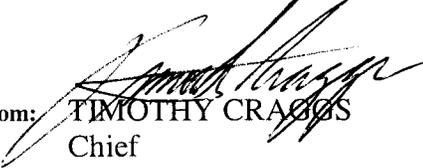


Memorandum

*Flex your power!
Be energy efficient!*

To: DISTRICT DIRECTORS
DEPUTY DIRECTORS
DIVISION CHIEFS

Date: October 1, 2013

From: 
TIMOTHY CRAGGS
Chief
Division of Design

File: 608

Subject: **DESIGN INFORMATION BULLETIN (DIB) 82-05**

DIB 82, "Pedestrian Accessibility Guidelines for Highway Projects", has been updated. Version 82-05 is now available on the Division of Design website: www.dot.ca.gov/hq/oppd/dib/dib82-05.pdf and is effective as of the date of this memorandum. Projects, where project development efforts have started, shall comply with Highway Design Manual (HDM) Index 82.5 "Effective Date for Implementing Design Revisions to Design Standards."

SUMMARY OF SIGNIFICANT CHANGES IN DIB 82-05

This revision reflects recent changes in Federal and State guidance. The following is a summary of the key changes:

- The 1991 Americans with Disabilities Act Accessibility Guidelines (ADAAG) has been replaced by the 2010 ADA (Americans with Disabilities Act) Standards.
- The Federal Highway Administration (FHWA) has issued revised guidance for when curb ramps are required on resurfacing projects.
- The FHWA has allowed more use of the draft Public Rights of Way Accessibility Guidelines (PROWAG) as design standards.
- The California Building Code 2013 (Title 24) has been updated and was published in July 2013.
- Incorporation of the previously distributed "Curb Ramp Scoping and Design Memo" as an appendix to the DIB.
- In addition, minor changes were also made to update terminology, provide clarifications, etc.

Training on pedestrian accessibility design for highway projects and this DIB is available from the Office of Geometric Design Standards on an as needed basis. If training is desired in the Region or District, please inform the Division of Design Coordinator to arrange for its delivery.

If you have any questions on this DIB, please contact Kevin Herritt, Chief, Office of Geometric Design Standards, at (916) 653-0253, or David Cordova, Office of Geometric Design Standards, at (916) 653-0485. Project specific applicability and questions should be referred to the Division of Design District Coordinators.

DISTRICT DIRECTORS, et al
October 1, 2013
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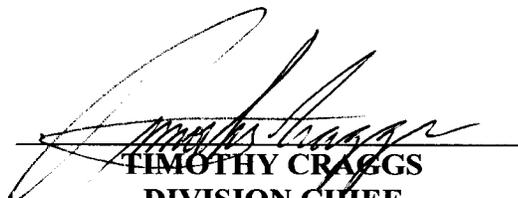
c: DCordova
KMHerritt
JBenton
Design Coordinators and Design Reviewers
Design Files

DESIGN INFORMATION BULLETIN NUMBER 82-05

**Department of Transportation
Division of Design
Office of Geometric Design Standards**

PEDESTRIAN ACCESSIBILITY GUIDELINES FOR HIGHWAY PROJECTS

APPROVED BY:



**TIMOTHY CRAIGS
DIVISION CHIEF
DIVISION OF DESIGN**

October 1, 2013

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Exception to Accessibility Design Standards	A-1
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1.0 BACKGROUND

The Americans with Disabilities Act (ADA) of 1990, along with its implementing regulations, and the California Government Code Sections 4450 et seq. prescribe that facilities shall be made accessible to persons with disabilities. To comply with the ADA, the 2010 ADA Standards, as adopted by the United States Department of Justice (DOJ), shall apply to the design of the California Department of Transportation (Caltrans) facilities. Although the 2010 ADA Standards are not specifically written for public rights-of-way projects, some of the provisions can apply to the highway environment and are included in this Design Information Bulletin (DIB). Until the draft Public Rights-of-Way Accessibility Guidelines (PROWAG) are adopted and binding, the 2010 ADA Standards are to be used as the primary basis of accessibility standards for public rights-of-way.

In addition to the 2010 ADA Standards, other Federal documents on designing accessible pedestrian facilities in public rights-of-way were used to develop this DIB. For example, the publication *Designing Sidewalks and Trails for Access* is referred to several times and is available on the Internet at:

www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/tranmemo.cfm

Also, certain portions of the PROWAG, as agreed to by the Federal Highway Administration (FHWA), are used in this DIB.

Title 24 of the California Code of Regulations (Title 24) is similar to the 2010 ADA Standards in that it prescribes accessibility design standards for the State of California; in Part 2, the California Building Code. The Department of General Services - Division of the State Architect (DSA) oversees California Building Code compliance. However, for transportation facilities on the State highway system, Caltrans (in addition to DSA) is authorized to certify, on a project-by-project basis, that a project complies with State pedestrian accessibility design standards. Rail and transit stations are the exception. Rail and transit stations are to be reviewed and require an approval from DSA to certify accessibility compliance.

This DIB has been written to provide general design guidance on how to comply with the various Federal laws and State codes on pedestrian accessibility for public use. The accessibility requirements typically associated with projects constructed in public rights-of-way have been presented in this DIB as “accessibility design standards” only to facilitate Caltrans processes and procedures. It is not the intent of this DIB to discuss all of the various Federal laws and State codes that apply to making buildings and public facilities accessible; nor is it the intent of this DIB to diminish the importance of and the requirement to comply with those accessibility standards not specifically mentioned in this DIB and as may be required on a project-by-project basis. See Section 3.1 of this DIB for further guidance on the review process for projects.

2.0 DEFINITIONS

The following words and phrases that are shown in bold text are used in this DIB and are defined as follows. As appropriate, referenced documents are noted within the brackets to indicate the source of the definition.

Accessible: A site, building, facility, or portion thereof that complies with this part (of the 2010 ADA Standards) [2010 ADA Standards].

Element: An architectural or mechanical component of a building, facility, space, site, or public right-of-way [PROWAG].

Facility: All or any portion of buildings, structures, improvements, elements, and pedestrian or vehicular routes located in a public right-of-way [PROWAG].

Historic Property/Historical Resources: Under Federal law [36 CFR 800.16(1)] the term used is “Historic Property” and includes any building, structure, site, object or district that is listed in or eligible for listing in the National Register of Historic Places.

Under State law [CEQA Guidelines 15064.5 and California Public Resources Code 5020] the term used is “Historical Resources” and includes any building, structure, site, object or district that meets one of the following:

- Listed in or eligible for listing in the National Register of Historic Places,
- Listed in or eligible for listing in the California Register of Historical Resources,
- Has been identified as significant for purposes of the California Environmental Quality Act (CEQA) by the lead agency because it meets the eligibility criteria of the California Register,
- Is listed in a local register of historical resources or has been identified as significant in an historical resource survey meeting the California Office of Historic Preservation’s standards.

