placed behind the sidewalk so as not to encroach on the pedestrian access route. Therefore, right of way shall be acquired behind the sidewalk for placement of all lateral obstructions.

For on-street parking situations, where sidewalk is placed adjacent to the curb, the width shall be 36” wider than normal [60”+36”=96” (2438 mm)] to allow vehicle doors to open and people to exit from the vehicle without blocking the pedestrian access route.

Slope

Sidewalk running slope (grade) shall not exceed the general slope (grade) established for the adjacent street or highway.

Cross slope shall not exceed 48:1. A level area with minimal cross slope is necessary for accessible passage across a driveway. Driveway aprons constructed like a ramp with steep short side flares can render a section of sidewalk impassible, especially when encountered in series as in residential neighborhoods.

Surfaces

Sidewalk surfaces shall be **stable, firm and slip resistant** and shall be generally in a continuous plane with a minimum of surface warping. “Materials such as gravel, wood chips, or sand, often used for outdoor walkways, are neither firm nor stable, nor can they generally be considered slip-resistant. Thus, these materials do not constitute an accessible route. However, some natural surfaces, such as compacted earth, soil treated with consolidants, or materials stabilized and retained by permanent or temporary geotextiles, gridforms, or similar construction may perform satisfactorily for persons using wheelchairs and walking aids.”

Changes in level up to 1/4” (6 mm) may be vertical and without edge treatment. Changes in level between 1/4” (6 mm) and 1/2” (13 mm) shall be beveled with a slope no greater than 2:1. Changes in level greater than 1/2” (13 mm) shall be accomplished by means of a ramp.

Grates in sidewalks shall have spaces no greater than 1/2” (13 mm) wide in the direction of traffic flow.

Where sidewalks cross rail systems at grade, the surface of the pedestrian access route shall be level and flush with the rail top at the outer edge and between the rails.

Separation

Curb and Gutter Typical Sections - Designers shall consider providing sidewalks with both a vertical and horizontal separation from the adjacent roadway. Vertical separation shall be created through the installation of curbs. Horizontal separation can be achieved through the installation of a buffer strip, landscaping or furniture zones for benches, planters, literature display boxes, or similar clearly defined features or surfaces that will help guide persons who may otherwise unintentionally enter the vehicular way.

Shoulder and Ditch Typical Sections - Sidewalks constructed along a shoulder and ditch section shall be placed behind the ditch in a manner that will be compatible with the roadway if the roadway is converted to a curb and gutter section. (Note: Placement of sidewalk within the shoulder area is not permitted.)

GUIDELINES FOR CURB RAMP LOCATIONS

- The placement of curb ramps is as critical to their effectiveness as the design. Placement should be determined by design constraints of the sidewalk, roadway, and intersection with respect to obstructions, crosswalks, and intersection types. Placement relative to obstructions should maintain consistency and effectiveness.
- Curb ramps shall be located within the crosswalks (marked or unmarked). The ramps may be centered or located to one side of the crosswalk with the flare outside of the crosswalk. Curb ramps shall be located in front of the vehicle stop bar, if one exists. The Project Manager should discuss the relationship between crosswalks, stop bars and curb ramps with the Traffic Engineering Designer throughout the design of a project.
- Pedestrian access routes that cross medians and refuge islands shall include a break or cut through a minimum of 60” (1525 mm) wide and shall include ramps and delectable warning surfaces. See Road and Bridge Standards.
- Typical situations depicting the placement of curb ramps in new construction and in alterations have been incorporated into VDOT’s Road and Bridge Standard details. Designers are urged to use sound engineering judgment in determining placement.

- **Curb ramps should be provided for each direction of crossing at intersections that incorporate pedestrian access routes, or on both sides of a mid-block location to establish a pedestrian access route for ramp users.** If curb ramps are not placed at all corners of an intersection the ramp user's accessibility is restricted to the paths that provide curb ramps. Access to all pedestrian paths should be provided.
- On new construction projects, utility poles, traffic control devices (such as sign, signal and lighting structures), fire hydrants, and drop inlets should be located so as to provide an unobstructed pedestrian access route to the curb ramp. Because the location of curb ramps may be adversely affected by obstructions, the curb ramp location should have priority over the location of potential obstructions.

