



Maryland Department of Transportation  
Office of Highway Development

# Accessibility Policy & Guidelines for Pedestrian Facilities along State Highways



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**TABLE OF CONTENTS**

<b><i>Policy</i></b>	<b>3</b>
<b><i>Design Waiver Process</i></b>	<b>5</b>
<b><i>Introduction</i></b>	<b>12</b>
<b><i>Definition &amp; Terms</i></b>	<b>13</b>
<b><i>Sidewalks</i></b>	<b>13</b>
<b><i>Ramps</i></b>	<b>14</b>
<b><i>Ramp Locations</i></b>	<b>15</b>
<b><i>Median Treatments</i></b>	<b>18</b>
<b><i>Driveway Crossings</i></b>	<b>20</b>
<b><i>Protruding Objects</i></b>	<b>22</b>
<b><i>Cross Walks</i></b>	<b>23</b>
<b><i>Mid Block Crossings</i></b>	<b>25</b>
<b><i>Stop Lines</i></b>	<b>25</b>
<b><i>Signals</i></b>	<b>26</b>
<b><i>Accessible Pedestrian Signals</i></b>	<b>26</b>
<b><i>Detectable Warning Devices</i></b>	<b>27</b>
<b><i>Maintenance of Pedestrian Access During Construction</i></b>	<b>27</b>
<b><i>References</i></b>	<b>29</b>
<b><i>ADA Checklist</i></b>	<b>30</b>
<b><i>Ramp Details</i></b>	<b>33</b>

## **Policy**

### **Maryland State Highway Administration Policy on Non-Discrimination and Equal Access Under the Americans with Disabilities Act (December 2005)**

The Maryland State Highway Administration (MSHA) is committed to a policy of full accessibility and does not discriminate in the provision of any of its business activities. The Administration is committed to upholding the intent and spirit of the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973 to the fullest extent possible. This commitment extends to all programs, services and activities of SHA, such that no qualified individual with a disability shall be discriminated against on the basis of his or her disability.

It is SHA's responsibility and desire that no person in the State of Maryland be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity supported by SHA based on their disability, as provided by the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973.

It is also the responsibility of each and every SHA employee to work cooperatively to achieve the goals and objectives of this statement.

SHA is fully committed to the goal of achieving equal opportunity and non-discrimination for all persons in their interactions with SHA.

### **POLICY FOR ACCOMMODATING PERSONS WITH DISABILITIES ALONG STATE HIGHWAYS**

The State Highway Administration (SHA) shall make the accommodation of persons with disabilities a routine and integral element of its planning, design, construction, operations and maintenance activities for all projects as outlined herein.

### **DESIGN GUIDELINES FOR ACCOMMODATING PERSONS WITH DISABILITIES ALONG STATE HIGHWAYS**

All projects, regardless of who is administering the contract, shall accommodate and provide accessibility for persons with disabilities where it is reasonable, feasible and appropriate to do so as described herein. This includes utility relocations, access permits and reimbursement projects. Providing accommodations is especially important where the existing and/or proposed land use supports pedestrians. This includes trip generators and destinations such as employment, education, residential, commercial, recreation and transit centers. **Examples provided within this document are not intended to be inclusive of all possible situations, but are representative of typical situations.**

# SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS

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## DESIGN WAIVERS

SHA is committed to providing American's with Disabilities Act (ADA) accommodations on all projects. If it is determined that full ADA compliance is technically infeasible or determined to be unreasonable to the desired degree as described in the SHA ADA guidelines, a design waiver must be requested and approved for each element that is not in full compliance. The design waiver shall demonstrate that the element has been designed to meet full compliance to the maximum extent feasible. No blanket design waivers will be granted on a project-wide or program-wide basis. A project can only proceed to advertisement and/or construction if it has achieved full compliance with the ADA guidelines or has been granted a design waiver.

A design waiver may be considered for such things as impacts to right of way, utilities, existing structures (such as bridges and drainage structures) or environmentally or historically sensitive areas. Cost alone will not be a consideration for a design waiver unless it is of an extraordinary magnitude. The need to provide safety or capacity improvements to the roadway may also be considered. A waiver should not be requested until all reasonable alternatives to provide the desired degree of ADA accommodations have been exhausted. The significance of additional impact created by these alternatives over and above the basic project will be considered in the waiver decision. The documentation of these alternatives will be required to support the design waiver request.

Design waivers are not intended to eliminate the requirements for accommodating persons with disabilities as described in SHA's ADA Guidelines. Even with a design waiver, a project shall be designed as close as practical to the desired design accommodations and still provide program access, that is access to all facilities, including mass transit within Maryland State Highway Administrations Right-of-Way.

For example:

- Due to physical constraints, five foot sidewalks cannot be provided throughout the entire project limits. A design exception will not be granted to provide four foot sidewalks throughout the entire project limits, only for the specific location where the physical constraint is present. The rest of the project must provide the five foot sidewalk width.
- Community opposition to providing the desirable degree of ADA compliance will not be grounds to request a design waiver.
- The fact that providing the desirable degree of ADA compliance on a project will have a significant cost impact on the project, by itself, will not be grounds to request a design waiver unless it is of an extraordinary magnitude. Right-of-way impacts, community impacts and other geographical, environmental and/or physical constraints must also be considered along with any other mitigating factors.
- Where a number of elements on a project qualify for a design waiver under the same rationale (i.e. right-of-way constraints), they may be lumped together in the design request so long as the same degree of mitigation and compliance holds true for each element.

## **DESIGN WAIVERS FOR AMERICANS WITH DISABILITIES (ADA) ACCOMMODATIONS**

It is SHA's intent to provide full ADA compliance on all roadway projects. However, if it is determined that full ADA compliance cannot be provided on Level 2 and Level 3 projects, a design waiver must be requested and approved. A project can only proceed to advertisement or construction (construction includes maintenance activities) if the project provides full ADA compliance or has been granted a design waiver, for elements of the project as described below.

**No blanket design waivers will be granted on a project-wide or program-wide basis.** If during construction, a project element cannot be constructed to meet ADA compliance, then a design waiver must be requested.

A design waiver will be considered for such things as impacts to right of way, utilities, structures (such as bridges and drainage structures), cost and environmentally or historically sensitive areas. Cost alone will not be a consideration for a design waiver. The need to provide safety or capacity improvements to the roadway may also be considered. A waiver should not be requested until all reasonable alternatives to provide full ADA compliance have been exhausted and documented. The significance of additional impact created by these alternatives over and above the basic project will be considered in the waiver decision. The documentation of these alternatives will be required to support the design waiver request.

Design waivers are not intended to exclude the implementation of ADA facilities as part of a project. Even with the design waiver, a project should still be designed as close as practical to full ADA compliance.

### **Design Waiver Process**

1. The Lead Project Manager/Division Chief determines that full ADA compliance cannot be provided within the scope of the Level 2 or Level 3 project (with input from all support divisions).
2. The Lead Project Manager/Division Chief reviews the project with SHA's ADA Compliance Coordinator.
3. If SHA's ADA Compliance Coordinator agrees that full ADA compliance can not be reasonably provided, the Lead Project Manager will then make a formal request in writing to the Director of the Office of Highway Development for consideration. The formal waiver request should include at minimum the following information:
  - Project description
  - Length/Scope
  - Description of design required to meet full ADA compliance;
  - Description of existing non-compliance;

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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- To what degree will compliance be met if granted a waiver?
  - Reason(s) for non-feasibility of meeting ADA and waiver request:
    - ex. lack of right of way;
    - ex. impacts to existing structures;
    - ex. impacts to environmental or historical sensitive areas;
4. If the Director agrees that full ADA compliance can not be included in the project, a waiver will be granted. If the Director does not agree, the Lead Project Manager will modify the project to include full compliance or a partial compliance alternate suggested by the Director. If the Lead Project Manager's Senior Manager disagrees with the Director's finding, the Director may recommend a presentation to SHA's Fast Response Action Team (FRAT).
  5. Upon the recommendation of the Director, a presentation will be made to FRAT. The decision by FRAT will be final.

### **IMPLEMENTATION**

SHA understands the need to include ADA accommodations in our projects. We also understand what to provide regarding ADA elements, such as curb cuts, sidewalk ramps and detectable warning surfaces (DWS). The challenge is to know when to provide the accommodations and the scope of the accommodations.

### **WHEN**

The ADA Standards for Accessible Design uses the term alteration as the mechanism that would initiate the need to provide ADA compliance. Alteration is described as a change that affects or could affect access to or the usability of a facility (this includes roadways, park and ride lots, rest areas, buildings) or a part of a facility. That is, if a jurisdiction alters an existing facility or part of a facility, the altered area must be accessible to and usable by people who have disabilities to the maximum extent feasible. If a roadway, for example, is widened and the existing sidewalks are impacted, the sidewalks and other appropriate pedestrian facilities must be replaced and must meet full ADA compliance. Another example is if new sidewalks are installed where none existed before; these sidewalks must meet full ADA compliance.

It is important to understand that the term alteration, as defined by a Federal District Court of Appeals includes the resurfacing of a roadway. The Court stated that "if a street is to be altered to make it more usable by the general public, it must also be made more usable by those with ambulatory disabilities." The decision goes on to state that, "If resurfacing affects the usability of a street for motor vehicles (or pedestrians at crosswalks), curb ramps must be included where pedestrian routes cross curbs or other barriers to use." **Therefore the answer to "when" do we include ADA compliance in a roadway project is basically any time we do anything to the roadway that would or could improve pedestrian access.** Basic repair or maintenance activities such as repairing a pothole, restriping a roadway (in kind), repairing guard rail or even a spot sidewalk repair typically would not trigger ADA compliance. However, new construction, reconstruction and resurfacing the roadway will require full ADA compliance.

# **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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## **MAINTENANCE OF PEDESTRIAN ACCESS**

It is incumbent on SHA, when developing contract documents for a project; to not only address maintenance of traffic for vehicles, but to address maintenance of pedestrian access as well. This includes ensuring that persons with disabilities are able to navigate the project site throughout all construction phases. Development of ADA compliant pedestrian access plans is strongly encouraged on projects that have an extended impact to pedestrian facilities and should be coordinated with the MOT plan.

## **SCOPE**

The scope and limits of ADA accessibility to be included in a project will typically be determined by the same scope and limits of the project and in most instances this is acceptable. The limits for ADA accessibility should not however, be set arbitrarily but based on connectivity and common sense. In some cases it may be incumbent on the project manager to take the initiative to maintain, modify or extend the limits or scope of a project in order to maintain existing accessibility, to provide the next level of pedestrian accessibility or to access logical termini. Examples of logical termini are; the end of a block, a bus stop, a school an existing stretch of sidewalk, a public-use facility, or a major commercial or residential area.

It is also important that the scope or limits of a project not result in a negative impact to existing accessibility. Negative impact is described in both Federal and State law as the permanent reduction, elimination or severing of existing accommodations. Negative impacts are unacceptable and will not be granted a waiver. They include both existing and future conditions.

For example:

- Based on pavement condition, one limit of a resurfacing project is set mid-block. Even though the pavement work stops short of the intersection, the installation/upgrades of the curb ramps should extend to the next intersection, within a reasonable distance (maximum 500 feet), and include every leg of the intersection.
- A turn lane is added at one quadrant of an intersection with existing sidewalks, requiring re-alignment of the sidewalk. The sidewalk should be upgraded to current ADA standards beyond the limits of the turn lane to the next logical termini, within a reasonable distance (maximum 500 feet). Curb cuts/curb ramps should be installed or upgraded to current standards at every leg of the intersection.
- One leg of an intersections ramp(s) are being upgraded to ADA Compliance. Curb cuts/curb ramps should be installed or upgraded to current standards at every leg of the intersection.
- One limit of a roadway reconstruction project is set just beyond an intersection. A school, public library or community center is located one more block up the road and the sidewalk between the school and the project limits does not meet ADA standards (or no sidewalk exists at all). Sidewalks should be installed/upgraded to current ADA standards to provide an accessible route from the project limits to the school.
- A signal pole was installed in the center of an existing 5 foot wide sidewalk resulting in the inability of a person in a wheelchair to pass the pole, thereby creating a barrier and

## SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS

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violating ADA compliance. This is an unacceptable negative impact. An acceptable option would be to offset the signal pole to provide a 36 inch passable width for wheelchair users or provide additional sidewalk width in the area of the pole. .

- A roadway is to be widened at an intersection to create a left turn lane. In order to not impact right of way, the project manager suggests reducing the existing five foot wide sidewalk to three feet for several hundred feet. This is an unacceptable negative impact. An acceptable solution would be to work with the appropriate District staff to reduce the lane widths and/or to secure a right of entry agreement or right-of-way from the adjacent property owner to shift the sidewalk outside of SHA right of way.

The Access Board has also provided guidance regarding scope by categorizing projects into levels, each with a progressively higher degree of obligation to integrate accessibility into a project and thereby increasing the scope of improvements. Their thought is that the obligation to provide access would be a function of the type of the work undertaken, the potential impact on usability to the pedestrian public and the opportunity to integrate accessibility features into the design.

The following categories were developed by the Access Board and adopted by the SHA. A project's scope of work will determine the category (Level 1, 2 or 3) it falls under rather than the funding source for the project. For example, a Fund 77 project for spot patching a roadway would be considered a Level 1 project; a Fund 77 project for roadway resurfacing that includes minor drainage or traffic barrier improvements would be considered a Level 2 project; and a Fund 77 project that included geometric improvements, new sidewalks, or roadway widening would be considered a Level 3 project.

### Level 1

Level 1 is considered to be “repair in-kind or in-place.” These projects include routine maintenance and repair work that generally does not impact, disturb or modify pedestrian usability. **Resurfacing projects are not considered routine maintenance and do not fall under Level 1.**

Examples of Level 1 activities include:

- Repair of drainage pipes or inlets that result in a small portion of sidewalk being removed and replaced. This type of work will require only that the sidewalk be repaired in kind and no additional installation/upgrade of sidewalk or curb ramps would be required. **This would not be considered Level 1 if a significant length (≥100 feet) of sidewalk is removed.**
- Utility repairs or relocations that result in a small portion (<100 feet) of sidewalk being removed and replaced would require only repair in kind and would not trigger any new installation or upgrades to existing sidewalk or curb ramps.
- Repair of damaged traffic barrier adjacent to sidewalk in an urban area would not require upgrade of the adjacent sidewalk or curb ramps.
- Repair of potholes, spot patching of roadway or crack sealing of roadway would not require any installation or upgrades to adjacent sidewalks or curb ramps.



## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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- Installation of or modifications to existing traffic signals, roadway lighting, or cameras would not require any installation or upgrades to adjacent sidewalks or curb ramps, unless the modification creates a negative impact to the existing sidewalk, or there are existing pedestrian push buttons that are not accessible.
- Re-striping or modifications to the pavement markings on a roadway would not require installation or upgrade of existing sidewalk or curb ramps. This does **not** include projects where the entire roadway surface is being milled or ground to be replaced with a new surface for the purpose of re-striping the roadway. If the re-striping includes a crosswalk, and there are no existing ramps at the crossing, it shall be necessary to install ADA-compliant ramps with detectable warning surfaces.
- Spot patching or repair of existing sidewalk to correct buckling, cracking or other severely deteriorated conditions would not require installation of new or upgrade of existing sidewalk. However, as a rule of thumb, if more than 50% of a run of sidewalk is being repaired, the entire length should be upgraded to SHA's standards for ADA compliance, curb ramps should be installed or upgraded, and detectable warning surfaces (DWS) should be provided at all street crossings and signalized entrances.
- Micro-surfacing (slurry seals) to correct surface friction or seal entire roadway to address cracking would not require upgrade of the curb ramps.
- Emergency repairs; such as, interim pavement patching, or thin overlays for severely distressed pavement due to a harsh winter, natural, or man-made disasters, or to address low surface friction pavement numbers would not require upgrade of the curb ramps

For Level 1 activities, any negative impact to an existing pedestrian facility resulting in a condition below SHA's standard for ADA compliance is not acceptable. A design waiver is required if SHA's standards are not being met. The request must document that the standards are being complied with to the maximum extent feasible. For example:

- It would be permissible to reduce an existing 6 foot wide sidewalk to 5 feet. It would not be permissible to reduce an existing 5 foot wide sidewalk to 4 feet without an approved design waiver documenting the unfeasibility of maintaining the existing width. It would not be acceptable to reduce any existing feature below the current minimum acceptable ADA standards.