Path or Pathway: A track or route along which people are intended to travel [*Designing Sidewalks and Trails for Access*].

Pedestrian: A person who travels on foot or who uses assistive devices, such as a wheelchair, for mobility [*Designing Sidewalks and Trails for Access*].

Public Right-of-Way: Public land or property, usually in interconnected corridors, that is acquired for or devoted to transportation purposes [PROWAG].

Sidewalk: A surfaced pedestrian way contiguous to a street used by the public [Title 24 11B-106.5]. Also, see the discussion in Section 4.3.1, “Surface” of this DIB.

State Highway: A traversable highway adopted as or designated in the Streets and Highways Code as a state highway.

Structurally Impracticable: Rare circumstances when the unique characteristics of terrain prevent the incorporation of accessibility features. [28 CFR 35.151(a)(2)(i)].

Technically Infeasible: With respect to an alteration of a building or a facility, something that has little likelihood of being accomplished because existing structural conditions would require removing or altering a load-bearing member that is an essential part of the structural frame; or because other existing physical or site constraints prohibit modification or addition of elements, spaces, or features that are in full and strict compliance with the minimum requirements. [2010 ADA Standards].

Transition Plan: Caltrans’ written commitment to accomplish ADA compliance in its services, programs, and activities.

Walk or Walkway: An exterior prepared surface for pedestrian use, including pedestrian areas such as plazas and courts. [2010 ADA Standards].

3.0 PROCEDURES

3.1 Applicability and Review Process

Every highway project (Capital and Maintenance; including all Encroachment Permit projects) within the State highway right-of-way, regardless of the project sponsor, that proposes to construct pedestrian facilities [See Section 4.1], must be designed in accordance with the policies and standards of this DIB. Accessibility design standards are listed in Section 4.3. Documentation of project compliance with this DIB will be at Ready-to-List (RTL) Certification (by checking the appropriate box on Section 4c of the RTL Certification Form), or at encroachment permit issuance, whichever is applicable.

If an accessibility design standard cannot be fully incorporated in a design, an accessibility design exception will be required. For an accessibility design exception to be approved, it will be necessary to document that, in the case of alterations to existing facilities, it is technically infeasible to do so. For new construction, the accessibility design standard must be structurally impracticable. Approval of accessibility design exceptions shall occur prior to project approval or as soon as the recommended alternative is identified. Accessibility design exceptions shall be documented, using the Exception to Accessibility Design Standards document format [See Attachment], and approved by the Design Coordinator. The Division of Engineering Services (DES) – Office of Transportation Architecture (OTA) will determine the compliance with accessibility design standards that pertain to building projects. Please note, the external site work not part of the building PS&E will be subject to the procedures in this DIB. OTA will provide ADA site design assistance for the Districts on building projects that they are responsible for designing.

3.2 Rail and Transit Stations

Approval authority for accessibility design of rail and transit stations rests with DSA and must occur by RTL or encroachment permit issuance. The appropriate filing fees [See Section 3.2.1] and a completed application form [See www.documents.dgs.ca.gov/dsa/forms/DSA-1.pdf] need to be transmitted to DSA along with the title sheet and pertinent project plans that show the details of the rail or transit station facilities being altered or newly constructed. DSA's office locations are listed on their website at:

www.dgs.ca.gov/dsa/AboutUs/contact.aspx

An Exception to Accessibility Design Standards document [See Attachment] must also be submitted as supplemental information when an exception is being requested to the accessibility design standards listed in Section 4.3 of this DIB. The DSA Regional Office will need to be contacted to discuss these details and confirm their specific requirements. Early submittal to DSA is recommended once enough design information, such as layouts, cross sections, profiles, construction details, etc. are developed and it is certain that the pedestrian facility design will not change. In the event of disagreement with the DSA Regional Office, DSA has an appeal process, which may invoke the involvement with their Headquarters DSA Office. The Headquarters Division of Design ADA Technical Specialist should be contacted immediately to assist with the negotiations and to contact the FHWA California Division Office for their assistance in resolving the issue(s). The DSA Regional Office normal review process is expected to take between 30 and 60 days from application submittal until receipt of their approval letter. Approval letters will be sent by DSA to the Project Engineer for incorporation into the project history files. DSA will stamp copies of the plan sheets that have been sent to them for their use during the project review and will retain them for their records.

3.2.1 Filing Fees for Rail and Transit Station Projects

Filing fees are to be calculated according to the fee schedule as prescribed in the *California Building Code* and as administered by DSA. The DSA website provides a fee calculator to determine the filing fee [See www.apps.dgs.ca.gov/tracker/FeeCalculator.aspx]. The fees to be paid by Caltrans can be authorized by completing the "Request for Revolving Fund Check" form (FA-0017). This form should indicate that the "Vendor" is DSA and that the expenditure is to be charged against the Project ID and the appropriate Object Code. The check can be mailed directly to the DSA Regional Office, if requested on the form. On the form, under "Purpose," indicate that this payment is for the DSA filing fee and reference the District and Project ID. The District and Project ID will then be referenced on the check for identification purposes. The completed form FA-0017 should then be mailed to Mail Station 25 (MS 25) or faxed (916-227-8766) to the Division of Accounting, Service Payables Branch, Alpha G. The completed DSA

application form for the project must be sent with this form to substantiate payment. It is anticipated that it should not take more than 5 working days to obtain this check.

4.0 DESIGN GUIDANCE AND BEST PRACTICES FOR PEDESTRIAN FACILITIES

4.1 Pedestrian Accessibility

All pedestrian facilities on all projects are to be accessible in accordance with State and Federal laws. The following guidance and best practices capture the lessons learned through the years since the passage of the ADA and to document the Federal and State regulatory standards that apply. Early consultation with the Design Coordinator is recommended to discuss pedestrian accessibility issues and their resolution. In addition, for safety roadside rest facilities, vista points, and park and ride facilities, early consultation is recommended with the Landscape Architecture Program District Coordinator.

4.1.1 New Construction

Federal regulations require that each facility or part of a facility constructed on State right-of-way shall be designed and constructed in such a manner that the facility or part of the facility is readily accessible to and usable by individuals with disabilities.

4.1.2 Alterations

Federal regulations require that each facility or part of a facility altered in the State right-of-way in a manner that affects or could affect the usability of the facility or part of the facility shall, to the maximum extent feasible, be altered in such manner that the altered portion of the facility is readily accessible to and usable by individuals with disabilities.

Where existing elements, spaces, or facilities are altered, each altered element, space or facility within the scope of the project shall comply with the applicable requirements for new construction. The work that will physically impact a pedestrian feature is due to the scope of the project identified in the project initiation document or the project report.