GUIDELINES FOR ALTERATIONS

- When existing areas, elements, or facilities intended for pedestrian access, circulation, and use in an existing developed public facility are altered, that is considered an alteration.
- An alteration of an existing element, space, or area of a building or facility shall not impose a requirement for accessibility greater than required for new construction.
- In alterations, where compliance with applicable requirements for new construction is technically infeasible, the alteration shall comply with the requirements to the "maximum extent feasible".
- An alteration that decreases or has the effect of decreasing the accessibility of a public building or facility below the requirements for new construction at the time of the alteration, is prohibited.
- If alterations to existing sidewalks, curb ramps, or pedestrian street crossings, when considered together amount to reconstruction of a block, intersection, or other substantial segment of the pedestrian circulation network in the public right of way, the entire segment, to the "maximum extent feasible", shall comply with provisions for new construction.
- Alterations to a sidewalk, curb ramp, or pedestrian street crossing in the public right of way shall be made so that adjacent segments on the pedestrian access route are readily accessible to and usable by individuals with disabilities.
- Ramps, curb ramps and exterior ramps to be constructed on sites or in existing facilities where space limitations prohibit the use of a 12:1 slope or less may have slopes and rises as follows:

    (1) A slope between 10:1 and 12:1 is allowed for a maximum rise of 6" (150 mm).

    (2) A slope between 8:1 and 10:1 is allowed for a maximum rise of 3" (75 mm). A slope steeper than 8:1 is not allowed.

- In alterations, full extension of handrails shall not be required where such extensions would be hazardous due to the ramp configuration.
- The guidelines apply technical requirements according to the scope of work for a planned alteration or addition. The more extensive the work is, the greater are the opportunities to achieve access. Compliance is "prorated" based on the extent of the work planned.

MISCELLANEOUS NOTES

- Maintenance of curb ramps may be necessary where there is a low velocity of storm water runoff. Debris may accumulate in the relatively flat areas at the base of the ramps, particularly in CG-12, Type B. Very little can be done cost-effectively to overcome this from a design and placement perspective.
- The design guidelines are based on a standard barrier curb height of 6” (150 mm). Should increased heights be used, it will be necessary to add to the length of the curb ramp.
- Special attention should be given to ensure that the bottoms of curb ramps and gutter pan lips are not adversely affected during street re-paving.
- New construction should not contain grates within the pedestrian access route. Should grates be located in walking surfaces, they shall have spaces no greater than 1/2” (13 mm) wide in the direction of traffic flow. If grates have elongated openings, they shall be placed so that the long dimension of the opening is perpendicular to the dominant direction of travel.
- Detectable warnings shall be provided only at the following locations:

  A. Where a sidewalk crosses a vehicular way, excluding un-signalized driveway crossings (private entrances).

  B. Where a rail system crosses *pedestrian* facilities that are not shared with vehicular ways. (See 1108.2 of the Access Board Draft Guidelines for Accessible Public Rights-of-Way for information)

     Guidelines concerning detectible warning locations at rail systems are contained in Section 1108.2.2 of the Access Board Draft Guidelines for Accessible Public Rights-of-Way (See References).

  C. At reflecting pools within the *public right-of-way*, which have no curb or rim protruding above the walking surface.

  D. Pedestrian access routes that cross medians and refuge islands. See Roads and Bridge Standards.

PROCEDURE FOR DETERMINING THE LOCATION AND DESIGN OF CURB RAMPS

Where do we want and plan for all pedestrians to walk or move? What is their destination and what is their current path? Is there an established network? The path may be along a sidewalk (or a relatively flat, unobstructed grass area behind a curb even though it is not surfaced) and through intersections.

1. Determine if the subject project is a new project or an alteration project.
2. Coordinate, early in the design process, with the State Bicycle and Pedestrian Coordinator concerning a pedestrian movement plan (pedestrian access route) and the Traffic Engineering Designer concerning crosswalk locations. Determine the most desirable crossing locations.
3. Determine the best type of curb ramp (CG-12, Type A, B or C) for each location. Specify a CG-12, Type A if there is sufficient space for the landing at the top of the ramp.
4. Evaluate conflicts with curb ramps (light poles, fire hydrants, traffic control devices, utilities, drainage structures, etc.) and coordinate revised crossing locations or fixed object locations as necessary to install curb ramps.
5. The above procedure should continue as necessary throughout the plan development process.