### **Level 2**

Level 2 projects include alterations that affect pedestrian usability. That is, when an existing element is replaced, it must either meet new construction guidelines for full ADA compliance or a design waiver will be required for any element that does not meet full compliance. However, the work does not initiate any additional work in the surrounding vicinity. **Resurfacing is considered a Level 2 activity.**

Examples of Level 2 activities include:

- A resurfacing project, including maintenance resurfacing, will trigger the need to include new curb cuts and/or curb ramps where any pedestrian route crosses a curb; to upgrade existing curb ramps to SHA's standards for ADA compliance; and to provide detectable warning surfaces (DWS) at all street crossings and signalized entrances within or

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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- adjacent to the limits of the project. The project would not initiate the need to make the existing sidewalks within the limits of the project ADA compliant. A design waiver is required for any curb ramp that does not meet SHA's standards for ADA compliance.
- A resurfacing project that includes any additional elements that would be considered Level 1 repair in kind activities by themselves, will not be required to make additional upgrades for ADA compliance beyond new curb cuts and/or sidewalk ramps. A design waiver is required for any curb ramp that does not meet SHA's standards for ADA compliance.
  - A utility company decides to underground its electric lines, requiring the reconstruction of a substantial ( $\geq 100$  feet) length of existing sidewalk. The newly constructed sidewalk will need to meet SHA's standards for ADA compliance. The limits of the sidewalk to be replaced must be extended to meet logical termini; curb ramps must be installed or upgraded and detectable warning surfaces (DWS) must be provided at all street crossings and signalized entrances. The limits will be determined by the District Utility Engineer using sound engineering judgment, considering factors such as ownership of the sidewalk, degree of impact, complexity of the solution and overall project scope. A design waiver is required for any element that does not meet SHA's standards for ADA compliance.
  - Minor widening or geometric improvements are being made to an open section roadway in a rural area with no evidence of existing pedestrian activity (i.e. worn dirt paths, visual observation of people walking in roadway, adjacent bus stops, adjacent pedestrian destinations such as schools or shopping centers, etc.). The project would not initiate any requirements to install new sidewalks, if it is not within a designated growth area or a pedestrian count study does not support the need.
  - A substantial section of sidewalk is to be reconstructed under an area-wide sidewalk contract. The entire section will be required to be replaced to SHA's standard for ADA compliance. The sidewalk must extend to logical termini and detectable warning surfaces (DWS) must be installed at all street crossings and signalized entrances. As a rule of thumb, if more than 50% of a run of sidewalk is being replaced, the entire length should be upgraded to SHA's standards for ADA compliance. A design waiver is required for any element that does not meet SHA's standards for ADA compliance.

Access to existing bus stops including placement of bus pads may not be required on Level 2 projects, if alternative access is provided. Alternative access must be verified to exist through local and transit agencies; such as MTA's Mobility and Paratransit program.

### **Level 3**

Level 3 projects are typically major projects including new construction, reconstruction, retrofit projects, sidewalk retrofit projects, community enhancement projects, etc. Level 3 projects will be held to the highest standards regarding pedestrian usability and ADA compliance. A design waiver will be required for any element that does not meet SHA's standards for ADA compliance. These projects would be expected to provide a complete pedestrian route between logical termini. These projects too, may initiate something more to be done than the initial scope of work unless work outside the original scope of the project could be deemed unfeasible or unreasonable.

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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Examples of Level 3 activities include:

- New construction or reconstruction of a closed section roadway would require adding new or upgrading sidewalks and curb ramps to SHA's standards for ADA compliance and providing detectable warning surfaces (DWS) at all street crossings and signalized entrances. A design waiver is required for any element that does not meet SHA's standards for ADA compliance.
- New construction or reconstruction of a bridge in an urban area or an area with evidence of existing pedestrian activity (i.e. worn dirt paths, visual observation of people walking in roadway, adjacent bus stops, adjacent pedestrian destinations such as schools or shopping centers, etc.) would require adding new or upgrading sidewalks and curb ramps to SHA's standards for ADA compliance and providing detectable warning surfaces (DWS) at all street crossings and signalized entrances. A design waiver is required for any element that does not meet SHA's standards for ADA compliance.
- A community enhancement project would be expected to include new or improve the existing sidewalk and curb ramps to SHA's standards for ADA compliance within the project limits and extending the limits to logical termini. Detectable warning surfaces (DWS) must be provided at all street crossings and signalized entrances. If aerial utilities are to be moved to support the project, they must be either relocated entirely outside the new sidewalk or within the sidewalk, as a last resort, to ensure compliance to the maximum extent feasible. A design waiver is required for any element that does not meet SHA's standards for ADA compliance.
- A park and ride lot or an expansion to an existing park and ride lot will be required to provide or upgrade sidewalks and curb ramps that meet SHA's standards for ADA compliance to access adjacent sidewalks, bus stops or transit stations. Detectable warning surfaces (DWS) must be provided at all street crossings and signalized entrances. Suitable bus loading areas shall be included in the project. A design waiver is required for any element that does not meet SHA's standards for ADA compliance.
- Minor widening or geometric improvements are being made at an intersection with curb, but no existing sidewalk. If there is any evidence of existing pedestrian activity (i.e. worn dirt paths, visual observation of people walking in roadway, adjacent bus stops, adjacent pedestrian destinations such as schools or shopping centers, etc.) new sidewalk meeting SHA's ADA standards will need to be installed in the area of the widening and extend to a logical termini, and curb cuts/curb ramps must be installed or upgraded at every leg of the intersection. A design waiver is required for any element that does not meet this standard.
- A resurfacing project on a closed section roadway includes minor widening to add shoulders or provide accommodations for bicyclists. This project must include new or upgrade sidewalks and curb ramps to SHA's standards for ADA compliance throughout the project limits and extending to logical termini. Detectable warning surfaces (DWS) must be provided at all street crossings and signalized entrances. A design waiver is required for any element that does not meet this standard.
- A resurfacing project includes the addition of new sidewalk within the project limits. All new sidewalk and curb ramps within the project limits must meet SHA's standards for ADA compliance. Detectable warning surfaces (DWS) must be provided at all street

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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crossings and signalized entrances. A design waiver is required for any element that does not meet this standard.

- A developer widens the roadway to provide an auxiliary lane. As a result, the existing sidewalks are impacted. The developer must replace the impacted sidewalk along their frontage, and may need to replace the remaining sections of sidewalk/curb ramps within the project limits to SHA's standard for ADA compliance. The developer shall provide detectable warning surfaces (DWS) at all street crossings and signalized entrances. A design waiver is required for any element that does not meet this standard.
- A developer wants to modify their existing access onto SHA right-of-way. There currently is no sidewalk along the property frontage and there is evidence of existing pedestrian activity and/or existing sidewalk along the frontage of adjacent businesses. The developer will be required to install new sidewalk, curb ramps and detectable warning surfaces (DWS) at all street crossings and signalized entrances along the property frontage. The developer may be required to extend the improvements beyond the frontage to logical termini. A design waiver is required for any element that does not meet this standard.
- New construction or reconstruction of hiker/biker trails will be required to meet SHA's standards for ADA compliance, which includes providing curb ramps wherever a trail crosses a curb. Detectable warning surfaces (DWS) shall be placed at all street crossings and signalized intersections. A design waiver is required for any element that does not meet this standard.

### **Introduction**

Over the last several years, our responsibility as a transportation agency has moved beyond providing safe mobility on our state's roadway system to include safe passage of pedestrians along them, as well as across them. In doing so, it is our responsibility for providing safe passage to all pedestrians.

This design guide was developed to assist the transportation engineer in designing public sidewalks and crossings to provide an accessible route. It is meant to provide guidance to the engineer when designing new roadways, as well as retrofit projects. It is our goal that these guidelines will assist the engineer and overall achieve a more consistent approach to the design of accessible facilities within the State Highway Administration.

Pedestrians with disabilities are challenged in different ways and navigate public rights-of-ways with varying success. While a certain feature within the right-of-way may present a hazard to a pedestrian who is blind, it may not be a challenge for a pedestrian in a wheel chair. In addition, design solutions may offer varying degrees of success in serving individual disabilities.

**These guidelines will highlight typical situations. However, each situation will require analysis to determine the best way to address accessibility and ultimately will be dependent upon engineering judgement. Cases where there are physical constraints, right-of-way limitations, historic districts, or other elements that may constrain the engineer's ability to provide full accessibility shall be documented. Documentation shall**

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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**be made in the milestone reports and include discussion on the specific constraint, options that were evaluated, and ultimate design provided. A Design Waiver will be required for any element that does not meet these guidelines.**

### **Definitions & Terms**

AASHTO – American Association of State and Highway Transportation Officials (typically reference is made to their standards, notably the Policy on Geometric Design, 2001).

Access Board – The U.S. Architectural and Transportation Barriers Compliance Board.

Accessible Route – a continuous route that is unobstructed and ADA compatible throughout.

ADA - American Disabilities Act: 1990 Legislation recognizing and protecting the civil rights of people with disabilities.

ADAAG – American Disabilities Act Accessibility Guidelines: Guidelines developed by the U.S. Architectural and Transportation Barriers Compliance Board, July 1998.

APS – Accessible Pedestrian Signals: Signals which are designed to serve pedestrians with disabilities, including audible and vibrotactile signals.

Cross Slope – Slope/gradient that is perpendicular to the path of travel.

Entrance – Point of access to a driveway from a State Road, often serving as a pedestrian crossing where sidewalk is present.

MUTCD – Manual of Uniform Traffic Control Devices, FHWA publication 2000.

Running Slope – Slope/gradient that is parallel to the path of travel.

SW – Sidewalk.

### **Sidewalks**

SHA’s goal for sidewalk construction is to make continuous connections to existing sidewalks, schools, rail transit stations, bus stops, and other pedestrian destinations. Sidewalks shall be designed to serve all pedestrians, including those with disabilities. Sidewalks shall be designed to provide a smooth, clear and predictable accessible route. Sudden changes in grade or direction, steep cross slopes, unexpected obstacles, drop-offs, narrow pathways and close traffic are all potential hazards.

With consideration given to accepted guidelines, SHA will seek to achieve the following in implementation for sidewalk design:

- The minimum width for travel shall be 60”- not including the top of curb dimension. The basis for utilizing less than 60” must be related to physical constraints or right-of-way limitations. A design waiver must be submitted where these conditions cannot be met. When a design waiver is submitted, the absolute minimum width for travel that will be accepted is

## SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS

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36" – not including the top of curb dimension. This minimum represents the width of a wheelchair plus maneuvering room. (This does not include pinch point exceptions which are addressed under **Protruding Objects**). A design waiver will be required where the sidewalk is less than 60".

- Where the sidewalk is placed on a bridge or a large culvert, the minimum width for travel shall be 68" – where there is no separately poured and formed curb and/or gutter. A design waiver must be submitted where these conditions cannot be met.
- If the width for travel is less than 60", then use of a passing zone (60" width by 60" length) is required. Passing zones shall be provided at an interval no greater than 200'. Use of driveways and leader walks (walks from residence to street) as passing zones is acceptable as long as cross slope requirements are still met.
- Sidewalk running slope for sidewalk adjacent to existing and reconstructed roadways shall not be limited. (AASHTO recommends that sidewalk running slope be consistent with running grade of adjacent roadways.)
- Where conditions and right of way allow, sidewalks may be separated from the roadway to make grade adjustments possible.
- Sidewalk cross-slope shall be a maximum 2% (48:1), including crossings of driveways or entrances. The designer shall consider use of special details in lieu of standards where necessary to meet this requirement.
- Construction tolerances of new sidewalk cross slopes  $\pm 1\%$ .
- Sidewalk must be constructed of a uniform material for the entire 60" width.
- Vertical elevation differences between adjacent surfaces (this includes special sidewalk treatments, such as brick pavers) shall not exceed  $\frac{1}{4}$ ". Elevation differences between  $\frac{1}{4}$ " and  $\frac{1}{2}$ " shall be beveled at maximum 2:1 slope.

Whenever feasible, sidewalks shall be separated from the back of curb by a green space/planting/utility strip. This area can be used for signs and utility poles and provides pedestrians with a greater sense of safety from traffic. This strip shall be continuous along the sidewalk, a minimum of 3 feet wide and can be grassed, brick or patterned concrete.

The presence of sidewalk at an intersection implies that a crosswalk exists, whether it is marked or not. In certain cases, it is determined for safety reasons not to allow pedestrian crossings at one or more legs of an intersection. The designer needs to be aware of these situations and coordinate directly with District Traffic and the Traffic Engineering Design Division. When this occurs, the sidewalk shall be physically separated from that leg. This shall be accomplished by providing a physical barrier or planting strip between the sidewalk and curb.

### Ramps

Legislation requires that a ramp be provided at pedestrian walkways, which are intersected by curbs. SHA standard ramps are generally compliant with the currently accepted guidelines. However, the standards do not address all potential conditions and constraints. Additional ramp designs are provided within the referenced guidelines. **In cases where none of these standards**

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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**or designs is appropriate, the designer is required to provide detailed designs for the special ramps.**

The following principles shall be followed for the application of standards and special designs (See Figure 1):

- Ramps shall be perpendicular to the curb (even on a radius)
- Each side of the ramp shall have an equal run
- Ramp running slopes shall be 12:1 maximum.
- All slopes shall be measured independent to the surrounding terrain. Therefore, the length of the ramp is solely dependent on the height of the curb (for example, a 6 in. curb with a 12:1 ramp slope should have a 6 ft length).
- The transition between the ramp and gutter shall be smooth. The gutter shall have no lip at the curb.
- Compound slopes in the path of travel shall be avoided.
- Cross-slope on ramps shall be 2% (48:1) maximum.
- Side flares shall be sloped at 12:1
- Minimum width on sidewalk ramps shall be 48" for the MD STD 655.11 sidewalk ramp; all other sidewalk ramps require a 60" minimum. The width of multi-use trail ramps shall equal the width of the trail.
- A level landing shall be provided at the top of perpendicular and diagonal ramps or where a change in travel direction is required. This landing should be 60" x 60" – less only where severe physical constraints are present.
- The ramp, not including side slopes, shall be located at least 2' within the limits of crosswalk striping.
- Ramps shall be located to minimize pedestrian exposure to traffic.
- Drainage shall be considered in locating ramps – avoid close proximity to sumps and inlet grates within the path of travel.
- Pedestrian railings should be considered for use on a case by case basis. For safety reasons, railings may be considered when providing a sidewalk adjacent to steep slopes.

### **Ramp Locations**

Because of the variability in locating ramps, there are no specific requirements, only suggested guidelines:

- SHA preference is to utilize paired perpendicular ramps, (two ramps on each corner). While this is more easily accomplished on intersections of smaller radius, seek to apply this approach more broadly. Large diagonal ramps tend to mislead pedestrians who are blind.
- Often a minimum radius in urban areas is 35'. Given a 35' radius, 10' crosswalk and 4' offset to stop bar, the pedestrian ramp will likely end up on the radius. If the ramp is on the radius, and must be perpendicular to the curbline, then the ramp will be skewed relative to the crosswalk. For traffic operations and sight distance for right turning vehicles, stop bars and crosswalks are often placed closer to the intersecting street, forcing the cross walk into the radius.

## SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS

- On skewed intersections, paired perpendicular ramps may be the best solution for one corner, while a diagonal ramp may be the best solution for others. (See Figures 1, 2, and 3)

### MD Standard Ramp Types

There are three Maryland Standard Ramp types:



**Figure 1: Maryland Standard 655.11**



**Figure 2: Maryland Standard 655.12**



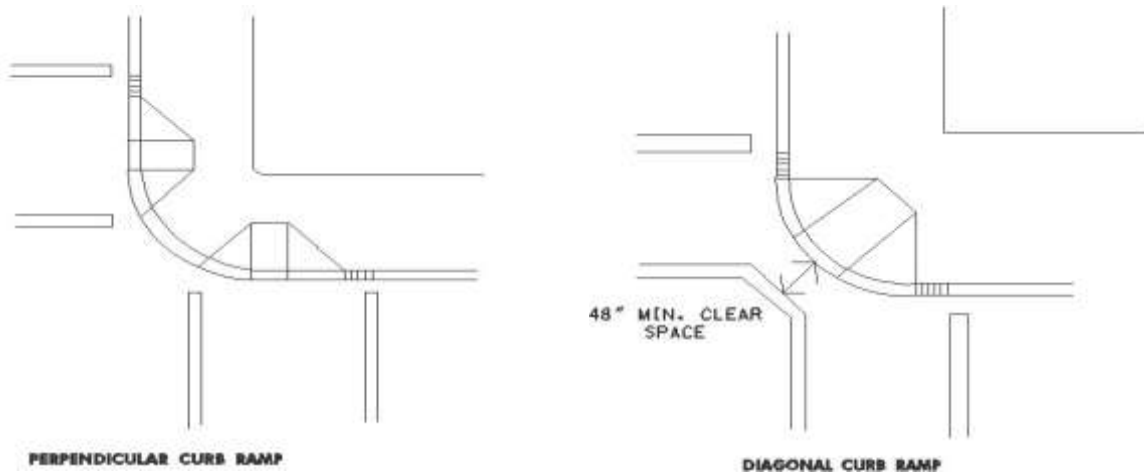
**SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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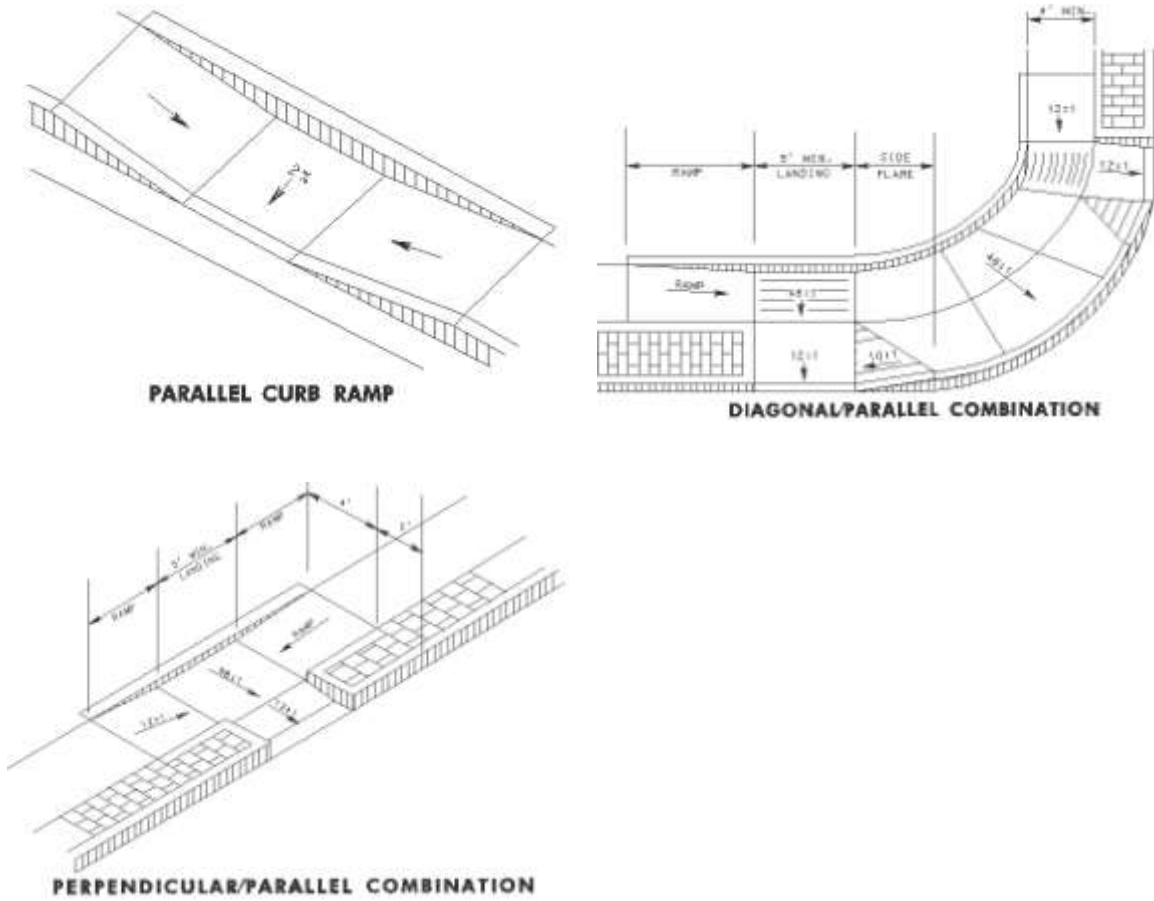


**Figure 3: Maryland Standard 655.13**

Various ramp types are acceptable. Based upon the Accessible Rights-of-Way Design Guide, the following ramp types are available: (See Figure 4 and Table 1)



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**FIGURE 4**

Use the following as guidance for selection and location of ramps.

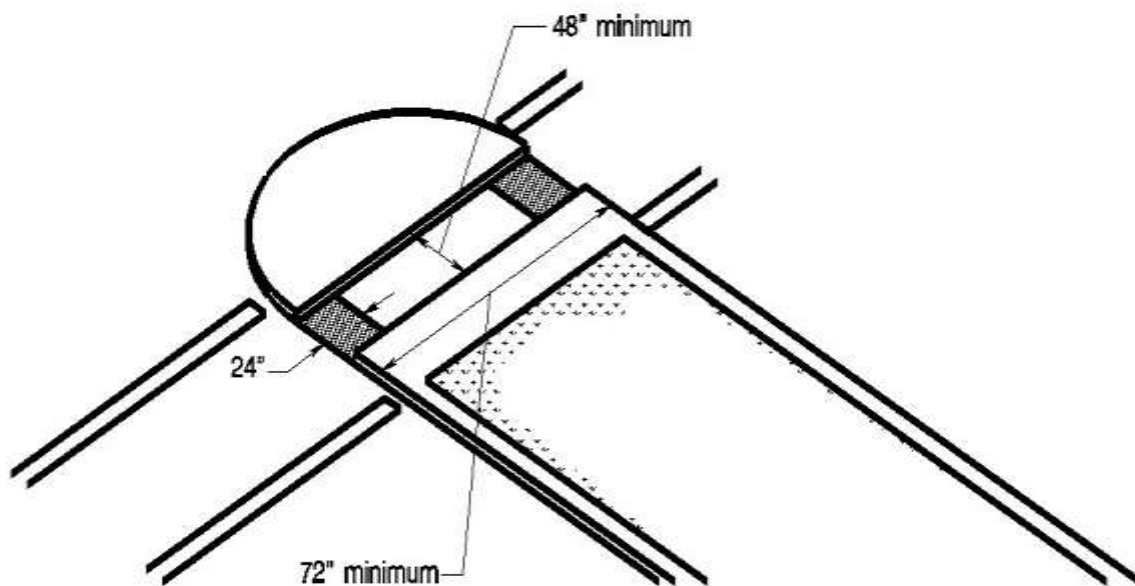
	Perpendicular	Diagonal	Parallel	Diagonal Parallel Combination	Perpendicular Parallel Combination
SW - 8' & less from curb to back of walk			X	X	
SW - 8' to 12' from curb to back of walk			X	X	X
SW - 12' & more from curb to back of walk	X	X	X	X	X
Small Radius (20' and Less)	X		X		X
Large Radius (25' and Greater)		X	X	X	
Islands	X				X

**TABLE 1**

## **MEDIAN TREATMENTS**

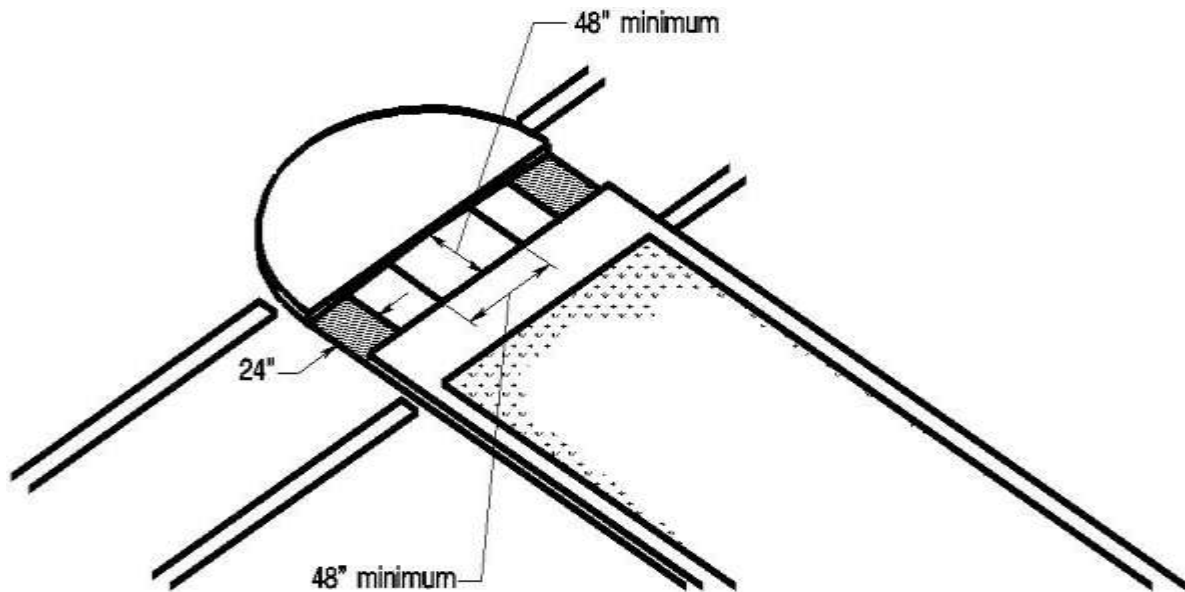
The principal function of a raised median on divided highways is to separate opposing traffic. Raised medians should also be treated as points of refuge for pedestrians. Medians help pedestrians by reducing the crossing distance from one side of the road to the other. Desirably, the pedestrian crosswalk should pass through the median to be more effective as a refuge. However, this may not always be feasible. The geometric configuration of the intersection and the location of the curb ramps at the corners of the intersection will determine if the pedestrian crossing will pass through the median or if the nose of the median will be cut back.

Where a pedestrian crossing is proposed through the median, the minimum median width shall be 6 feet. Where right-of-way and physical constraints control the available space, a 4 foot minimum width is acceptable. A design waiver will be required where the median is less than 6 feet. Raised medians should be designed with a cut through flush to the roadway (See **Figure 5A**) or ramped (See **Figure 5B**) dependent upon the width of the median and the ability to provide positive drainage. Both cut through medians and ramped medians shall provide a 4 foot minimum clear width for travel for the pedestrian. If a median is ramped, the slope of the ramps shall be 12:1 maximum. A level area of 4 feet wide and 4 feet long shall also be provided when using a ramped median.



*Cut-Through Median*

**FIGURE 5A**



***Ramped Median***

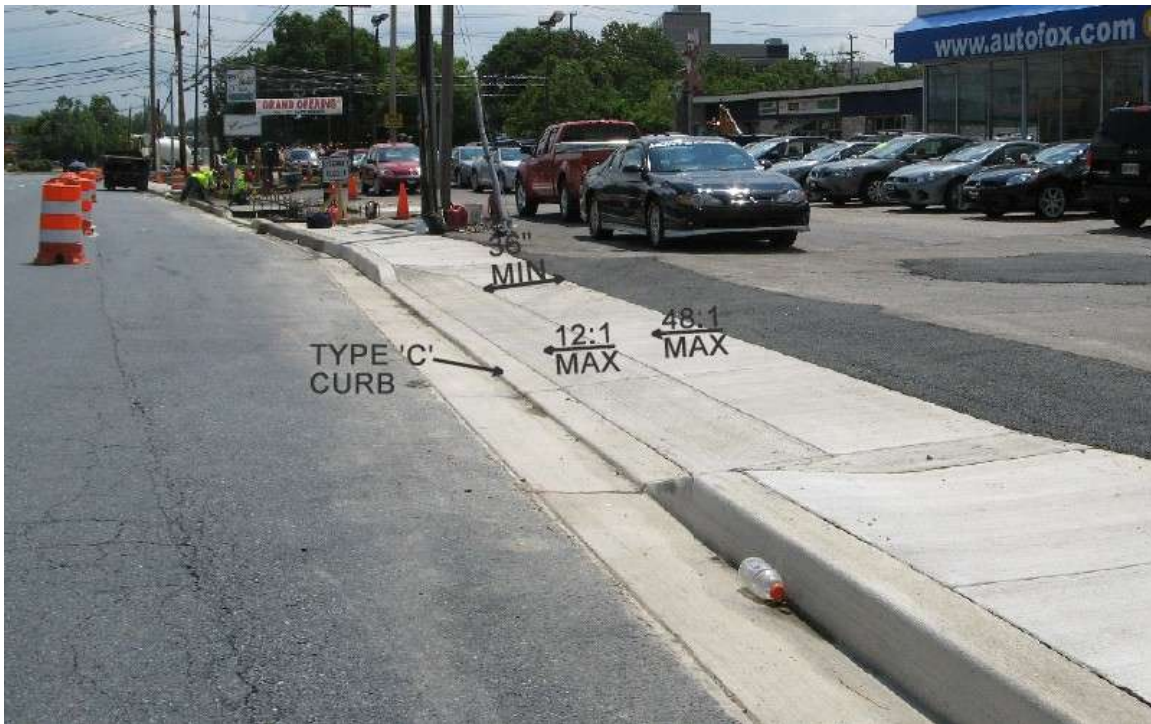
**FIGURE 5B**

## **DRIVEWAY CROSSINGS**

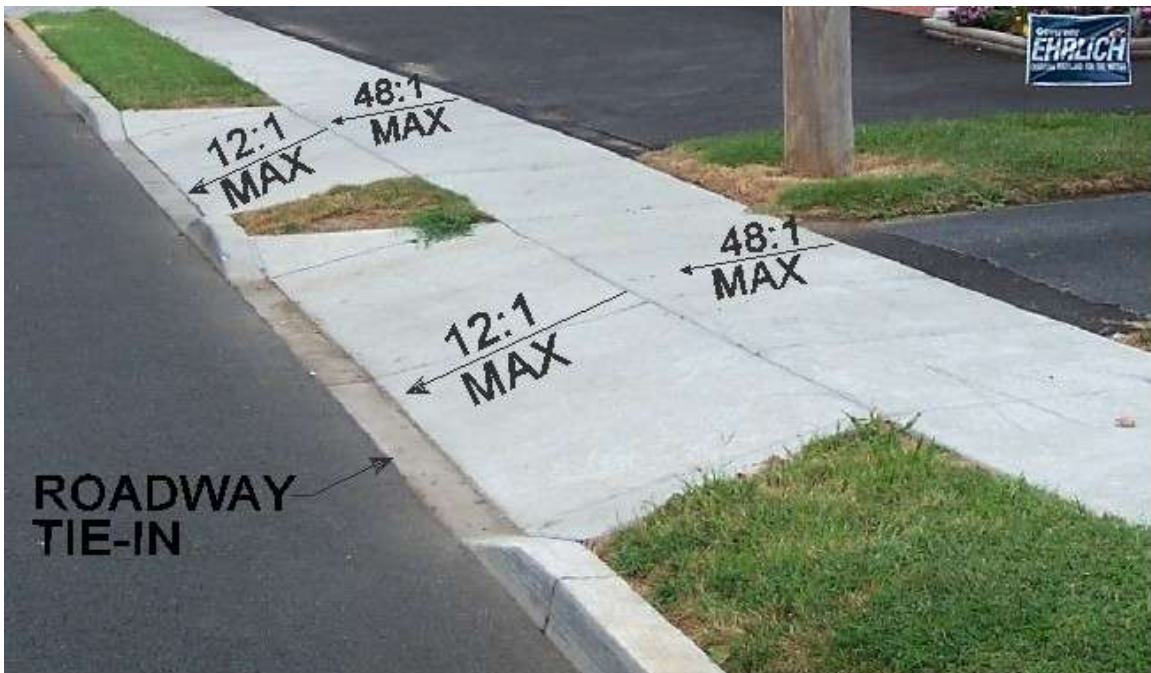
Where the pedestrian pathway crosses a driveway or entrance, limitations on ramp and sidewalk criteria will still apply. Where the pedestrian pathway crosses a non signalized entrance or driveway, a minimum 36" pedestrian pathway with a maximum cross-slope of 2% (48:1) shall be provided regardless of the driveway material. A design waiver is not required for the 36" pedestrian pathway across the driveway or entrance. The location of the pedestrian pathway relative to the curb can be varied to meet slope limitations. For standard applications, refer to MD Standards 630.01 and 630.02 (See Figures 6 & 7). The designer is required to provide detailed designs for special entrances, as necessary.

**SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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**Figure 6: Maryland Standard 630.01**

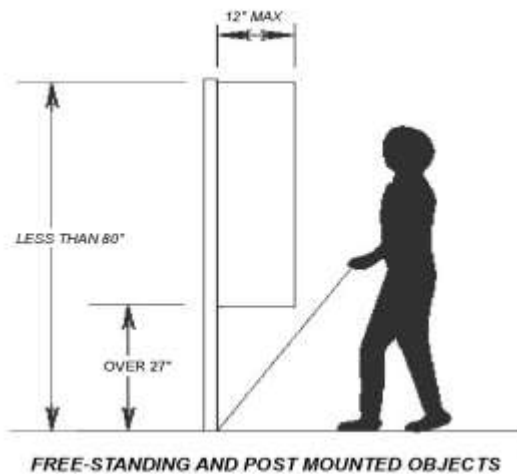


**Figure 7: Maryland Standard 630.02**

## **PROTRUDING OBJECTS**

Protruding objects into sidewalks can cause many challenges to the person with a disability. These objects may consist of utility poles, mailboxes, signal poles, signal boxes, signs, etc. A protruding object (control box, sign, etc.) that is mounted to a fixed structure, shall be mounted in the following manner: (See **Figure 8**)

- Objects mounted between 27” and 80” above the ground cannot extend more than 4” from the fixed structure into the sidewalk.
- Objects mounted either below 27” or above 80” may extend more than 12” from the fixed structure into the sidewalk.



**FIGURE 8**

At the same time, the designer shall provide a minimum 60” corridor for pedestrian passage. The best way to do this would be to utilize a MD STD 655.02 Sidewalk Passing Zone (See **Figure 9**). In many circumstances, the designer is challenged with finding locations for utility poles, signal cabinets, mailboxes, etc. outside of the pedestrian space. There are many ways to deal with these objects and acquiring additional right-of-way may be necessary. Acceptable access at isolated pinch points may be provided at a width of 32” minimum. Additionally, the following criteria should be followed, but again each case is different and must be evaluated independently using sound judgment.



**Figure 9: Maryland Standard 655.02**

It is preferred that above ground utilities be located behind the sidewalk. If space behind the sidewalk is not available, utilities may be located within a hardscape or green space corridor between the face of the curb and sidewalk. AASHTO requires a minimum 18” from curb face to utility pole. If signs, poles or other obstacles must be located in the sidewalk, they should be placed, where it is reasonable and feasible to do so, either right or left of center to provide a consistent utility corridor. Special sidewalk treatments (brick pavers, stamped concrete) are recommended to provide a different surface texture to differentiate between the utility corridor and sidewalk.

## **CROSS WALKS**

The Maryland Annotated Code, Transportation §21-101 defines “crosswalk” as that part of the roadway that is within the prolongation or connection of the lateral lines of sidewalks at any place where 2 or more roadways meet or join, measured from the curbs or edges of the roadway or is distinctly indicated for pedestrian crossing by lines or other markings. If a crosswalk is not

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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indicated by lines or markings on the roadway, its existence is dependent on the presence of sidewalks.

Crosswalks at intersections are marked primarily to guide pedestrians across the intersection and to warn approaching motorists of the potential of pedestrian presence.

Crosswalks with special surface treatments, such as brick pavers or stamped concrete shall maintain a maximum ¼” vertical elevation differences between adjacent surfaces. Elevation differences between ¼” and ½” shall be beveled at a maximum 2:1 slope. When choosing a treatment, special attention should be paid to the depth and spacing between each paver to ensure compliance.

Crosswalks and Crosswalk lines shall be designed using the MUTCD and supplements to the MUTCD. Crosswalks shall be placed where school crossing, pedestrian crossing and bicycle crossing signs are used. Engineering judgement and traffic engineering analysis are required to determine the appropriate method to provide the safest passage for pedestrians crossing a street. During design, an engineering study for placement of marked crosswalks at an intersection shall be performed. The factors that should be considered are:

- Is there a substantial conflict between pedestrians and vehicular movements?
- Is there a substantial volume of pedestrians (generally considered greater than 150 pedestrians/day)?
- Where are nearby pedestrian generators; what is the "natural" path of pedestrians?
- Where are the bus stops/shelters located, if any?
- Is the crossing location unclear to pedestrians?
- If installed, can we reasonably expect that pedestrians will use the crosswalk and not cross elsewhere, mid-block or nearby?
- Do we have a specific leg of the intersection where we would prefer crossing due to sight distance for both motorists and pedestrians, location of ADA ramps, ease of access (sidewalks, lack of barriers such as signal poles, hydrants, newspaper boxes, etc.), or fewest motorist conflicts?
- What are the demographics of the pedestrians, such as age and walking speed, presence of crossing guards, 85<sup>th</sup> percentile approach speeds, etc.?
- Are there other potential conflicts at the intersection, such as right turn channelization, right turn on red, and so forth?
- Is it safe to allow pedestrians to cross a roadway that has high speeds, high volumes, poor LOS, etc. where even if the pedestrian demand is substantial, we cannot provide enough concurrent walk/don't walk time to get pedestrians across the roadway safely?



## **MID BLOCK CROSSINGS**

The use of Mid Block Crossing shall be discouraged and used only when diversion to other crosswalks is unlikely. Mid Block Crossings shall be designed using the governing AASHTO standards, which includes MUTCD sections signing 2C-31 and marking 3B-34 and supplements to the MUTCD. Design shall be fully consistent with placement of pedestrian ramps. Pedestrian activated flashing yellow lights shall be evaluated for these crossings.

The elimination of existing Mid Block Crossings shall be a priority of the designer, since non-intersection pedestrian crossings are generally unexpected by the motorist and unprotected by a signal or stop control.

Crossing length and sight distance are primary pedestrian considerations and analysis should be based on pedestrian speeds of 3 to 3.5 feet per second (per MUTCD) or 2.5 feet per second for elderly persons or where there exists a known concentration of people with disabilities.

***Example:*** Four-lane, median divided highway, design speed 40 mph, includes 18' median, adequate pedestrian refuge, crossing distance 24' (one-side only). What is an appropriate sight distance to allow for pedestrian crossing?

1. Required sight distance is 305' (for stopping, per AASHTO, 3.5' object).
2. The pedestrian needs 8 seconds to cross. (24 feet @ 3 feet per second).
3. The motorist requires 352' of sight distance to allow the pedestrian to cross safely.  $((40 \text{ mph} \times 5280 \text{ ft/mi}) / 3600 \text{ sec/hr}) \times 8 \text{ sec} = 469 \text{ feet}$
4. In order to account for variability in pedestrian walking speed and to provide a factor of safety, a sight distance of 475' might be recommended.

When designing an intersection (signalized or unsignalized), turning speeds and sight distance should be taken into account, to minimize conflicts between the pedestrian and motorist.

Wherever possible, pedestrian crossings should occur at 90 degrees across the lane and where the pedestrian can easily be seen.

## **STOP LINES**

Stop Lines shall be designed using MUTCD and supplements to the MUTCD. If a crosswalk is present, the stop line shall be parallel to the crosswalk and placed 4 feet in advance of the crosswalk to ensure visibility at the intersecting roadways for both the pedestrian and motorist. If a crosswalk is not required, the stop line shall be located based on the angle of intersection of the cross-street, sight distance, vehicle turning radius, signal timing, etc.

## **SIGNALS**

A Signal Warrant Analysis is required to determine if a signal is warranted. Included in the study are pedestrian movements at the intersection and surrounding area. The study will note which legs of the intersection shall be marked for crosswalks and pedestrian signals. Pedestrian signals will be considered at locations having marked crosswalks where additional passage and/or clearance time is required, where pedestrians must be held to avoid vehicle conflicts, or where pedestrians are given advanced passage time prior to vehicles being given a green light, and at established school crossings at signalized intersections. If an existing signal is in the project limits, the project engineer shall contact the Assistant District Engineer - Traffic for guidance on existing pedestrian movements and how that will affect the placement of ADA ramps and crosswalks.

The traffic engineer must coordinate closely with the OHD project engineer to ensure ADA compliance with the installation of the signal and its related hardware and signal cabinets, balancing the needs of utility poles and signal poles, signing and handboxes shall all be located outside the clear pedestrian route and the sight distance triangle for the intersection. Right of Way may need to be purchased to assure ADA compliance. The placement of unimpeded accessible ramps with proper markings needs to be determined, balancing the needs of highway design and the signal designer. Identification of significant pedestrian generators such as schools, churches, and community centers should be included in the discussion.

If a pedestrian signal is deemed warranted, pedestrian pushbuttons shall be located to ensure accessibility for pedestrians with disabilities. The following considerations should be evaluated when determining the location.

- Pushbuttons are to be located so that they can be activated by a person in a wheelchair from a 60" x 60" paved level landing area. A level landing area is an area with a cross slope of less than or equal to 2% (48:1).
- Mount the pushbutton no higher than 36" above the sidewalk.

## **Accessible Pedestrian Signals (APS)**

To provide equal access under the American Disabilities Act, increasing use of APS is being made. Several publications, including those from the U.S. Access Board, Transportation Research Board and others, provide information for APS. SHA-Office of Traffic & Safety (OOTS) has developed a draft, "Accessible Pedestrian Signals-Design Guidelines."

MUTCD provides information on the design of APS. Before addressing the need for APS, the Assistant District Engineer-Traffic is to be contacted as is standard procedure when considering the need for any traffic signal work.

## **Detectable Warning Devices**

A detectable warning device is a standard feature built into the sidewalk or ramp that alerts visually impaired individuals to the presence of a hazard in the line of travel. ADAAG specifies that detectable warnings shall consist of raised truncated domes. Truncated domes are required at street crossings and signalized entrances. Reference the current Book of Standards for Highway & Incidental Structures for Detectable Warning Surfaces Standard number 655.40.

## **Maintenance of Pedestrian Access During Construction**

This work shall consist of providing and maintaining an accessible pedestrian route, to the maximum extent feasible, throughout the project's limits in accordance with requirements of the traffic control plans, standards and this specification. Where an existing pedestrian route is disrupted by construction activities, all pedestrians, including persons with disabilities, shall be provided with a reasonably safe, convenient and accessible path throughout the limits of the workzone.

The phrase to the maximum extent feasible applies to the occasional case where the nature of an existing facility or site conditions makes it virtually impossible to comply fully with applicable accessibility standards through a planned alteration. In these circumstances, the alternate accessible pedestrian route shall provide the maximum physical accessibility that is feasible, or a design waiver must be approved by SHA's Office of Highway Development.

The following considerations should be taken into account when addressing accessible pedestrian maintenance of traffic:

- (a) Whenever an existing pedestrian access route in the public right of way is blocked by construction, alteration, or maintenance activity, an alternate accessible pedestrian route must be provided.
- (b) If adequate, the width of the existing pedestrian facility should be maintained. When it is not possible to maintain a minimum width of 60 inches throughout the entire length of the pedestrian route, a minimum width of 36 inches shall be provided with 60 inch by 60 inch passing zones at least every 200 feet, to allow individuals in wheelchairs to pass.
- (c) Traffic control devices and other construction materials and features shall not intrude into the usable width of the sidewalk, temporary pathway or other pedestrian facility.
- (d) Signs and other devices mounted lower than 80 inches above the temporary pedestrian pathway shall not project more than 4 inches into accessible pedestrian route.

## **SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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- (e) A smooth, continuous hard surface shall be provided throughout the entire length and width of the pedestrian route throughout construction. There shall be no curbs or vertical elevation changes greater than ¼” in grade or terrain that could cause tripping or be a barrier to wheelchair use. Vertical Elevation differences between ¼ inch and ½ inch shall be beveled at a maximum 2:1 slope. Elevation changes greater than ½ inch shall be ramped at a slope not to exceed a 12:1 slope (horizontal to vertical ratio).
- (f) When channelization is used to delineate a pedestrian pathway, a continuous detectable edging shall be provided at grade or, if a bottom opening is provided, a minimum 1.5 inches and maximum 4 inches above finished grade throughout the length of the facility such that pedestrians using a white cane can follow it.
- (g) Temporary ramps shall be provided wherever an alternate pedestrian route crosses a curb and no permanent ramps are in place. To the maximum extent feasible, the width of the ramp shall be a minimum of 48 inches and the running slope of the ramp shall not exceed a 12:1 slope.
- (h) To the maximum extent feasible, an accessible pedestrian route shall be provided on the same side of the street as the disrupted route. Where it is not feasible to provide a same-side accessible pedestrian route an accessible pedestrian detour route will be provided.
- (i) Information regarding closed pedestrian routes, alternate crossings, relocated transit stops, and sign and signal information shall be communicated to pedestrians with visual disabilities by providing devices such as audible information devices, accessible pedestrian signals or detectable barriers and channelizing devices in accordance with the requirements of the workzone plan and this specification.

Access to existing and/or temporary transit stops shall be maintained and/or provided.

Refer to Maryland Standards 104.06-05A, 104.6-05B, 104.6-05C, and 104.6-05D for typical Pedestrian Maintenance of Traffic applications.

## SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS

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### REFERENCES

In addition to this design guide, SHA recognizes and utilizes the following documents with regard to the design of accessible facilities.

- ADA Handbook, published by the US Equal Employment Opportunity Commission and the US Department of Justice.
- Accessible Rights-of-Way: A Design Guide, published by the US Architectural and Transportation Barriers Compliance Board.
- ADAAG Manual, published by the US Architectural and Transportation Barriers Compliance Board.
- A Policy on Geometric Design of Highways and Streets, published by the American Association of State Highway and Transportation Officials (AASHTO)
- Manual on Uniform Traffic Control Device (MUTCD), published by the Federal Highway Administration (FHWA)
- Designing Sidewalks and Trails for Access – Best Practices Design Guide, Parts 1 & 2, published by the Federal Highway Administration (FHWA)

The documents referenced above are to be utilized as guidelines.

**SHA – ADA CHECKLIST**

This checklist has been developed to provide an itemized list of considerations that will help the designer to determine the best possible accessible facility or route.

**Sidewalk**

**YES    NO    N/A**

           Is the sidewalk width 5 foot (60”) exclusive of curb? If no, what physical constraint(s) exist to cause a reduction in sidewalk width?

           Where sidewalk width is less than 5 feet, are passing zones (60” x 60”) provided at intervals no greater than every 200 feet.

           Is the sidewalk cross-slope no greater than 2% (48:1)?

           Is the vertical elevation difference between adjacent surfaces no greater than ¼”? (for example stamped concrete, driveway entrances, etc.)