More specifically, the following types of highway work are considered to be alterations of existing facilities:

1. Pavement Reconstruction. For more information, see Chapter 600 of the *Highway Design Manual*.
2. Pavement focused (2R) and resurfacing, restoration, and rehabilitation (3R) work. For additional guidance see DIB 79 – “Design Guidance and Standards for Roadway Rehabilitation Projects [Pavement Focused (2R) and Resurfacing, Restoration, and Rehabilitation (3R) Projects] . . .”
3. Capital Preventive Maintenance (CAPM) projects. For additional guidance see DIB 81 – “Capital Preventive Maintenance (CAPM) Guidelines.”
4. Major Maintenance, HM-1 Program (Pavement), thin overlay projects or projects to place open-graded surface course, microsurfacing, cape seals, and in-place asphalt recycling. For additional guidance see Highway Maintenance Guidelines (Maintenance Policy Directives).
5. Any work that physically impacts existing curb ramps.

Regarding items 1 through 5, for the intersections that are altered, existing nonstandard curb ramps will be required to be reconstructed to current standards; and where missing, curb ramps are to be constructed where there are sidewalks or other pedestrian facilities. Additionally, item 1 will require the marked crosswalk (or unmarked crosswalk to pedestrian facilities) cross slope and grade to be reconstructed to current standards. Item 2 will require the marked crosswalk (or unmarked crosswalk to pedestrian facilities) grade to be reconstructed to current standards. Routine maintenance work is not considered to be

an alteration and may be designed following the guidance in this DIB, but they are not required to unless the work significantly affects a pedestrian facility.

4.1.3 Accessibility Requirements on 2R, 3R, and CAPM Projects

2R, 3R, and CAPM projects are SHOPP funded pavement projects that have specific program requirements for the inclusion of safety and operational improvements. Other improvements may supplement the minimum accessibility requirements in Section 4.1.2, such as, including sidewalk and driveway corrections. The accessibility needs of the communities and highway users, in particular the needs of users with disabilities, need to be considered on each 2R, 3R, and CAPM project. Early stakeholder participation, as appropriate, to identify accessibility deficiencies is recommended.

Any pedestrian facility work that needs to be completed outside of the scope of a 2R, 3R, or CAPM project should be added to the Transition Plan through the following process. The pedestrian facility needing accessibility improvements must be specifically identified and documented by memorandum to the project history file. The District ADA Engineer needs to be contacted and involved in submitting this information. Externally sponsored work that is not being designed by Caltrans is not exempt from this requirement. The Caltrans representative that is working with the external sponsor for the work is required to contact the District ADA Engineer and assist the external partner in submitting any work for inclusion in the Caltrans Transition Plan.

4.1.4 Minimum Accessibility

Newly constructed or altered (see Section 4.1.2) streets, roads, and highways must contain curb ramps or other sloped areas at any intersection having curbs or other barriers to entry from a street level pedestrian walkway. This context refers to entry to a sidewalk or pedestrian path from a street level pedestrian walkway.

To the maximum extent feasible, at least one accessible route must be provided from one facility to another. If a more direct route exists that is not an accessible route, the accessible route must be in the same vicinity as the other route.

Whether the project is for new construction or for an alteration of an existing facility, full compliance with the design standards contained herein are not required where it can be demonstrated that it is structurally impracticable (for new construction) or technically infeasible (for alterations projects) to meet the requirements. An exception would be required as explained in Section 3.1. Any portion of the new facility that can be made accessible to persons with disabilities shall comply to the extent that it is not structurally impracticable. Also, any elements or features of the facility that are being altered and can be made accessible shall be made accessible within the scope of the alteration. Regarding scope, a more extensive discussion is provided in the Appendix of this DIB.

4.1.5 Historic Preservation

In meeting the aforementioned requirements of “Minimum Accessibility,” a design that would alter or destroy the historic significance of a historic property/historical resource should not be constructed. Historic property/historical resource is any property listed or eligible for listing in the National Register of Historic Places, or properties designated as historic under State or local law. In order to comply with Public Resources Code 5024 and CEQA, the District Heritage Resources Coordinator should be contacted as early as possible in the planning process in order to initiate the required consultation. Non-construction strategies may be an option. See Section 4.1.6, “Program Accessibility” of this DIB.

The fourth item under Section 4.3.7 in this DIB may be used to maintain historic preservation of a historic property/historical resource based on the California State Historic Building Code, which is the mandatory

code for State-owned historical resources. An approved accessibility design exception must be obtained to use this standard. Additionally, consultation with the State Historical Building Safety Board is required

4.1.6 Program Accessibility

In some situations, an operational solution may achieve accessibility without the need for construction. Alterations to existing facilities do not have to be made accessible if other methods of providing access are effective. Non-construction approaches may include alternate accessible routings, relocating services or activities to accessible locations, or taking the service or benefit directly to the individual. Coordination with local agencies, transit agencies, or other affected entities may be required to achieve these strategies.

4.2 Placement of Pedestrian Facilities

Vehicular lanes and shoulders are not required to be designed as accessible pedestrian routes. Where vehicular lanes and shoulders are intended by Caltrans for pedestrian use, thus rendering them walkways, they shall be made accessible.

Deciding to construct pedestrian facilities and elements where none exist is an important consideration. In built-up urban areas with pedestrians present, pedestrian facilities should be constructed. In rural areas where few or no pedestrians exist, it may not be reasonable or cost effective to construct pedestrian facilities. For situations between these two extremes the designer should consult with the affected local agency, and special interest groups. Any decision made should be clearly documented in the Project History Files.

All pedestrian facilities proposed within the State highway right-of-way shall follow the guidance in Chapter 31 “Non-motorized Transportation Facilities” in the *Project Development Procedures Manual*. Pedestrian facilities proposed by non-Departmental entities within State highway access controlled right-of-way shall also comply with Chapter 17 “Encroachments in Caltrans’ Right of Way,” in the *Project Development Procedures Manual*.

4.3 Accessibility Design Standards

The most current version of the *Standard Plans* (this includes Revised Standard Plans) for Curbs and Driveways A87A, Curb Ramp Details A88A, Curb Ramp and Island Passageway Details A88B, Accessible Parking Off-Street A90A, and Accessible Parking On-Street A90B should be used for designing accessible facilities. The *Standard Plans* are used for commonly designed accessible features and are consistent with this DIB. Curb ramps or pedestrian paths in the *Standard Plans* contain conservative slopes and widths (not the same slopes and widths as in this DIB) and may be used where the designer has determined that due to relatively flat terrain and ample space these conservative designs are realistically attainable. However, where the designer has determined that due to existing grades and space constraints the *Standard Plans* may not achieve accessibility, a Construction Detail according to the standards and best practices of this section should be developed. Construction Details for curb ramps and driveway crossings designed as part of the pedestrian route should specify the slopes and dimensional widths that require contractor surveys (see the PS&E section of the Appendix and the *Plans Preparation Manual* for further guidance). In many cases, designing to the maximum slope or minimum width is unnecessary. The concept of designing using conservative slopes and widths is recommended. Modifying the features shown on the *Standard Plans* or designing pedestrian facilities not covered by the *Standard Plans*, such as in a Construction Detail, shall be in accordance with the following standards and best practices. Following each accessibility design standard is a reference to the applicable Federal and/or State regulation.