ALTERATION (RETROFIT) CG-12 into EXISTING CURB AND GUTTER and/or SIDEWALK LOCATIONS

When retrofitting a CG-12 into an existing curb and gutter location and/or sidewalk location, evaluation must be made for the most appropriate type of CG-12 configuration to match existing conditions with consideration of grade, type of curb and gutter, pedestrian path, available crosswalks, R/W, location of utilities, location of drainage structures, and any other features that may prohibit or affect the placement and design of the curb ramp.

The existing curb and gutter (or curb only) will need to be removed in the area of the ramp. If there is existing sidewalk it may need to be removed back to the point where the proposed curb ramp will meet existing sidewalk grade. A new curb and gutter will need to be placed to match the existing edge of pavement and to tie to the proposed CG-12 as called for on the plans by type. (This may result in a warped surface area of 20:1 rather that normal gutter slope in the area approaching the ramp.) The sidewalk will be placed to meet the selected type of CG-12 shown on the plans and the detectable warning surface will be placed by the acceptable method selected by the contractor as shown in the Standard for CG-12. **If the landing area is placed at the top of the ramp (i.e.: CG-12, Type A) it may be constructed of the same surface as the traversable path (including grass) although it still must meet the minimal requirements of a landing (i.e.: within R/W, flat surface, correct size, etc.).**

PAY ITEMS

14100	Removal of Sidewalk and Entrance	SY	SQ M	To remove exist. sidewalk
14120	Removal of Comb. Curb and Gutter	LF	M	To remove exist. C&G (or curb only)
13108	CG-12 Detectable Warning Surface	SY	SQ M	For the detectable area
13220	Hydr. Cement Conc. Sidewalk 4”	SY	SQ M	For the SW concrete portion of ramp
13222	Hydr. Cement Conc. Sidewalk 7”	SY	SQ M	For the SW concrete portion of ramp
12600	STD. Comb. Curb & Gutter CG-6 *	LF	M	For the prop. C&G
12700	STD. Comb. Curb & Gutter CG-7 *	LF	M	For the prop. C&G
12020	STD. Curb CG-2*	LF	M	For the prop. Curb
12030	STD. Curb CG-3*	LF	M	For the prop. Curb

*(Std. Type.) (match exist. conditions)

- All items should be plan quantity. Curb ramps should be graphically depicted accurately on plans, drawn to scale, and annotated to denote the Type of curb ramp (CG-12, Type A, B or C) to ensure required quantities and placement can be readily ascertained.

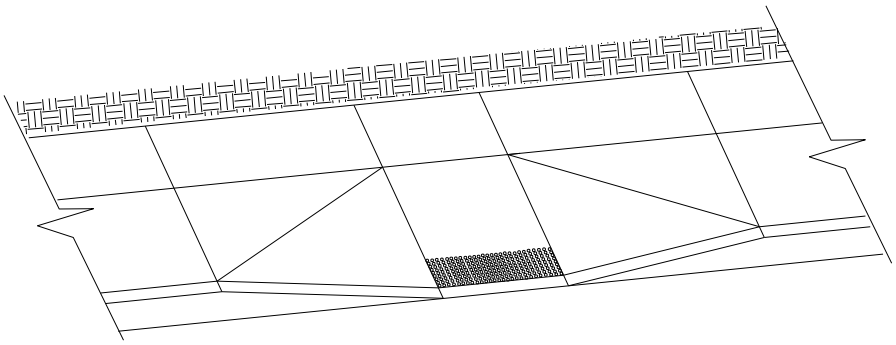
- Where there is an existing curb and gutter, the contractor may choose to remove only the curb utilizing a saw cut in which case the contractor is still paid only for the plan quantity item for Removal of Comb. Curb and Gutter.

- Where there is existing curb (with no gutter), the removal will be paid for by the same item (Removal of Comb. Curb and Gutter) as if there was curb and gutter.

- No special provisions are needed.