           If elevation differences between ¼” and ½” exist are they beveled at maximum 2:1 slope?

           Are sidewalks adjacent to steep slopes?

           If yes, are handrails provided?

           Are there protruding objects located in the sidewalk (ex: utility poles, mailboxes, signal poles, signs, etc.)?

**Ramps**

           Are all ramps free from obstacles?

           Are ramps perpendicular to the curb?

           Are the bottoms of ramps flush with roadway?

           Are ramps placed at each end and in-line with crosswalk.

           Are ramps (not including side slopes) located at least 2 feet (measured from inside to inside of crosswalk striping) within the limits of the crosswalk striping?

**SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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YES	NO	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are crosswalks perpendicular to the lanes?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If no, can they be perpendicular to the lanes?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are stop bars located a minimum of 4 feet from the crosswalk?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are pedestrian push buttons located 10 feet maximum from the curb and accessible?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are ramp running slopes no greater than 12:1?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are cross-slopes on the ramps no greater than 2% (48:1)?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are side flares sloped 12:1?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the minimum width of sidewalk ramps 60”?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a level (max. 2% (48:1)) landing area provided at the top of perpendicular and diagonal ramps?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the landing area 60” x 60”?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do construction notes on roadway plans include Detectable Warning Surfaces placement?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are ramps located to minimize pedestrian exposure to traffic?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are ramps located outside of sump areas where ponding could occur?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the project includes multi-use trails, is the ramp width equal to the width of the trail?

**Median Treatments**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the minimum median width for pedestrian refuge 6 feet from face of curb to face of curb? If no, what physical constraint(s) exist to cause a reduction in the width?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a 4-foot minimum clear width for pedestrian travel provided on cut through and ramped medians?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are median ramp slopes 12:1 maximum?

**SHA - ACCESSIBILITY POLICY & GUIDELINES FOR PEDESTRIAN FACILITIES ALONG STATE HIGHWAYS**

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Is a level area measuring 4 feet wide by 4 feet long provided when using a ramped median?

**Driveway Crossing**

YES NO N/A

Where the sidewalk crosses the driveway/entrance, is the cross-slope a 2% (48:1) maximum?

At the point of crossing, is the driveway/entrance profile in fact the sidewalk cross-slope?

**Accessible Pedestrian Signals (APS) (To be developed by OOTS)**

Are pedestrian signals being replaced or installed within the limits of the project?

If yes, are Accessible Pedestrian Signals included?

**Protruding Objects**

Are any objects mounted to a fixed structure between 27” and 80” above the ground?

If yes, do the objects extend more than 4” from the fixed structure into the sidewalk?

**Inlets**

YES NO N/A

Is there an inlet within the 12:1 slope? If so, can the inlet top be placed in the correct slope? If not, can the ramp be relocated?

Is there an inlet in the cross walk or landing area? If so, are the gaps less than 1/2” wide and placed perpendicular to the pedestrian travel way? If not, can the ramp be relocated?

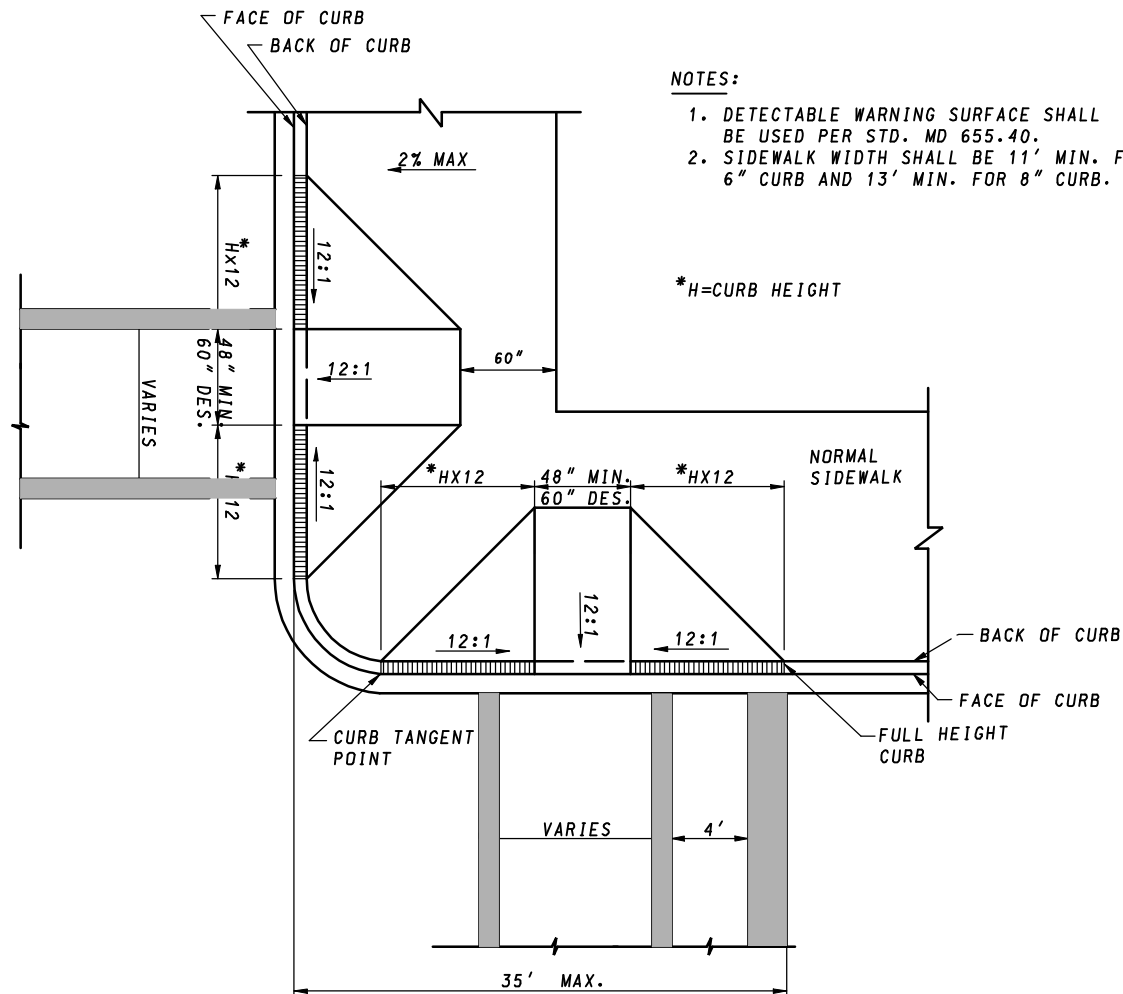
**Miscellaneous**

Is enough detail included to construct all ADA features properly? (i.e. curb elevations, etc.)

Do plans include handicapped accessible Maintenance of Pedestrian Access plans?

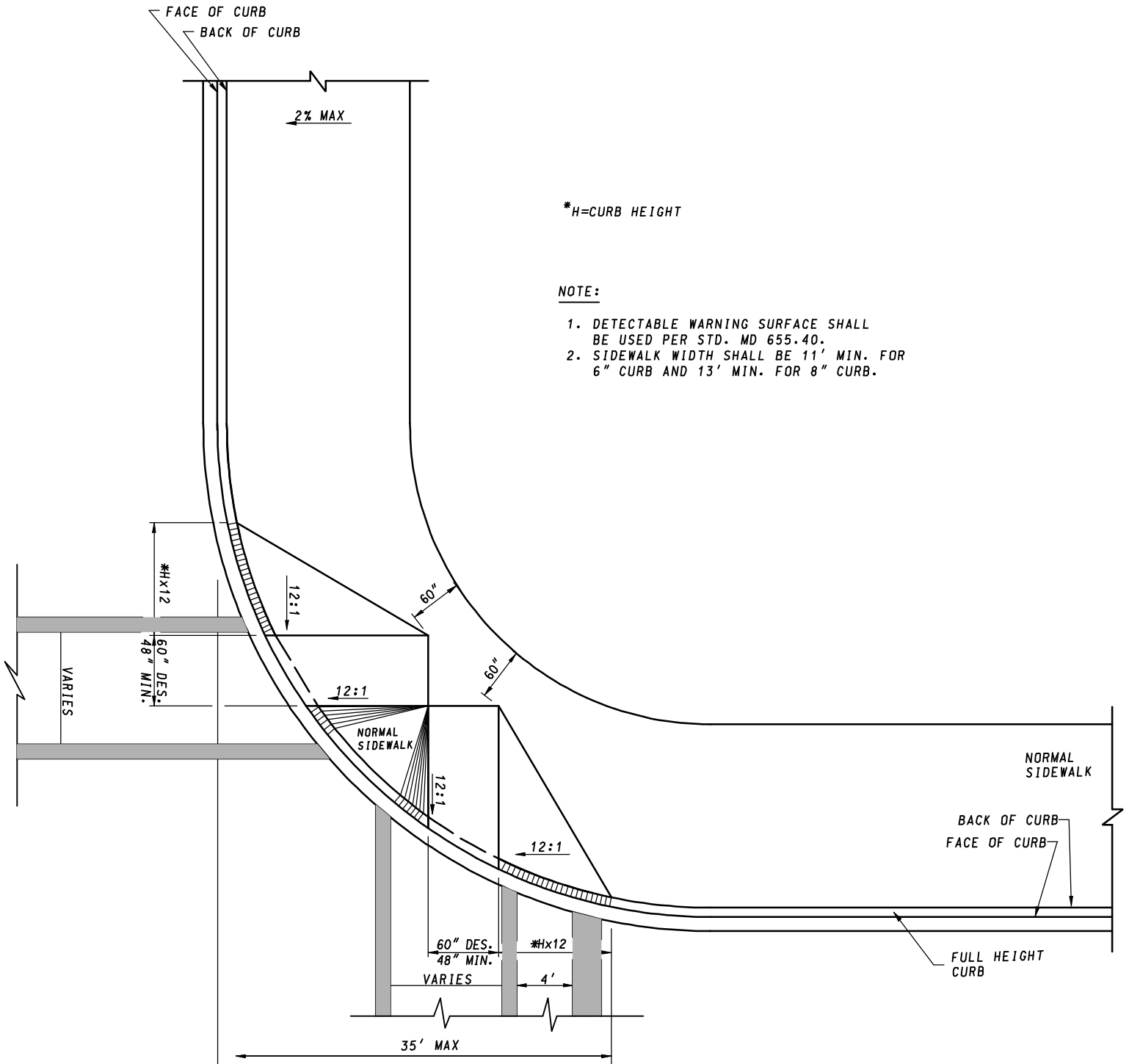


**PAIRED PERPENDICULAR RAMP WITH OPTIMAL SEPARATION ON SHORT RADIUS  
CURB RADIUS  $\geq 5'$**



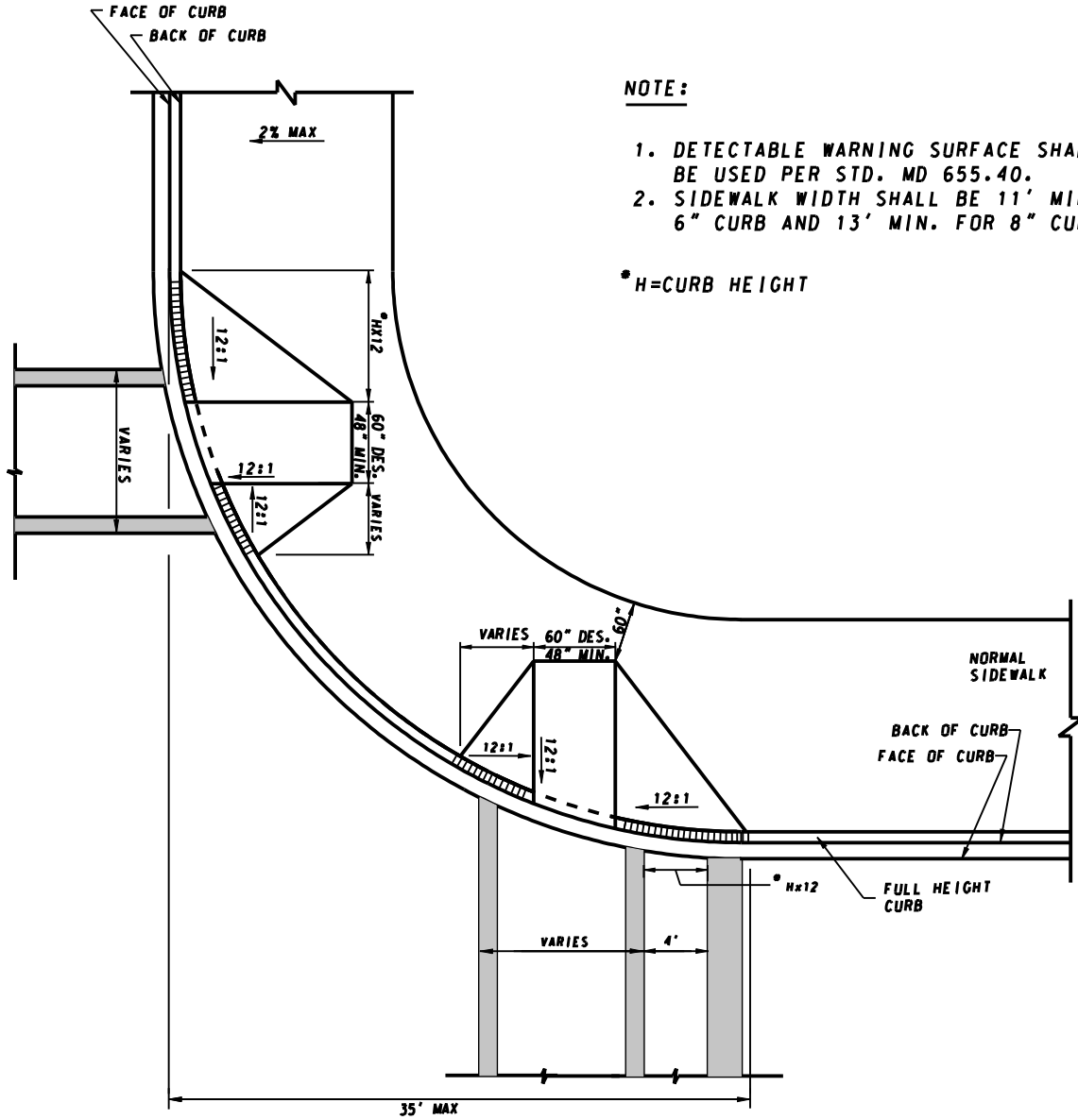
THIS IS THE PREFERRED CURB RAMP CONFIGURATION WHEN RADIUS GREATER OR EQUAL THAN 5'. APPLICATIONS FOR THIS DETAIL INCLUDE URBAN AND SUBURBAN INTERSECTIONS WITH SHARP CURB RETURNS AND WIDE SIDEWALKS THAT ALLOW A PAIR OF PERPENDICULAR RAMPS TO BE BUILT ACCORDING TO STANDARD (MD 655.11) WHILE MAINTAINING MINIMUM SIDEWALK CLEARANCES AND LANDING AREAS. PEDESTRIANS USING THE RAMP WILL ENTER THE ROADWAY PERPENDICULAR TO THE CURB, AND THEREFORE THIS DETAIL IS OPTIMAL FOR LOCATIONS WHERE THE CROSSWALK IS PLACED AT A RIGHT ANGLE TO TRAFFIC. THE LOCATION OF THE RAMP, AS SHOWN IN THIS DETAIL, IS BASED ON DEVELOPING FLARES FROM THE TANGENT POINT. USE OF THIS DETAIL IS APPROPRIATE AT NON-SIGNALIZED INTERSECTIONS, SINCE THE SETBACK OF THE RAMP FROM THE CROSSING ROADWAY ALLOWS A STOP BAR BE INSTALLED RELATIVELY CLOSE TO THE INTERSECTION, THEREBY ENHANCING SIGHT DISTANCE FOR STOPPED TRAFFIC.