4.3.1 Surface

- (1) All surfaces on an accessible route shall be stable, firm, and slip resistant.
[2010 ADA Standards 302.1 and Title 24 11B-302.1]
- (2) Changes in level up to ¼ inch may be vertical and without edge treatment.
[2010 ADA Standards 303.2 and Title 24 11B-303.2]
- (3) Changes in level between ¼ inch and ½ inch shall be beveled with a slope no greater than 1V:2H.
[2010 ADA Standards 303.3 and Title 24 11B-303.3]
- (4) Changes in level greater than ½ inch shall be accomplished by means of a ramp.
[2010 ADA Standards 303.4 and Title 24 11B-303.4]

Surface types on State right of way can vary due to the type of facility served. Normally, sidewalks are made of Portland cement concrete, or in some situations asphalt concrete. Surface type selection is a decision made by the designer. Design factors to consider for surface materials are discussed in *Designing Sidewalks and Trails for Access*.

The use of paving units, stamped concrete, or stamped asphalt concrete, although within the surface uniformity requirements of an accessible route, could lead to a vibration effect causing repeated jarring to a wheelchair user. No roughness index exists for walkways, as it does for roadway surfaces. Until such guidance becomes available, engineering judgment must be used; the Design Reviewer or Traffic Operations Liaison can be consulted for further assistance. As a general rule, cobblestone or similar treatments should not be used. It should be noted that the change in level standards in (2) and (3) does not apply to the curb ramp – gutter transition; it should be flush (no lip).

If paving units are used, they must meet the specification requirements of the American Society for Testing and Materials (ASTM) C936.

All walkway surfaces shall have a broom finish texture or an equivalent. A broom finish surface is described in Section 73 of the current *Standard Specifications*. Regardless of surface type, if the walkway encroaches onto a roadway, as in the case of a crosswalk, the surface must have a coefficient of friction not less than 0.35 as determined by using California Test Method 342.

At present, no particular color requirement is prescribed in Federal guidelines for an accessible route; see the Detectable Warning Surface section of this DIB regarding the color specification. However, material used to provide contrast of detectable warnings on walkway surfaces should have a contrast of at least 70%. This contrast is intended to assist the visually impaired pedestrian. This contrast is calculated by $[(B1-B2)/B1] \times 100$, where B1=light reflectance value (LRV) of the lighter area, and B2=light reflectance value (LRV) of the darker area. Visual contrast can be quantified with a luminance meter that measures the amount of light reflected by each subject (where zero is total darkness and 100 is theoretical complete light reflection). This contrast may be used to distinguish elements of a walkway, such as to differentiate a curb ramp from the sidewalk, or the crosswalk from the rest of the pavement. Also, crosswalk or sidewalk surfacing shall not cause glare to the user. Colored pavement or paving units are not to be used in lieu of striping for marked crosswalks.

4.3.2 Vertical Clearance

- (1) Vertical clearance shall be 80 inches high minimum.
[2010 ADA Standards 307.4 and Title 24 11B-307.4]

It should be noted that the Federal and California State version of the *Manual on Uniform Traffic Control Devices (MUTCD)* requires a vertical clearance at pedestrian pathways to the bottom of signs to be at least

7 feet. This will meet most pedestrian vertical clearance needs. Pedestrian pathways that are part of a shared facility, i.e., bicyclists and equestrians, shall follow the appropriate guidance in the *Highway Design Manual*. See Section 4.4, “Shared Facilities” of this DIB for further information.

4.3.3 Clear Width

See the *Highway Design Manual (HDM)* Index 105.2 for the discussion and Advisory Design Standard, of sidewalk width. In many locations, local agency sidewalk standards will require greater widths; which can provide even greater accessibility than the minimum standard stated in the *HDM*. If for a specific project this is the case, the local agency standard should be used. Street furniture, signs, above ground utilities and poles, business frontage needs, street landscaping, etc. should all be placed outside of the clear width of a sidewalk.

In addition to the standards referenced above, the following Accessibility Design Standards are to be followed:

- (1) If an accessible route has less than 60 inches clear width, then passing spaces at least 60 inches by 60 inches shall be located at intervals not to exceed 200 feet.
[2010 ADA Standards 403.5.3 and Title 24 11B-403.5.3]
- (2) The clear width for sidewalks and walks shall be 48 inches minimum, exclusive of the width of the curb.
[Title 24 11B-403.5.1.3 and PROWAG R302.3]
- (3) When, because of right-of-way restrictions, natural barriers or other existing conditions, the enforcing agency determines that compliance with the 48-inch clear sidewalk width would create an unreasonable hardship, the clear width may be reduced to 36 inches.
[Title 24 11B-403.5.1.3]

Regarding (3) above, an unreasonable hardship must be concurred with by the Design Coordinator and documented using the Exception to Accessibility Design Standards format (see attached). In the exception document under Reason for Exception, the following factors for an unreasonable hardship are to be discussed for each location: 1) the cost of providing access, 2) the impact of proposed improvements on financial feasibility of the project, 3) the nature of the accessibility which will be gained or lost, and 4) the nature of the use of the facility under construction and its availability to persons with disabilities.

4.3.4 Grade

- (1) All walks with continuous gradients shall have resting areas, 5 feet in length, at intervals of 400 feet maximum.
[Title 24 11B-403.7]
- (2) Where pedestrian access routes are contained within a street or highway right-of-way, the grade of pedestrian access routes shall not exceed the general grade established for the adjacent street or highway. Where pedestrian access routes are not contained within a street or highway right-of-way, the grade of pedestrian access routes shall be 5.0% maximum.
[PROWAG R302.5]
- (3) When pedestrian access routes are contained within pedestrian street crossings, the grade of the pedestrian route shall be 5.0% maximum.
[PROWAG R302.5.1]

The accessibility standard in (1) above does not apply to sidewalks, but (2) does. The grade or slope of an accessible route should be as flat as possible. Since exterior facilities must drain, a walkway can be at 2.0% and still be considered level. The practical use of the accessibility standard in (1) above is thus applied for grades exceeding 2.0%; the “resting areas” are considered level, not exceeding 2.0%. Any part

of an accessible route with a slope greater than 1V:20H (5.0%) shall be considered a ramp, and must comply with the standards of a ramp. See Section 4.3.7 of this DIB, "Ramps," for further information.