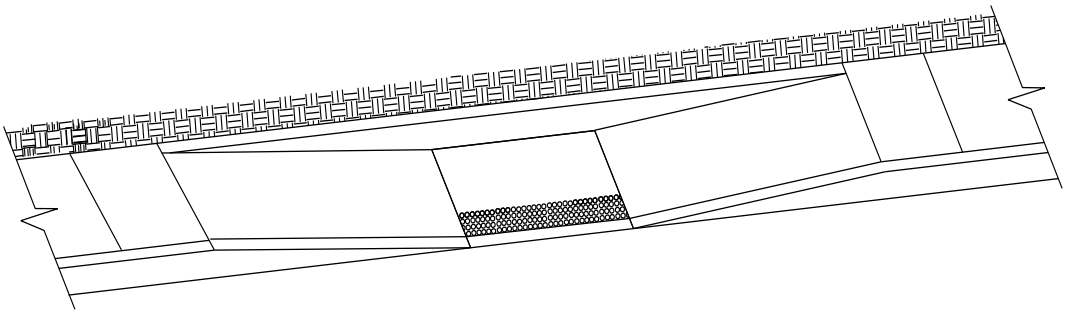
- Where curb ramps are constructed adjacent to commercial entrances or street connections with heavy truck traffic, Hydraulic Cement Concrete Sidewalk 7” should be considered. See Road and Bridge Standards CG-13.