**PAIRED PERPENDICULAR RAMP WITH MINIMAL SEPARATION ON LONG RADIUS  
CURB RADIUS  $\geq 35'$**



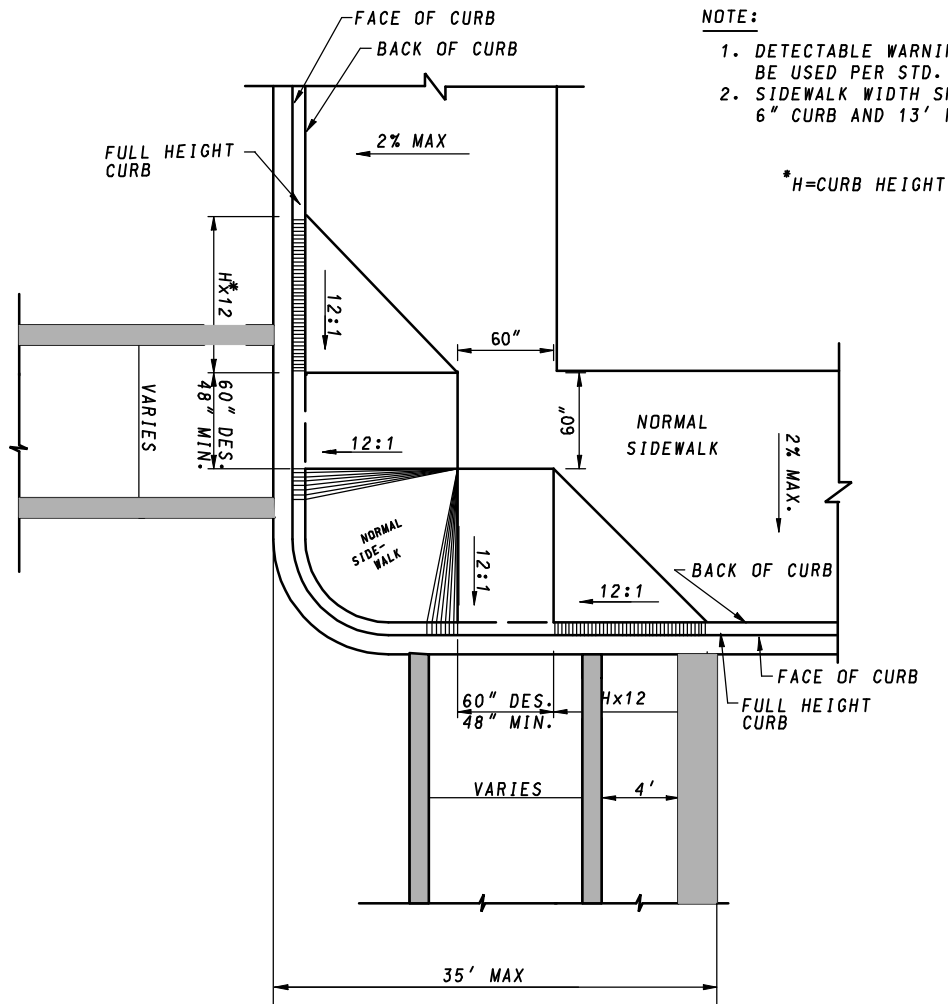
IDEAL APPLICATIONS FOR THIS DETAIL ARE SUBURBAN INTERSECTIONS WITH LARGE CURB RADII AND WIDE SIDEWALKS WHERE IT IS IMPORTANT TO MAINTAIN CLOSE PLACEMENT OF THE STOP BAR TO THE INTERSECTION AND FOR THE RAMP TO BE PROPERLY ALIGNED WITH THE CROSSWALK. MINIMUM SIDEWALK CLEARANCES AND LANDING AREAS ARE MAINTAINED. THE DESIGN DOES NOT INTERSECT THE BACK OF THE CURB BUT IS USEFUL IN AREAS WHERE THERE ARE CONSTRAINTS SUCH AS UTILITY POLES, SIGNS, FIRE HYDRANTS ETC. FORCE THE RAMPS CLOSE TOGETHER. CONSIDERATION SHOULD BE GIVEN TO THE ADDITIONAL LENGTH OF THE CROSSING RESULTING FROM THE SETBACKS FROM TRAFFIC LANES IN SIGNALIZED APPLICATIONS.

**PAIRED PERPENDICULAR RAMP WITH OPTIMAL SEPARATION ON LONG RADIUS  
CURB RADIUS  $\geq 35'$**



APPLICATIONS FOR THIS DETAIL INCLUDE SUBURBAN INTERSECTIONS WITH LARGE CURB RADII AND WIDE SIDEWALKS WHERE CLOSE PLACEMENT OF THE STOP BAR TO THE INTERSECTION IS NOT A HIGH PRIORITY, SUCH AS SIGNALIZED INTERSECTIONS WITH LIMITED PERMITTED MOVEMENTS (I.E. NO "RIGHT TURN ON RED"). IT ALLOWS FOR PEDESTRIANS TO ENTER AN INTERSECTION AND CROSSWALK AT A RIGHT ANGLE, ALTHOUGH THE RAMP DOES NOT INTERSECT THE BACK OF THE CURB AT A RIGHT ANGLE. IT IS IMPORTANT TO NOTE THAT THE TRANSITIONS FROM FULL CURB HEIGHT TO DEPRESSED CURB OCCUR WITHIN THE RADIUS. THIS DETAIL SHOULD BE USED WHERE INTERSECTION GEOMETRY MAKES IT UNDESIRABLE TO HAVE PEDESTRIANS ENTER A CROSSWALK ON A SKEW.

**PAIRED PERPENDICULAR RAMP WITH MINIMAL SEPARATION ON A SHORT RADIUS CURB RADIUS  $\geq 5'$**

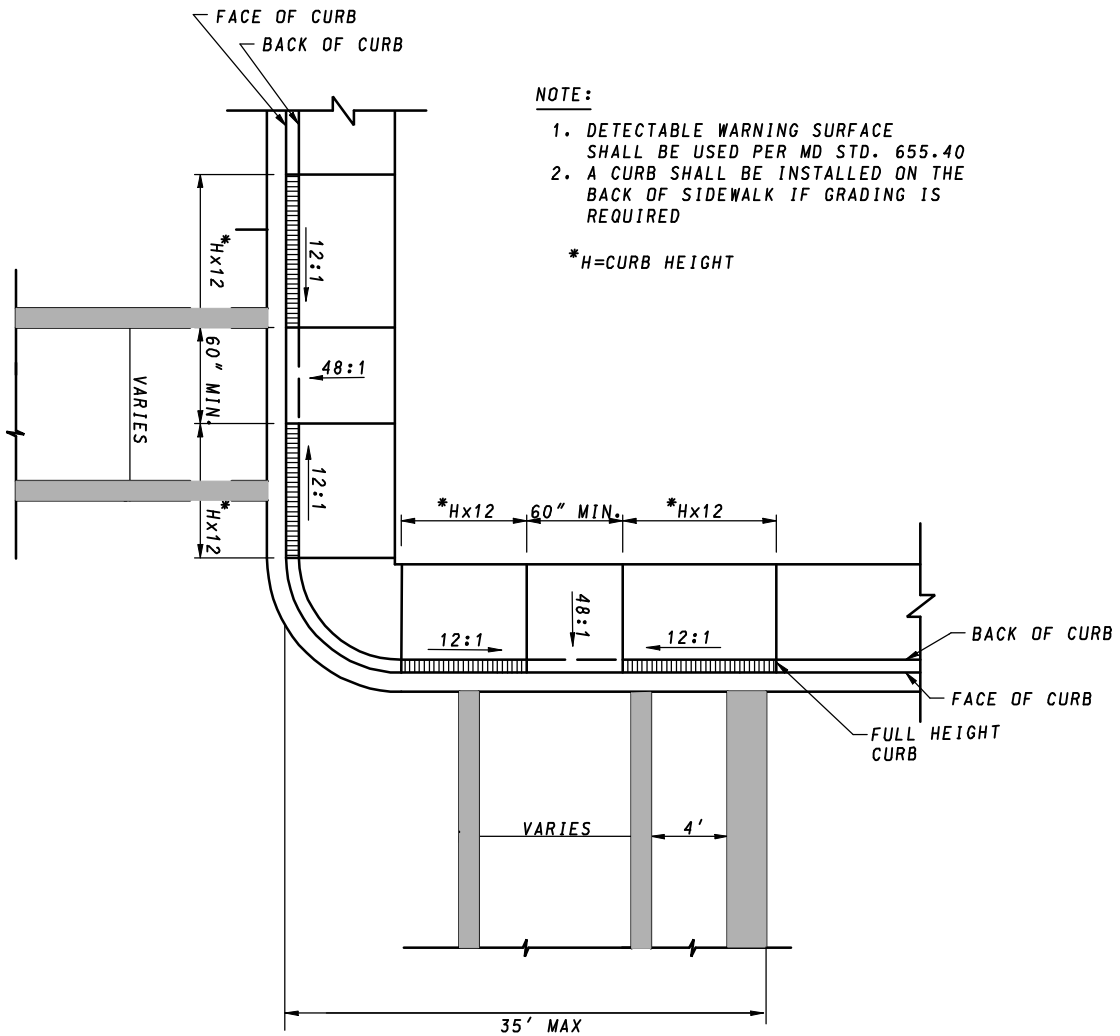


**NOTE:**  
 1. DETECTABLE WARNING SURFACE SHALL BE USED PER STD. MD 655.40.  
 2. SIDEWALK WIDTH SHALL BE 11' MIN. FOR 6" CURB AND 13' MIN. FOR 8" CURB.

\*H=CURB HEIGHT

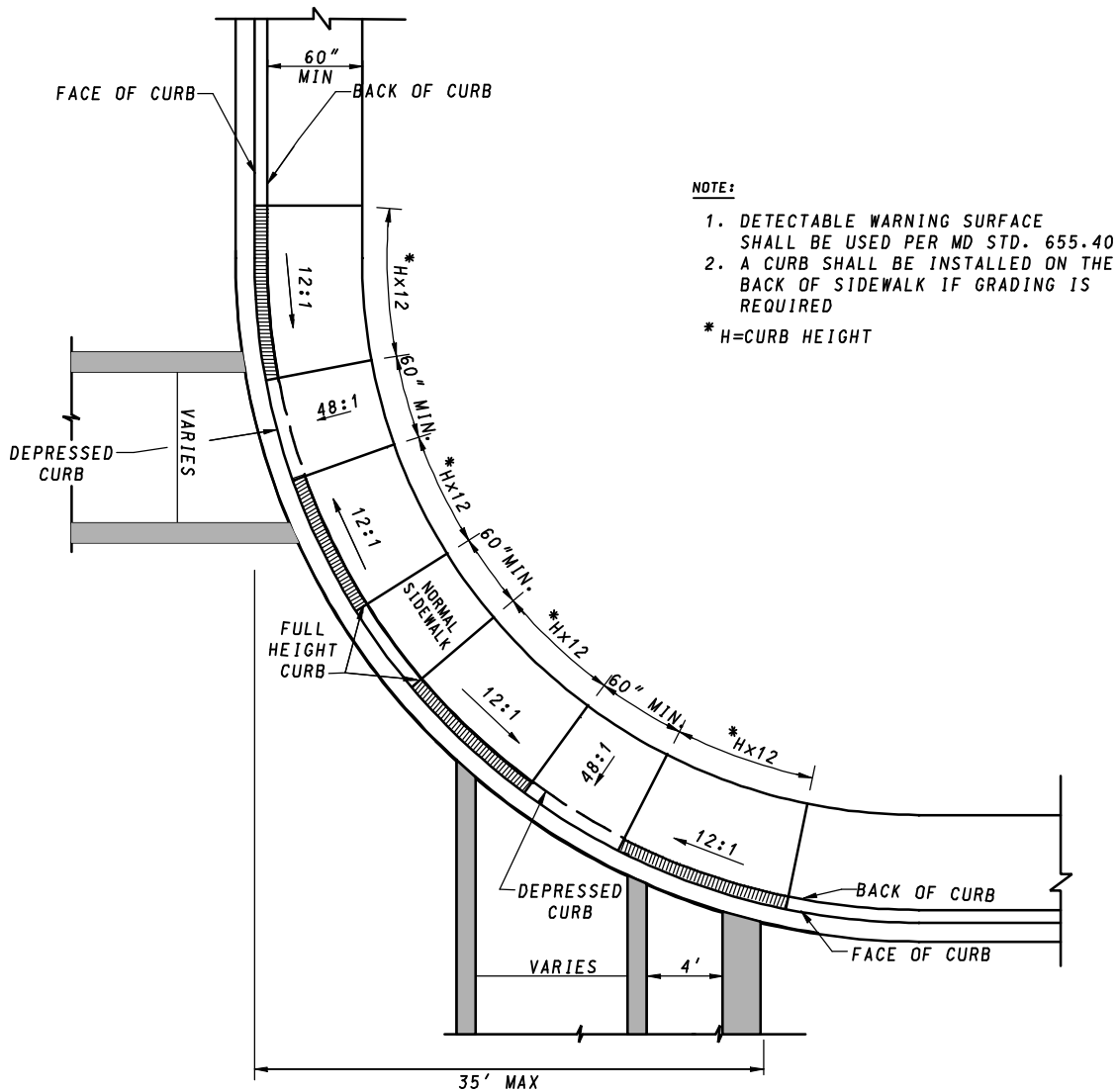
APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS AND WIDE SIDEWALKS. IT ALLOWS FOR PEDESTRIANS TO ENTER AN INTERSECTION AND CROSSWALK AT A RIGHT ANGLE.