A profile of the pedestrian pathway should be developed to ensure compliance with grade and other design parameters.

4.3.5 Cross Slope

- (1) Except as provided in Section 4.3.5(2) and (3), the cross slope of pedestrian access shall be 2.0% maximum.
[PROWAG R302.6]
- (2) Where pedestrian access routes are contained within pedestrian street crossings without yield or stop control, the cross slope of the pedestrian access route shall be 5.0% maximum.
[PROWAG R302.6.1]
- (3) Where pedestrian access routes are contained within midblock pedestrian street crossings, the cross slope of the pedestrian access route shall be permitted to equal the street or highway grade.
[PROWAG R302.6.2]

Drainage is always a design consideration for exterior facilities. Walkways shall be designed so that water will not accumulate on the surface. "Yield or stop control" refers to yield or stop signs for the State highway traffic movement.

4.3.6 Grates and Railroad Tracks

- (1) If gratings are located in walks, then they shall have spaces no greater than ½ inch in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel.
[2010 ADA Standards 302.3 and Title 24 11B-302.3]
- (2) Where a path crosses tracks, the opening for wheel flanges shall be permitted to be 2-½ inches maximum.
[2010 ADA Standards 810.10 and Title 24 11B-810.10 Exception]

Walks shall be free of grating whenever possible.

4.3.7 Ramps

- (1) Slopes that are greater than 1V:20H (5.0%) will be considered ramps and must not exceed a 30-inch rise without landings.
[2010 ADA Standards 106.5, 405.6 and Title 24 11B-403.3, 11B-405.6]
- (2) The maximum slope of a ramp shall not exceed 1V:12H (8.3%).
[2010 ADA Standards 405.2 and Title 24 11B-405.2]
- (3) The cross slope of ramp surfaces shall be no greater than 2.0%.
[2010 ADA Standards 405.3 and Title 24 11B-405.3]
- (4) In the case of a historic property/historical resource, ramps no greater than 1V:10H, cannot exceed a horizontal distance of 5 feet. Or, ramps of 1V:6H slope cannot exceed a horizontal distance of 13 inches. Signs shall be posted at upper and lower levels to indicate steepness of the slope.
[Title 24 8-603.6]

This standard should only be used with an approved exception.

It should be noted that a sidewalk is not bound by the requirements of a ramp. Curved (or helical) ramps shall be subject to the same design standards as straight ramps. However, because of the complexity,

curved ramps should not be constructed if a straight ramp can accomplish the same accessibility. If a curved ramp is sloped at the maximum 1V:12H (8.3%), then the minimum radius needed is 50 feet; otherwise, a smaller radius will provide a path that exceeds the maximum 2.0% cross slope. Table 4.3.7 shows the minimum radius required for a given ramp slope:

TABLE 4.3.7 – HELICAL RADIUS REQUIREMENTS

Slope	Minimum Radius Required to Inner Side of Ramp
5.0%	30 feet
8.3%	50 feet

4.3.8 Curb Ramps

The most common curb ramps are the perpendicular (Case A) and the parallel (Case C); these standards and their variations are contained in the *Standard Plans*. The blended transition is also acceptable, although not shown in the *Standard Plans*; it would require a Construction Detail. See the Appendix for a graphical representation of these curb ramps.

- (1) Perpendicular and parallel curb ramps shall have a running slope not steeper than 1V:12H (8.3%) maximum but shall not require the ramp length to exceed 15 feet. Blended transitions shall have a running slope not steeper than 1V:20H (5.0%).
[2010 ADA Standards 406.1, 405.2 and Title 24 11B-406.2.1, 406.3.1, 406.4.1, PROWAG R304.2.2, R304.3.2 and R304.4.1]
- (2) The clear width of curb ramp runs (excluding any flared sides), blended transitions, and turning spaces shall be 48 inches minimum.
[Title 24 11B-406.5.2]
- (3) Landings shall be provided at the tops of curb ramps and blended transitions. The landing clear length shall be 48 inches minimum. Exception: parallel curb ramps shall not be required to comply with the top landing requirement.
[2010 ADA Standards 406.4 and Title 24 11B-406.5.3 including Exception]
- (4) Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1V:20H (5.0%). The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
[2010 ADA Standards 406.2 and Title 24 11B-406.5.8]
- (5) Where provided, curb ramp flares shall not be steeper than 1V:10H (10.0%).
[2010 ADA Standards 406.3 and Title 24 11B-406.2.2]
- (6) Diagonal curb ramps with flared sides shall have a segment of curb 24 inches long minimum located on each side of the curb ramp and within the marked crossing.
[2010 ADA Standards 406.6 and Title 24 11B-406.5.10]
- (7) Diagonal curb ramps provided at marked crossings shall provide the 48 inches minimum clear space within the markings.
[2010 ADA Standards 406.6 and Title 24 11B-406.5.9]
- (8) The cross slope of curb ramps, blended transitions, and turning spaces (landings) shall be 2.0% maximum. At pedestrian street crossings without yield or stop control and at midblock pedestrian street crossings, the cross slope shall be permitted to equal the street or highway grade.
[PROWAG R304.5.3]

Regarding (6) above, this standard applies only on flared sides, such as the Case A curb ramp (see Detail B of Standard Plan A88A); the Case C curb ramp and others without flares are not subject to this standard.

Regarding (8) above, the designer should strive to hold a 2.0% cross slope before deciding to match the street or highway grade. In most cases, the 2.0% can be held and a detail would be needed to show the transition and pavement/sidewalk conformance. To accomplish this, the gutter pan must be warped before additional slope, beyond the 2%, is introduced outside of the curb ramp itself (on the pavement and sidewalk). The crosswalk must comply with Section 4.3.5 (also see Section 4.1.2); therefore, cross slope of curb ramps should not exceed that of the crosswalk regardless of roadway profile grade.

Standard Plan A88A shows the illustration of curb ramps that may apply to curved alignments on a corner or on a tangent. The ramp width shall be consistent with the width of an accessible route. Flares are needed if the curb ramp is located where pedestrians may traverse across the ramp.

The Federal recommendation found in Part II of *Designing Sidewalks and Trails for Access* is for curb ramps to be aligned perpendicular to curb face. However, directional curb ramps may be designed by the use of a construction detail that shows a bottom grade break perpendicular to crosswalk travel.

In addition to the curb ramp slope, the cross slope of a sidewalk will determine the horizontal length of the curb ramp run, since anything more than a flat surface (no slope) will require more length to intercept the sidewalk surface. Table 4.3.8 can be used as a design aide when the sidewalk has a 2.0% cross slope.

TABLE 4.3.8 – Curb Ramp Runs for Sidewalks with 2.0% Cross Slopes

Height of Curb Face	Curb Ramp Run (Horizontal Length)
4 inches	63 inches
5 inches	78 inches
6 inches	95 inches
7 inches	111 inches
7-½ inches	118-½ inches
8 inches	126 inches

4.3.9 Medians and Islands

- (1) Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides.