CURB RAMP EXAMPLES



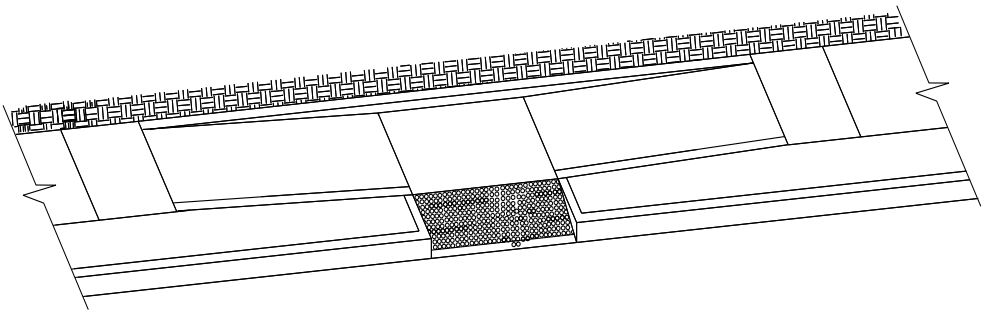
PERPENDICULAR

CG-12, TYPE A



PARALLEL

CG-12, TYPE B

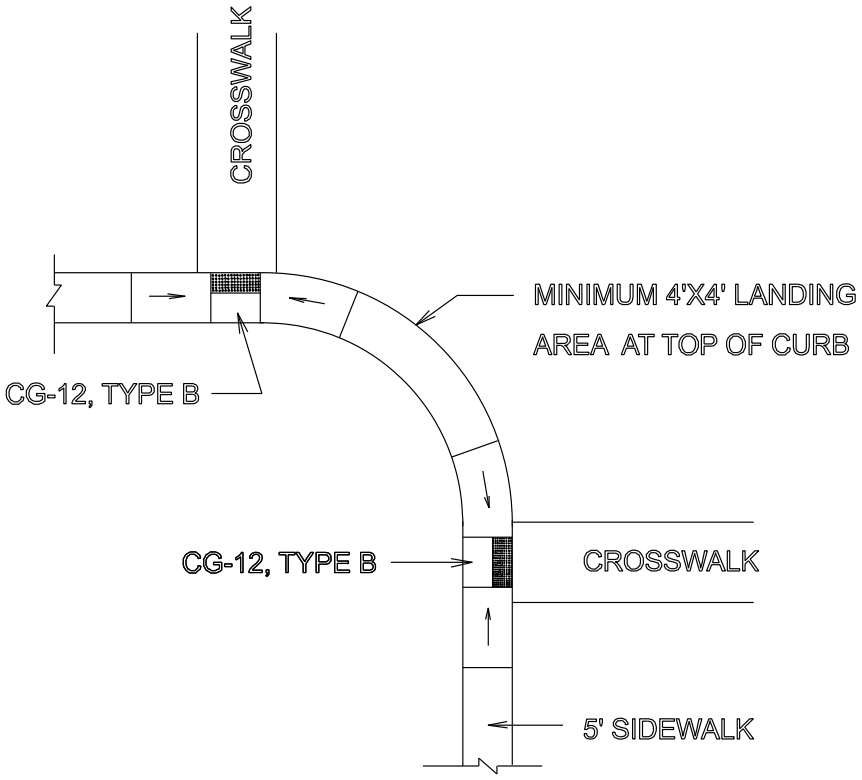


PARALLEL AND PERPENDICULAR

CG-12, TYPE C

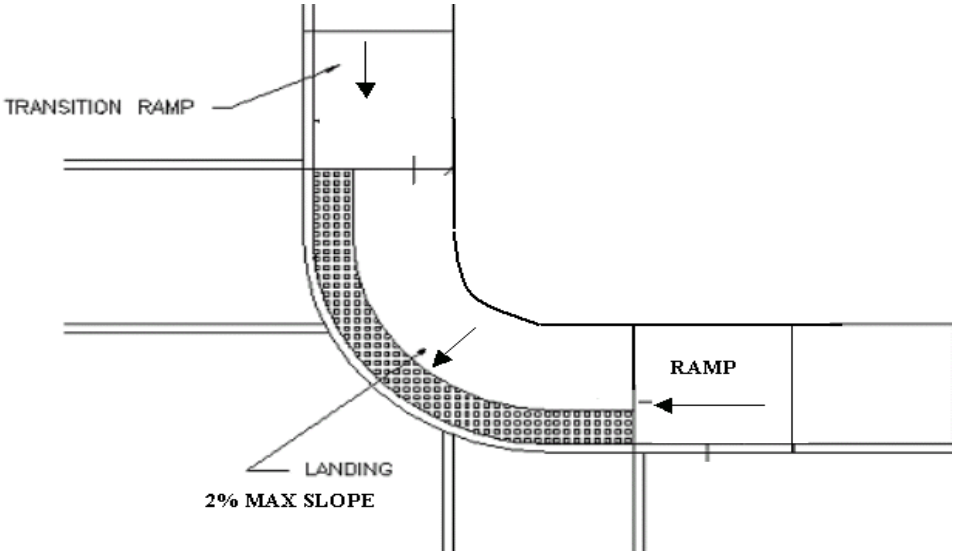
CURB RAMP APPLICATION DETAILS

Two CG-12, Type B's



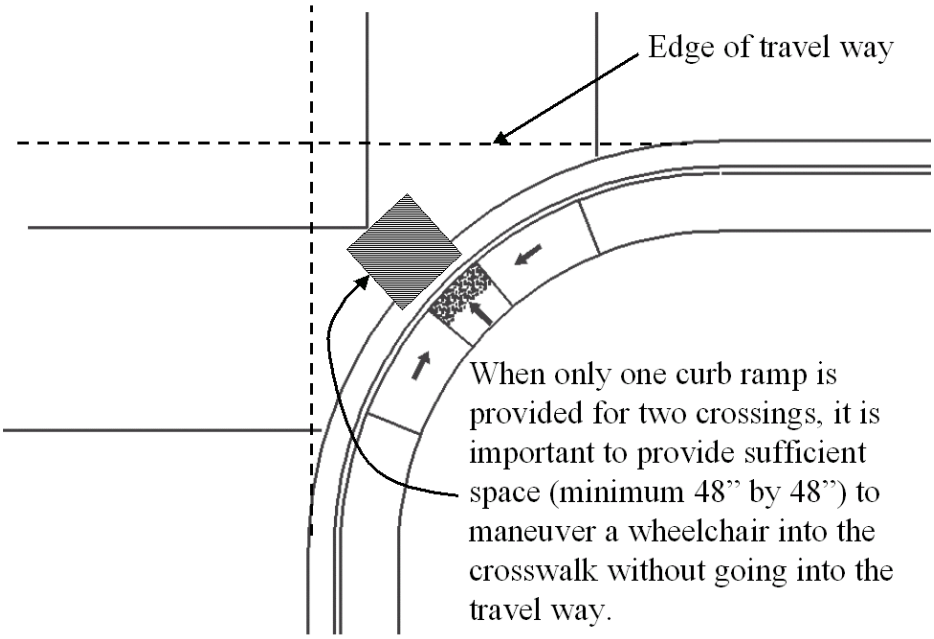
Ramps (with arrows) are 12:1 maximum slope