**PAIRED PARALLEL RAMP WITH OPTIMAL SEPARATION SHORT RADIUS  
CURB RADIUS  $\geq 6'$**



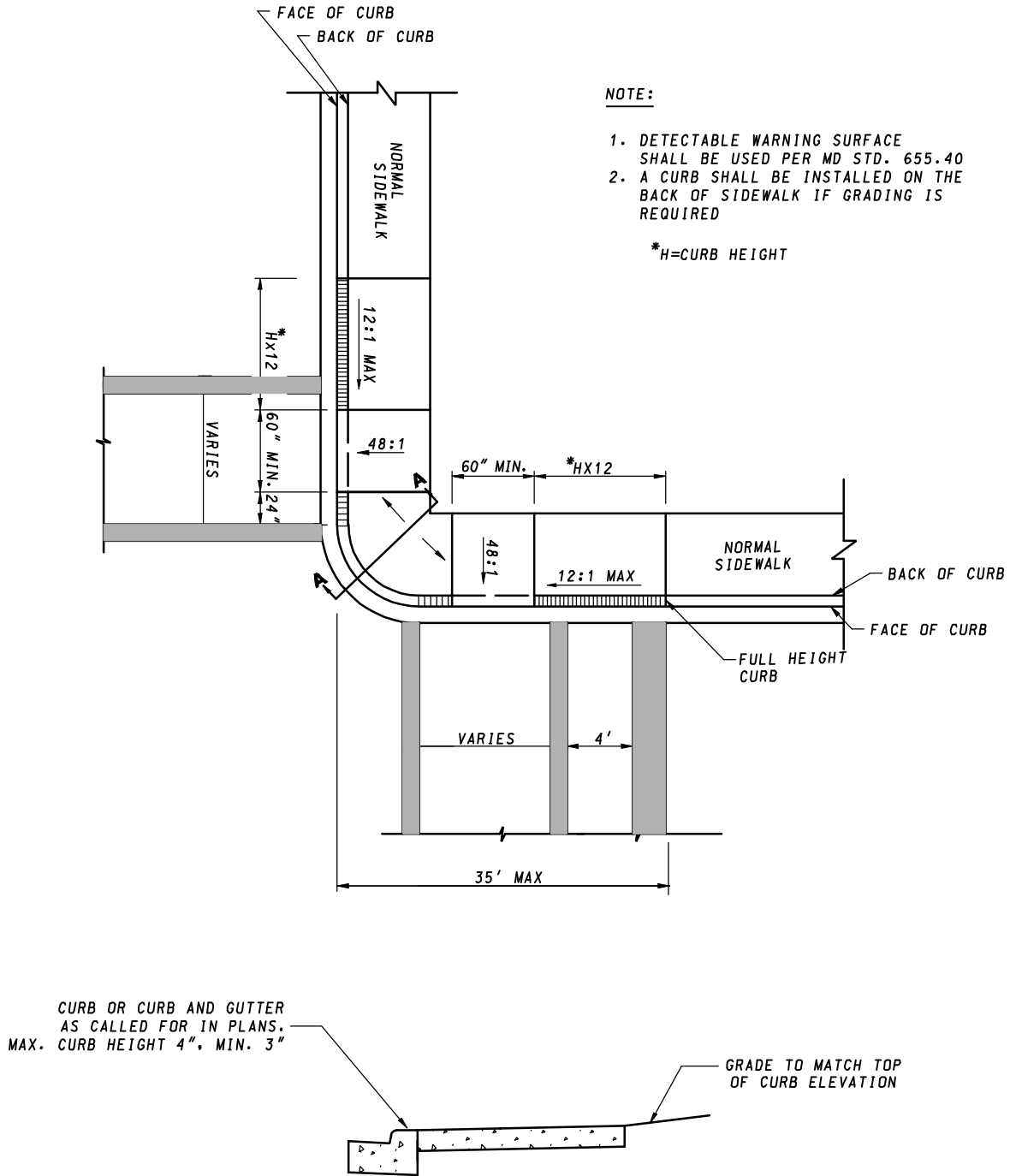
APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS AND NARROW SIDEWALKS. PEDESTRIANS USING THE RAMP WILL ENTER THE ROADWAY PERPENDICULAR TO THE CURB THEREFORE THIS DETAIL IS OPTIMAL FOR LOCATIONS WHERE THE CROSSWALK IS PLACED AT A RIGHT ANGLE TO TRAFFIC. THE LOCATION OF THE RAMP, AS SHOWN IN THIS DETAIL, IS BASED ON DEVELOPING FLARES FROM THE TANGENT POINT. USE OF THIS DETAIL IS MOST APPROPRIATE AT SIGNALIZED INTERSECTIONS, SINCE THE SETBACK OF THE RAMP FROM THE CROSSING ROADWAY REQUIRES THAT THE STOP BAR BE INSTALLED FARTHER BACK THAN IS DESIRABLE FOR SAFE OPERATION AS A STOP-CONTROLLED INTERSECTION. IT MAY ONLY BE APPLIED ON SIDEWALKS 5' WIDE OR GREATER.

**PAIRED PARALLEL RAMP WITH OPTIMAL SEPARATION LONG RADIUS  
CURB RADIUS = 35'**



APPLICATION FOR THIS DETAIL IS APPLIED TO URBAN OR SUBURBAN INTERSECTIONS WITH LARGE CURB RADII AND NARROW SIDEWALKS. IT DOES NOT ALLOW FOR PEDESTRIANS TO ENTER AN INTERSECTION AND CROSSWALK AT A RIGHT ANGLE. USE OF THIS DETAIL IS MOST APPROPRIATE AT SIGNALIZED INTERSECTIONS, SINCE THE SETBACK OF THE RAMP FROM THE CROSSING ROADWAY REQUIRES THAT THE STOP BAR BE INSTALLED FARTHER BACK THAN IS DESIRABLE FOR SAFE OPERATION AS A STOP-CONTROLLED INTERSECTION.

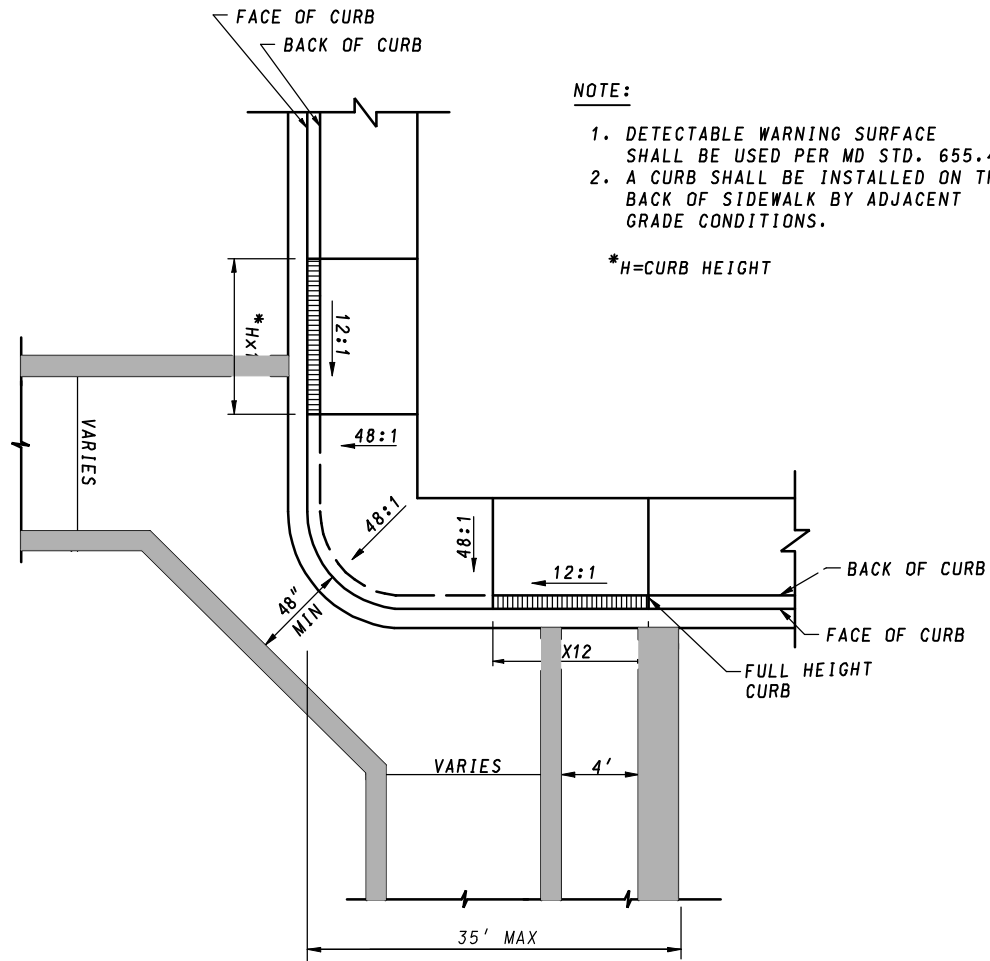
**PAIRED PARALLEL RAMP WITH MINIMAL SEPARATION SHORT RADIUS  
CURB RADIUS  $\leq 5'$**



**SECTION A-A  
NTS**

APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS AND NARROW SIDEWALKS. PEDESTRIANS USING THE RAMP WILL ENTER THE ROADWAY PERPENDICULAR TO THE CURB, AND THEREFORE THIS DETAIL IS OPTIMAL FOR LOCATIONS WHERE THE CROSSWALK IS PLACED AT A RIGHT ANGLE TO TRAFFIC. THE CONSTRUCTION OF THE RAMP BEGINS IN THE CURVE. IT MAY BE APPLIED ON SIDEWALKS 5' OR GREATER.

**DIAGONAL PARALLEL RAMP SHORT RADIUS CURB  
CURB RADIUS = 5'**



**NOTE:**

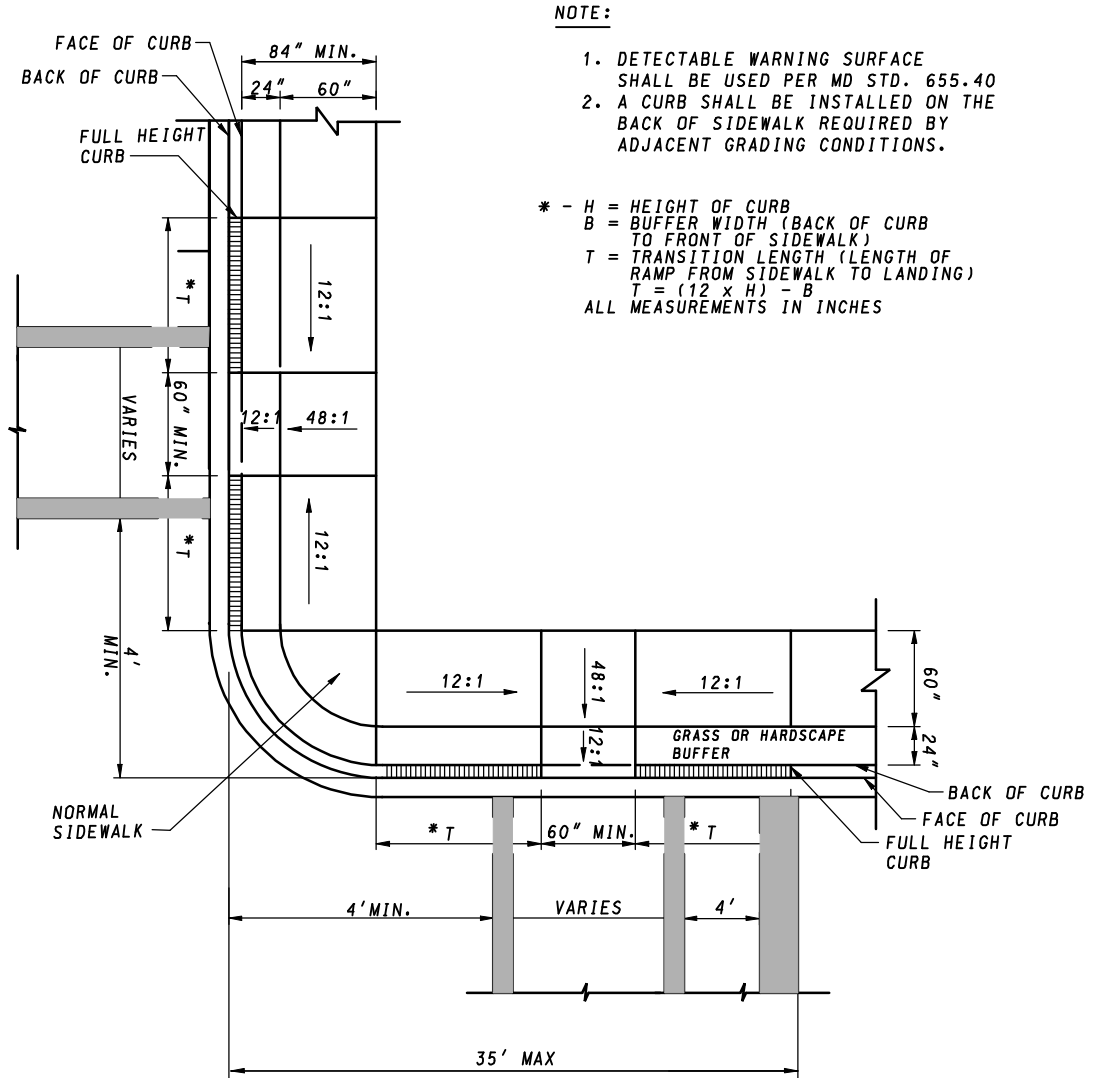
1. DETECTABLE WARNING SURFACE SHALL BE USED PER MD STD. 655.40
2. A CURB SHALL BE INSTALLED ON THE BACK OF SIDEWALK BY ADJACENT GRADE CONDITIONS.

\*H=CURB HEIGHT

APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS AND NARROW SIDEWALKS. PEDESTRIANS WILL ENTER THE INTERSECTION ON AN ANGLE. THE VISUALLY IMPAIRED DO NOT ADVOCATE DIAGONAL RAMPS BECAUSE IT IS REASONED THAT THE RAMP WILL DIRECT BLIND INDIVIDUALS INTO THE INTERSECTION. IF THIS RAMP IS APPLIED, THE CROSSWALK STRIPING SHALL PROVIDE A MINIMUM 4' LANDING AREA IN THE ROADWAY. THE DEPRESSED CURB AND ADJOINING SIDEWALK SHALL BE CONSTRUCTED OF 8" CONCRETE SINCE AUTOMOBILES AND TRUCKS MAY TRACK OVER THE CORNER. IT MAY BE APPLIED ON SIDEWALKS 5" WIDE OR GREATER.

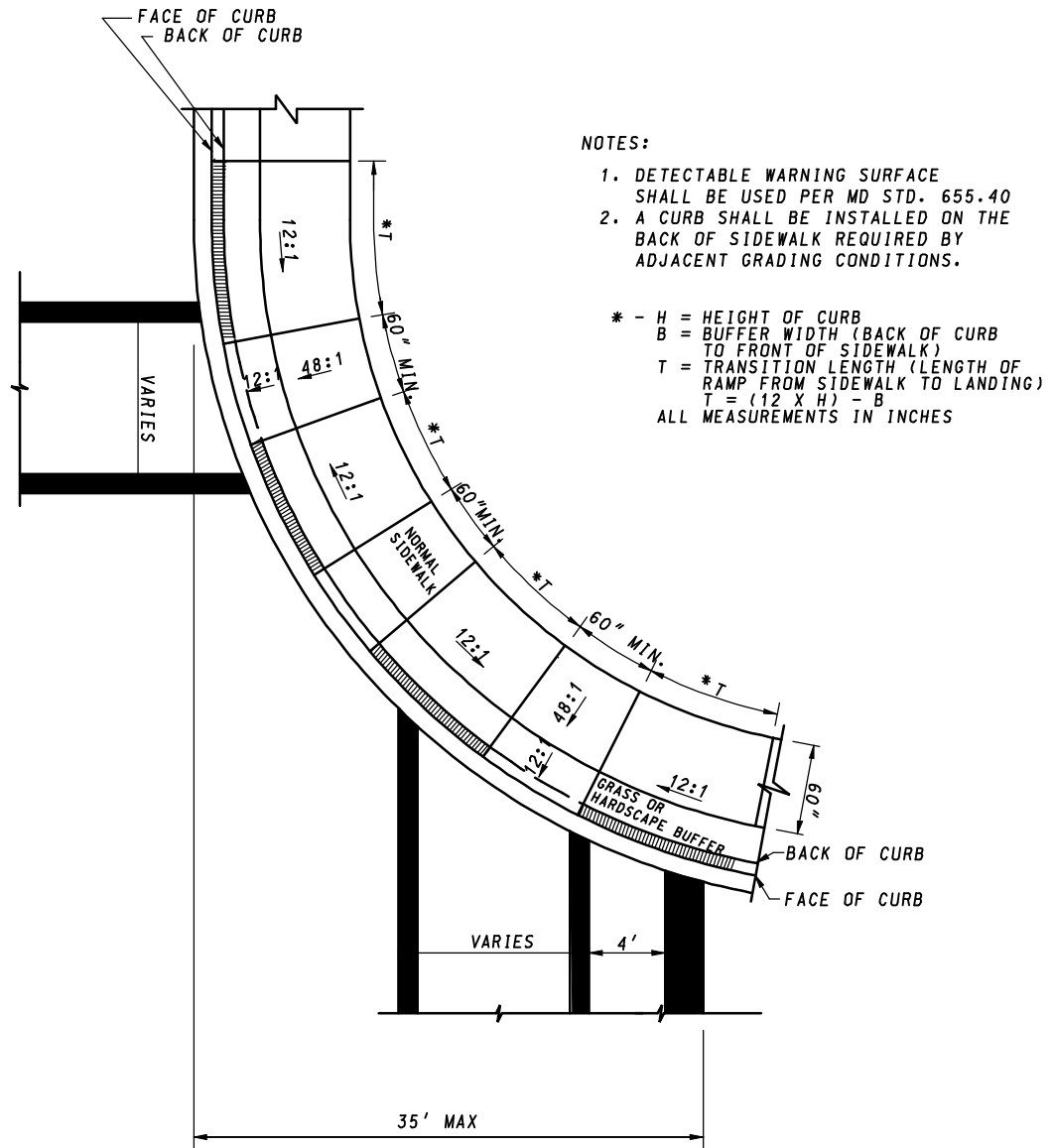


**PAIRED COMBINATION WITH OPTIMAL SEPARATION ON A SHORT RADIUS  
CURB RADIUS  $\geq 8'$**



APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS. PEDESTRIANS USING THE RAMP WILL ENTER THE ROADWAY PERPENDICULAR TO THE CURB, AND THEREFORE THIS DETAIL IS OPTIMAL FOR LOCATIONS WHERE THE CROSSWALK IS PLACED AT A RIGHT ANGLE TO TRAFFIC. THE LOCATION OF THE RAMP, AS SHOWN IN THIS DETAIL, IS BASED ON DEVELOPING FLARES FROM THE TANGENT POINT. IT MAY BE APPLIED ON SIDEWALKS 8' WIDE OR GREATER.