[2010 ADA Standards 406.7]

The width of the cut through raised medians or islands should be consistent with the widths required in Section 4.3.3 in this DIB. Since the cut for the path through the raised median or island is adjacent to traffic and without a “barrier,” it must have a detectable warning surface as described in Section 4.3.14 in this DIB. The detectable warning surface width and placement shall follow the details in Standard Plan A88B.

4.3.10 Handrails

Handrails are not required on curb ramps or along sidewalks. In all other situations, the following applies:

- (1) Ramp runs with a rise greater than 6 inches shall have handrails. Handrails shall be provided on both sides of stairs and ramps.

[2010 ADA Standards 405.8, 505.2 and Title 24 11B-505.2]

- (2) Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights and runs.

[2010 ADA Standards 505.3 and Title 24 11B-505.3]

- (3) Clearance between handrail gripping surfaces and adjacent surfaces shall be 1-½ inches minimum.
[2010 ADA Standards 505.5 and Title 24 11B-505.5]
- (4) Gripping surfaces shall be continuous.
[2010 ADA Standards 505.6 and Title 24 11B-505.6]
- (5) Top of handrail gripping surfaces shall be mounted between 34 inches and 38 inches above ramp surface.
[2010 ADA Standards 505.4 and Title 24 11B-505.4]
- (6) Handrails shall not rotate within their fittings.
[2010 ADA Standards 505.9 and Title 24 11B-505.9]
- (7) Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1¼ inches minimum and 2 inches maximum. Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches minimum and 6¼ inches maximum, and a cross-section dimension of 2¼ inches maximum.
[2010 ADA Standards 505.7.1, 505.7.2 and Title 24 11B-505.7.1, 505.7.2]
- (8) Ramp handrails shall extend horizontally above the landing for 12 inches minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent ramp run.
[Title 24 11B-505.10.1]

4.3.11 Warning Curb and Guard

Guard as used in this section is defined in the *California Building Code* [Title 24 202] as a building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to the lower level. It should be noted that a guard is not an accessibility design feature and not subject to the ADA. A guard is a fire and life safety design feature for elevated pedestrian paths. The guard standards in this DIB do not apply to bridge structures and railings. The Division of Engineering Services guidance on bridge structures applies.

- (1) Abrupt changes in level exceeding 4 inches in a vertical dimension between walks, sidewalks or other pedestrian ways and adjacent surfaces or features shall be identified by warning curbs at least 6 inches in height above the walk or sidewalk surface. Exception: a warning curb is not required between a walk or sidewalk and an adjacent street or driveway.
[Title 24 11B-303.5 including Exception #1]
- (2) A warning curb is not required when a guard or handrail is provided with a guide rail centered 2 inches minimum and 4 inches maximum above the surface of the walk or sidewalk.
[Title 24 11B-303.5 Exception #2]
- (3) Guards shall be located along open-sided walking surfaces, including mezzanines, equipment platforms, stairs, ramps and landings that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side.
[Title 24 1013.2]
- (4) Required guards shall not be less than 42 inches high, measured vertically as follows: 1) From the adjacent walking surfaces; 2) On stairs, from the line connecting the leading edges of the tread nosings; and 3) On ramps, from the ramp surface at the guard.
[Title 24 1013.3]

- (5) Required guards shall not have openings which allow passage of a sphere 4 inches in diameter from the walking surface to the required guard height.
[Title 24 1013.4]

Chain link fence Type CL-4 satisfies the requirements of a guard, see the *Standard Plans* for details.

4.3.12 Curb or Barrier

Where the ramp surface is not bounded by a wall, the ramp shall comply with the following requirements:

- (1) A curb, 2 inches high minimum, or barrier shall be provided that prevents the passage of a 4 inch diameter sphere, where any portion of the sphere is within 4 inches of the finish floor or ground surface. To prevent wheel entrapment, the curb or barrier shall provide a continuous and uninterrupted barrier along the length of the ramp.
[2010 ADA Standards 405.9.2 and Title 24 11B-405.9.2]

This requirement is not applicable to sidewalks or curb ramps.

4.3.13 Landings

A level landing is allowed to be sloped up to 2.0% to accommodate drainage. For curb ramp landing guidance, see Section 4.3.8 of this DIB. This DIB does not discuss the situation where a door opens onto a landing at a building entrance. For this situation, as well as with any building egress design, refer to the Office of Transportation Architecture in the Division of Engineering Services. DSA may review and approve building entrance design in combination with the State highway rights-of-way. Processing plans through DSA would be similar to the process described in Sections 3.2 and 3.2.1 of this DIB.

Landings shall be designed as following:

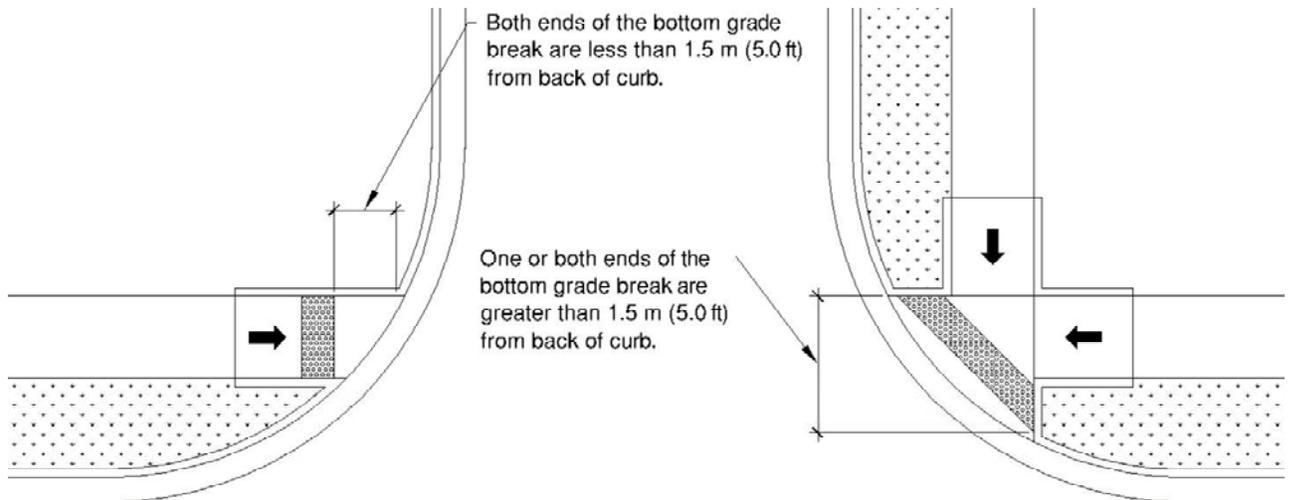
- (1) Ramps shall have landings at the top and the bottom of each ramp run.
[2010 ADA Standards 405.7 and Title 24 11B-405.7]
- (2) The landing clear width shall be at least as wide as the widest ramp run leading to the landing.
[2010 ADA Standards 405.7.2 and Title 24 11B-405.7.2]
- (3) The landing clear length shall be at least 60 inches long minimum. However, the bottom landing length shall be not less than 72 inches.
[2010 ADA Standards 405.7.3 and Title 24 11B-405.7.3, 11B-405.7.3.1]
- (4) Top landings shall be not less than 60 inches wide.
[Title 24 11B-405.7.2.1]
- (5) Ramps that change direction between runs at landings shall have a clear landing 60 inches minimum by 72 inches minimum in the direction of downward travel from the upper ramp run.
[2010 ADA Standards 405.7.4 and Title 24 11B-405.7.4]