A Single Parallel Curb Ramp, CG-12, Type B, with an Enlarged Landing Area



Provide Sufficient Maneuvering Space for Wheelchairs

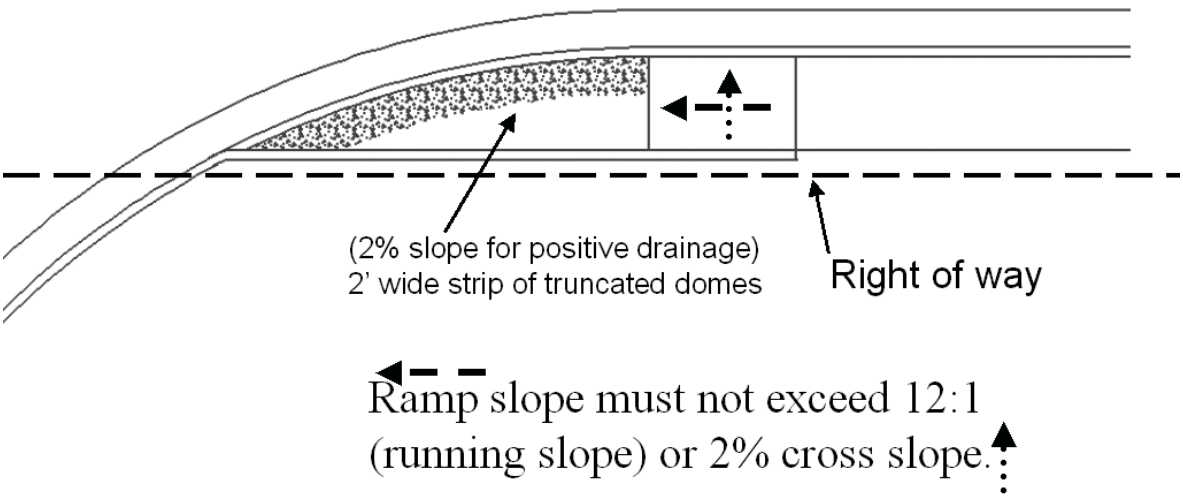
(space may include gutter pan)



These layouts may be considered for new construction when the radius is less than 25 feet and for alterations when the distance between two CG-12, Type B's is insufficient to install a separate landing with each.

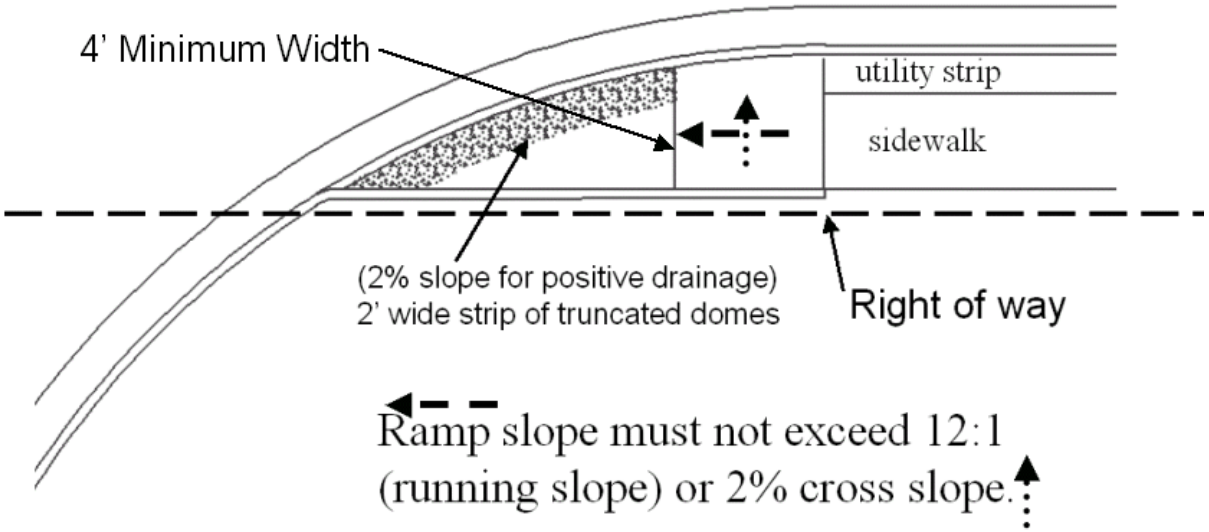
Note: Designer should consider the intersection skew and on-street parking when using this layout.

Another CG12, Type B Layout



There may be situations where right of way restrictions dictate the above ramp configuration. It should not be used where right of way or a pedestrian access route continues around the curve. The bottom of the ramp may be located to the left of the curb return in the above example; however the ramp width shall not be less than 4' at the bottom.