**PAIRED COMBINATION RAMP WITH OPTIMAL SEPARATION ON LONG RADIUS  
CURB RADIUS  $\geq 35'$**



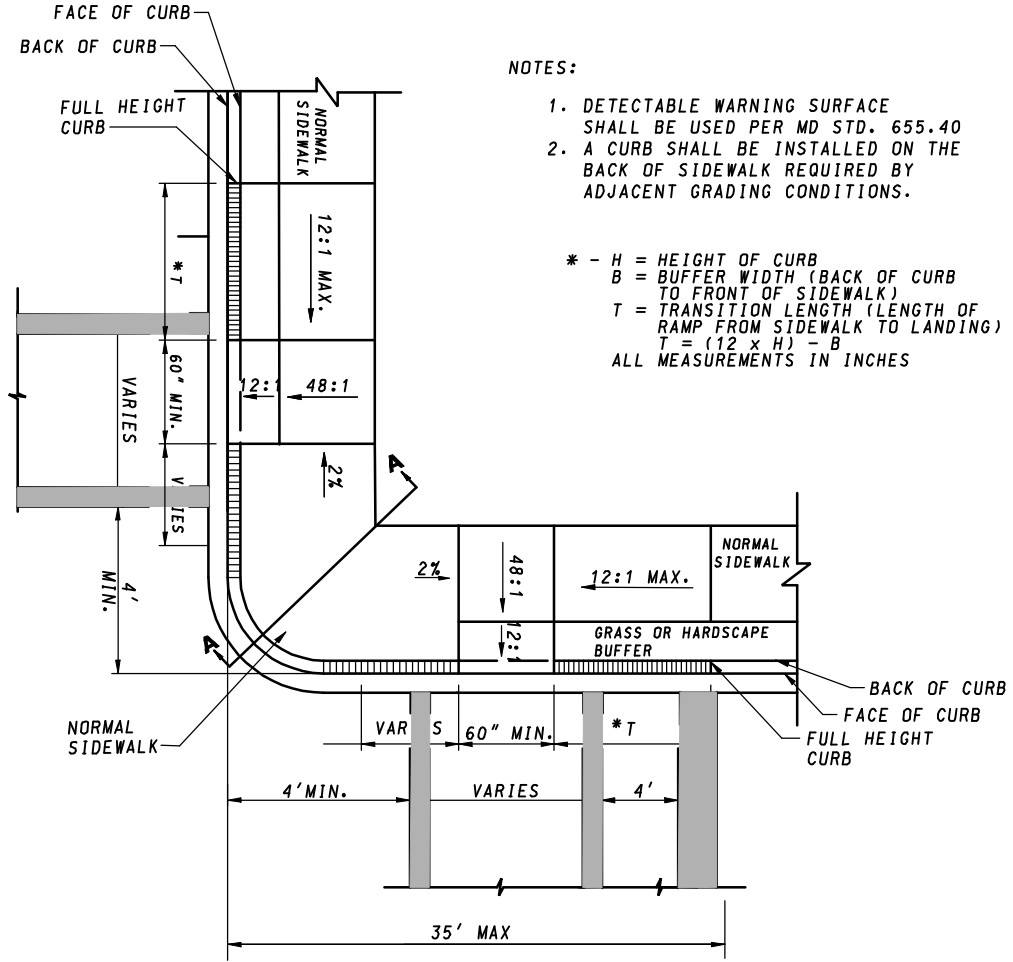
**NOTES:**

1. DETECTABLE WARNING SURFACE SHALL BE USED PER MD STD. 655.40
2. A CURB SHALL BE INSTALLED ON THE BACK OF SIDEWALK REQUIRED BY ADJACENT GRADING CONDITIONS.

\* - H = HEIGHT OF CURB  
 B = BUFFER WIDTH (BACK OF CURB TO FRONT OF SIDEWALK)  
 T = TRANSITION LENGTH (LENGTH OF RAMP FROM SIDEWALK TO LANDING)  
 $T = (12 \times H) - B$   
 ALL MEASUREMENTS IN INCHES

APPLICATION FOR THIS DETAIL IS APPLIED TO INTERSECTIONS WITH LARGE CURB RADII AND NARROW SIDEWALKS. IT DOES NOT ALLOW FOR PEDESTRIANS TO ENTER AN INTERSECTION AND CROSSWALK AT A RIGHT ANGLE. USE OF THIS DETAIL IS MOST APPROPRIATE AT SIGNALIZED INTERSECTIONS, SINCE THE SETBACK OF THE RAMP FROM THE CROSSING ROADWAY REQUIRES THAT THE STOP BAR BE INSTALLED FARTHER BACK THAN IS DESIRABLE FOR SAFE OPERATION AS A STOP-CONTROLLED INTERSECTION. IT MAY BE APPLIED ON SIDEWALKS 8' WIDE OR GREATER.

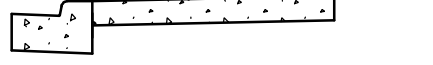
**PAIRED COMBINATION RAMP WITH MINIMAL SEPARATION ON SHORT RADIUS  
CURB RADIUS  $\geq 5'$**



- NOTES:**
1. DETECTABLE WARNING SURFACE SHALL BE USED PER MD STD. 655.40
  2. A CURB SHALL BE INSTALLED ON THE BACK OF SIDEWALK REQUIRED BY ADJACENT GRADING CONDITIONS.
- \* - H = HEIGHT OF CURB  
 B = BUFFER WIDTH (BACK OF CURB TO FRONT OF SIDEWALK)  
 T = TRANSITION LENGTH (LENGTH OF RAMP FROM SIDEWALK TO LANDING)  
 $T = (12 \times H) - B$   
 ALL MEASUREMENTS IN INCHES

CURB OR CURB AND GUTTER AS CALLED FOR IN PLANS. MAX. CURB HEIGHT 4", MIN. 3"

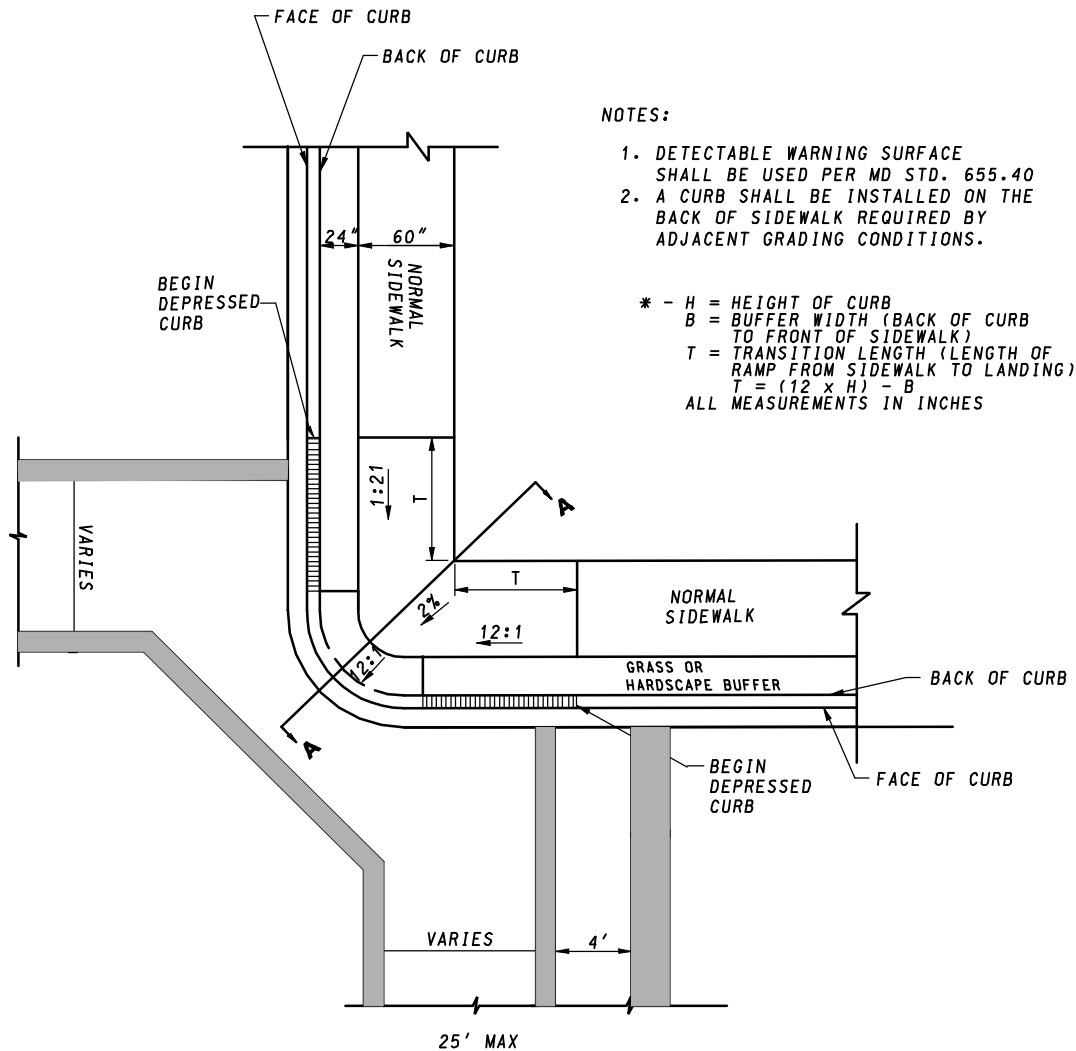
GRADE TO MATCH TOP OF CURB ELEVATION



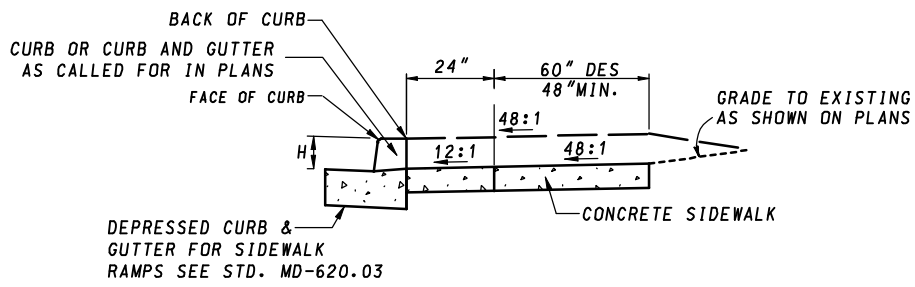
**SECTION A-A  
NTS**

APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS AND A HARDSCAPE OR GRASS BUFFER BETWEEN THE CURB AND SIDEWALK. PEDESTRIANS USING THE RAMP WILL ENTER THE ROADWAY PERPENDICULAR TO THE CURB, AND THEREFORE THIS DETAIL IS OPTIMAL FOR LOCATIONS WHERE THE CROSSWALK IS PLACED AT A RIGHT ANGLE TO TRAFFIC. THE CONSTRUCTION OF THE RAMP BEGINS IN THE CURVE. IT MAY BE APPLIED ON SIDEWALKS 8' OR GREATER.

**COMBINATION DIAGONAL RAMP ON SHORT RADIUS  
CURB RADIUS  $\geq 5'$**



- NOTES:**
1. DETECTABLE WARNING SURFACE SHALL BE USED PER MD STD. 655.40
  2. A CURB SHALL BE INSTALLED ON THE BACK OF SIDEWALK REQUIRED BY ADJACENT GRADING CONDITIONS.
- \* - H = HEIGHT OF CURB  
 B = BUFFER WIDTH (BACK OF CURB TO FRONT OF SIDEWALK)  
 T = TRANSITION LENGTH (LENGTH OF RAMP FROM SIDEWALK TO LANDING)  
 $T = (12 \times H) - B$   
 ALL MEASUREMENTS IN INCHES



**SECTION A-A  
NTS**

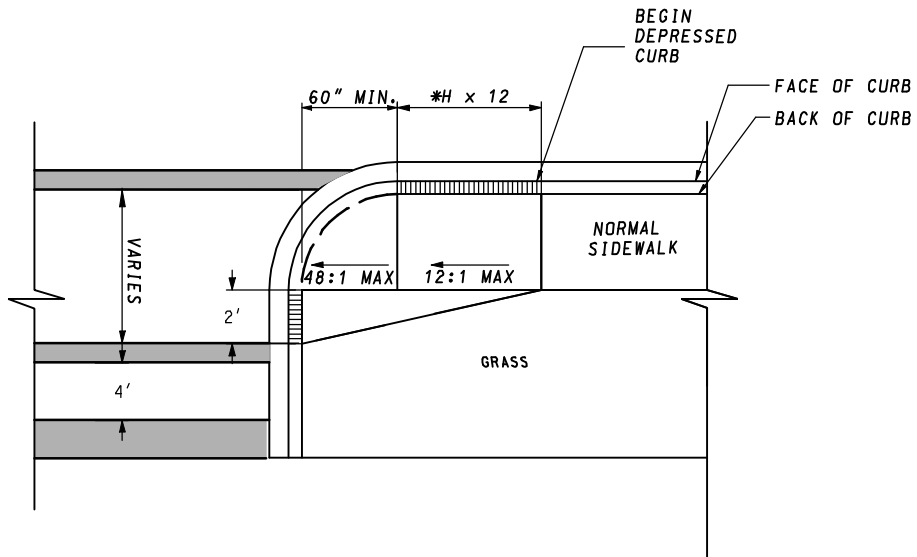
APPLICATIONS FOR THIS DETAIL INCLUDE URBAN INTERSECTIONS WITH SHARP CURB RETURNS AND A HARDSCAPE OR GRASS BUFFER BETWEEN THE CURB AND SIDEWALK. PEDESTRIANS WILL ENTER THE INTERSECTION ON AN ANGLE. THE VISUALLY IMPAIRED DO NOT ADVOCATE DIAGONAL RAMPS BECAUSE IT IS REASONED THAT THE RAMP WILL DIRECT BLIND INDIVIDUALS INTO THE INTERSECTION. IF THIS RAMP IS APPLIED, THE CROSSWALK STRIPING SHALL PROVIDE A MINIMUM 4' LANDING AREA IN THE ROADWAY. THE DEPRESSED CURB AND ADJOINING SIDEWALK SHALL BE CONSTRUCTED OF 8" CONCRETE SINCE AUTOMOBILES AND TRUCKS MAY TRACK OVER THE CORNER. IT MAY BE APPLIED ON SIDEWALKS 8' WIDE OR GREATER.

**SINGLE PARALLEL RAMP ON SHORT RADIUS  
CURB RADIUS  $\geq 5'$**

**NOTE:**

DETECTABLE WARNING SURFACE SHALL  
BE USED PER STD. MD 655.40.

\*H=CURB HEIGHT



APPLICATIONS FOR THIS DETAIL INCLUDE URBAN AND SUBURBAN INTERSECTIONS WITH SHARP CURB RETURNS AND SIDEWALKS IN ONE DIRECTION. PEDESTRIANS WILL ENTER THE INTERSECTION AT A RIGHT ANGLE. IT MAY BE APPLIED ON SIDEWALKS 5' WIDE OR GREATER.