4.3.14 Detectable Warning Surface

- (1) Detectable warnings at hazardous vehicular areas shall be 36 inches in width.
[Title 24 11B-705.1.2.5]
- (2) On perpendicular curb ramps, detectable warning surfaces shall be placed as follows (also see figure below):
 - (a) Where the ends of the bottom grade break are in front of the back of curb, detectable warning surfaces shall be placed at the back of curb.

- (b) Where the ends of the bottom grade break are behind the back of curb and the distance from either end of the bottom grade break to back of curb is 5.0 ft or less, detectable warning surfaces shall be placed on the ramp run within one dome spacing of the bottom grade break.
- (c) Where the ends of the bottom grade break are behind the back of curb and the distance from either end of the bottom grade break to the back of curb is more than 5.0 ft, detectable warning surfaces shall be placed on the lower landing at the back of curb.

[PROWAG R305.2.1]



Detectable warnings on curb ramps shall consist of raised truncated domes with the 3 foot depth and full width standard shown on Standard Plans A88A, A88B, A90A, and A90B. Detectable warning products generally come in a 4 foot width; this width meets the full width intent when placed on the 4 foot 2 inch curb ramp width shown on the Standard Plans. Additionally, Section 73 of the *Standard Specifications* contains the color, warranty, and Authorized Material List specifications for detectable warning surfaces. Detectable warning surfaces are not normally placed at driveways. However, in some cases driveways at high traffic generators are designed similarly to street intersections; including curb returns and curb ramps. Detectable warning surfaces may be necessary in these instances.

4.3.15 Grooves

- (1) Curb ramps shall have a grooved border 12 inches wide along the top of the curb ramp at the level surface of the top landing and at the outside edges of the flared sides. The grooved border shall consist of a series of grooves $\frac{1}{4}$ inch wide by $\frac{1}{4}$ inch deep, at $\frac{3}{4}$ inch on center. Exceptions: 1) At parallel curb ramps, the grooved border shall be on the upper approach immediately adjacent to the curb ramp across the full width of the curb ramp. 2) A grooved border shall not be required at blended transitions.

[Title 24 11B-406.5.11 including Exceptions]

See Standard Plan A88A for grooving detail.

4.3.16 Bus Stops

- (1) Bus Stop boarding and alighting areas shall provide a clear length of 96 inches minimum, measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches minimum, measured parallel to the vehicle roadway.
[2010 ADA Standards 810.2.2 and Title 24 11B-810.2.2]
- (2) Where provided, new or replaced bus shelters shall be installed or positioned so as to permit a wheelchair or mobility aid user to enter from the public way and to reach a location, having a minimum clear floor area of 30 inches by 48 inches, entirely within the perimeter of the shelter.
[2010 ADA Standards 305.3 and Title 24 11B-810.3]
- (3) Bus stop boarding and alighting areas shall be connected to streets, sidewalks, or pedestrian paths by an accessible route. Newly constructed bus stop pads shall provide a square curb transition between the pad and roadway elevations or detectable warnings.
[Title 24 11B-810.2.3]
Caltrans Type A or B curb, will satisfy the square curb requirement. See *Standard Plans*.
- (4) Parallel to the roadway, the slope of the bus stop boarding and alighting area shall be the same as the roadway, to the maximum extent practicable. Perpendicular to the roadway, the slope of the bus stop boarding and alighting area shall not be steeper than 2.0%.
[2010 ADA Standards 810.2.4 and Title 24 11B-810.2.4]

4.3.17 Parking

The following applies to off street accessible parking.

- (1) For off street parking, Table 4.3.17 establishes the number of accessible parking spaces required.
[2010 ADA Standards 208.2 and Title 24 11B-208.2]
- (2) For every six or fraction of six accessible parking spaces, at least one shall be a van parking space.
[2010 ADA Standards 208.2.4]
- (3) Car and van parking spaces shall be 216 inches (18 ft) long minimum. Car parking spaces shall be 108 inches (9 ft) wide minimum and van parking spaces shall be 144 inches (12 ft) wide minimum, shall be marked to define the width, and shall have an adjacent access aisle. Exception: Van parking spaces shall be permitted to be 108 inches (9 ft) wide minimum where the access aisle is 96 inches (8 ft) wide minimum.
[Title 24 11B-502.2 including Exception]
- (4) Access aisles serving car and van parking spaces shall be 60 inches wide minimum.
[2010 ADA Standards 502.3.1 and Title 24 11B-502.3.1]
- (5) Access aisles shall be at the same level as the parking spaces they serve. Changes in level are not permitted. Exception: Slopes not steeper than 2.0% shall be permitted.
[2010 ADA Standards 502.4 including Exception and Title 24 11B-502.4 including Exception]

Parking spaces that serve a particular building or facility shall be located on the shortest accessible route from the parking to an entrance. Where parking serves more than one accessible entrance, parking spaces shall be dispersed and located on the shortest accessible route to the accessible entrances. In parking

facilities that do not serve a particular building or facility, parking spaces shall be located on the shortest accessible route to an accessible pedestrian entrance of the parking facility.

In each parking area, a bumper or curb shall be provided and located to prevent encroachment of cars over the required width of walkways. Also, the space shall be so located that persons with disabilities are not compelled to wheel or walk behind parked cars other than their own. Pedestrian ways which are accessible to persons with disabilities shall be provided from each such parking space to related facilities, including curb cuts or ramps as needed. Ramps shall not encroach into any accessible parking space or the adjacent access aisle.

TABLE 4.3.17 – OFF STREET ACCESSIBLE PARKING SPACE REQUIREMENTS

Total Number of Parking Spaces Provided in Parking Facility	Minimum Number of Required Accessible Parking Spaces
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1,000	See Note 1
1,001 and over	See Note 2

Notes:

1. Two percent of total.
2. Twenty plus one for each 100, or fraction thereof, over 1,000.

Signing and striping for on and off street parking shall conform to the design details shown on Standard Plans A90A and A90B. Consult with the Division of Traffic Operations Liaison regarding proposed signing and striping changes.