Another CG12, Type B Layout, with Utility Strip



This is similar to the previous drawing except with a utility strip. It should not be used where right of way or a pedestrian access route continues around the curve.

REFERENCES

Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations, dated August 31, 2007: www.access-board.gov/prowac/alterations/guide.htm

U.S. Department of Justice ADA Best Practices Tool Kit for State and Local Government issued December 5, 2006: http://www.usdoj.gov/crt/ada/pcatoolkit/toolkitmain.htm; http://www.usdoj.gov/crt/ada/pcatoolkit/abouttoolkit.htm

FHWA Office of Civil Rights Memorandum dated September 12, 2006: www.fhwa.dot.gov/civilrights/ada_memo_clarificationa.htm

U.S. DOT FHWA Memorandum dated January 23, 2006: www.fhwa.dot.gov/environment/bikeped/prwaa.htm

The United States Access Board Home Page: http://www.access-board.gov/index.htm.

The Access Board current status of Draft Guidelines for Accessible Public Rights-of-Way: Background (November 23, 2005): www.access-board.gov/prowac/status.htm.

The Access Board Revised Draft Guidelines for Accessible Public Rights-of-Way dated November 23, 2005: http://www.access-board.gov/prowac/draft.htm

The Access Board news release concerning Guidelines for Accessible Public Rights-of-Way (Revised Draft Guidelines dated November 23, 2005 and Draft Guidelines dated June 17, 2002): www.access-board.gov/prowac/index.htm .

Supplemental Information to the ADA and ABA Accessibility Guidelines for Buildings and Facilities dated March 23, 2007: http://www.access-board.gov/ada-aba/supplement.htm

ADA and ABA Accessibility Guidelines for Buildings and Facilities dated July 23, 2004 and amended August 5, 2005: http://www.access-board.gov/ada-aba/final.cfmThe Access Board Notice of Availability of Draft Guidelines dated June 17, 2002: www.access-board.gov/prow-notice.htm.

The Access Board Draft Guidelines for Accessible Public Rights-of-Way dated June 17, 2002: www.access-board.gov/rowdraft.htm.

The Draft Guidelines for Accessible Public Rights-of-Way dated June 17, 2002. Section 1108 for information concerning new guidelines on truncated domes: http://www.access-board.gov/rowdraft.htm#1108.

Publication FHWA-EP-01-027: Designing Sidewalks and Trails for Access Part II (Best Practices Design Guide dated September 2001) at http://www.fhwa.dot.gov/environment/sidewalk2/index.htm. See this guide for crossing refuge islands and median crossings.

The Access Board's "Accessible Rights-of-Way, A Design Guide" dated November 1999. Section 3.4 concerns Curb Ramps and Section 3.5 concerns Pedestrian Street Crossings Numerous relevant Figures are available at this web site: http://www.access-board.gov/PROWAC/guide/PROWGuide.htm #2-4.

Publication FHWA-HEP-99-006: Designing Sidewalks and Trails for Access Part I (Review of Existing Guidelines and Practices dated July 1999): www.fhwa.dot.gov/environment/sidewalks/index.htm. Please see this publication for information on ramp orientation.

Department of Justice: Architectural and Transportation Barriers Compliance Board (Access Board) Joint final rule concerning detectable warnings: www.usdoj.gov/crt/ada/detwarn.htm.

The current Manual of Uniform Traffic Control Devices (MUTCD) provides design guidance and recommendations with respect to pedestrian crosswalk markings http://mutcd.fhwa.dot.gov/.

SPECIAL PROVISIONS

- Please refer to the Special Provision for "CG-12 Detectable Warning Surface" on all projects using Standard CG-12, Type A, CG-12, Type B or CG-12, Type C and/or Standard CG-13.

  Specification and Special Provisions are available for applicable projects as follows: http://www.virginiadot.org/business/const/spec-default.asp

STANDARD CG-9A, CG-9B, CG-9D and CG-13 ENTRANCES

- Standards for CG-9A, CG-9B, CG-9D and CG-13 entrances incorporate pedestrian access route treatment within the design.

INSERTABLE SHEETS (FOR METRIC PROJECT ONLY)

- Insertable sheets (drawings MA59, MA76, MA78, and MA108) are available on the Falcon DMS, under the UPC#: eng-ser, minsert for insertion into applicable metric plan assemblies.