4.3.18 Trails

Trails within the State highway right of way are considered to be pedestrian facilities if pedestrians may traverse the path, either for their exclusive use or shared with other users. Trails that are intended for nonpedestrian use only, e.g., equestrian or for mountain bikes, are not subject to the guidance in this section.

- (1) This DIB adopts the trail guidance provided within Sections 1016 through 1018 of the Federal Guide on “Outdoor Developed Areas” as found on the US Access Board website:

www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas

The provisions found on this website shall be regarded as design standards.

[Final Guidelines for Outdoor Developed Areas]

Any proposed exception to the design standards in the “Outdoor Developed Areas Guide” must make reference to those applicable sections in the exception request. The conditions described in Section 1019 Conditions for Exceptions may be used, as specified in the provisions, to support an exception.

4.3.19 Protruding Objects

- (1) Objects with leading edges more than 27 inches and not more than 80 inches above the finish floor or ground shall protrude 4 inches maximum horizontally into the circulation path. Exception: Handrails shall be permitted to protrude 4½ inches maximum.
[2010 ADA Standards 307.2 and Title 24 11B-307.2 including Exception]
- (2) Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches high. The leading edge of such guardrail or barrier shall be located 27 inches maximum above the finish floor or ground. Where a guy support is used parallel to a circulation path, including but not limited to sidewalks, a guy brace, sidewalk guy or similar device shall be used to prevent an overhanging obstruction.
[2010 ADA Standards 307.4 and Title 24 11B-307.4]
- (3) Free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches maximum when located 27 inches minimum and 80 inches maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches, the lowest edge of such sign or obstruction shall be 27 inches maximum or 80 inches minimum above the finish floor or ground.
[2010 ADA Standards 307.3 and Title 24 11B-307.3]
- (4) Protruding objects shall not reduce the clear width required for accessible routes.
[2010 ADA Standards 307.5 and Title 24 11B-307.5]

In general, street furniture or any item placed within the pedestrian environment must be cane detectable. Objects that protrude over a pedestrian pathway above a height of 27 inches are not considered detectable by cane. A critical zone, which is not considered detectable, is between 27 inches and 80 inches above the pedestrian pathway surface. Many transportation elements within the pedestrian pathway are cane detectable, such as electrical systems hardware, as specified in the Caltrans *Standard Plans*.

Where it is decided to prohibit pedestrian crossings at an intersection or ramp crossing, a pedestrian barricade per Standard Plan ES-7Q should be used. Consult with your Division of Traffic Operations Liaison for further guidance.

4.4 Shared Facilities

Pedestrian facilities that are part of nonmotorized transportation facilities must be designed in accordance with the *Highway Design Manual* for the appropriate bikeway classification, and the *Designing Sidewalks and Trails for Access* for best practice equestrian design.

Designers of pedestrian-shared facilities must consider the geometric requirements that are most critical for the intended users. In some cases designing for pedestrians may govern the geometric features. For example, a designated Class 1 bikeway may legally be used by pedestrians and bicycles. But, it may not be practical to design for both users at certain segments of the path. In such cases, appropriate documentation of the deviation from standard will either be required for a bicycle standard in Chapter 1000 of the *Highway Design Manual* or for a pedestrian accessibility standard in this DIB; consult with your Design Coordinator.

4.5 Alternate Standards

Federal regulations allow the use of other accessibility standards, if they provide substantially equivalent or greater access to the facility system, as the minimum Federal accessibility standards. Similarly, the *California Building Code* allows the enforcing agency to make design judgments as to equivalent designs.

Local Agency standards that provide equivalent or greater accessibility than the Federal 2010 ADA Standards and the *California Building Code* may be used in lieu of the minimum standards in this DIB. Those standards not in this DIB should be discussed with the Design Coordinator and the decision documented in the project files. In the case of a historic property/historical resource, use of the California State Historical Building Code is mandatory for State-owned facilities as well as consultation with the State Historical Building Safety Board.

4.6 Temporary Traffic Control

Temporary traffic control zones can impact a wide range of State highway users, including persons with disabilities. During the design phase, a decision must be made whether or not to include plans to accommodate pedestrians and/or special provisions consistent with the *California Manual on Uniform Traffic Control Devices (CA MUTCD)*. If plans and/or special provisions are provided for this purpose, the Transportation Management Plan Guidelines must be followed. If it is elected to close any sidewalk(s) due to construction and if it is elected to provide a temporary route for use by the public, the various provisions for pedestrian accommodation as set forth in the *CA MUTCD* Part 6 must be followed. For projects under construction, the Resident Engineer must discuss the provisions of the *CA MUTCD* with the contractor prior to the beginning of work during the preconstruction meeting, as required in the *Construction Manual*.

4.7 Exhibits

Pedestrian facilities that are part of nonmotorized transportation facilities may include vertical exhibit panels, wayside exhibits panels, and touchable exhibits. The following information is taken from the Programmatic Accessibility Guidelines for National Park Service Interpretive Media. This publication is available at www.nps.gov/hfc/accessibility/accessibilityGuideVersion2.1.pdf.

The smallest type in a vertical exhibit panel should be placed within a zone containing the range of eye level for a person in a wheelchair to a standing adult for a panel that must be approachable, with no physical barriers. This eye-level zone is approximately 40 inches to 60 inches from the finished grade. Adjustments would have to be made based on lighting conditions, colors, contrasts, layouts, and other design considerations. This typically applies to the body copy and photo caption type. If type cannot be placed at the appropriate eye level, increase readability with a larger type size, more leading, smaller line length, and/or more contrasting color and background.

Wayside exhibit panels shall be installed at heights and angles favorable for viewing by all visitors, including wheelchair users. For low-profile exhibits (angled at 30 or 45 degrees) the recommended height is 28 to 34 inches from the bottom of the exhibit frame to finished grade (based on the California State Parks Accessibility Guidelines); for upright exhibits and bulletin boards the height is 24 to 36 inches from the bottom of the exhibit frame to the finished grade, depending on the panel.

The following reach ranges refer to items briefly touched with one hand, such as a push button or small tactile exhibit or display:

- Reach Ranges: See Architectural Barriers Act Accessibility Standards 308 for more information, including children's reach ranges, obstructed/unobstructed reaches, and exceptions.
- Forward Reach (unobstructed): For touchable exhibits positioned unobstructed on a vertical surface, the high forward reach will be 44 inches maximum, and the low forward reach will be 16 inches minimum above the finished grade. These are common measurements for adults and children ages 9 and above.
- Side Reach (unobstructed): Where a clear floor space allows a parallel approach to a touchable exhibit and the side reach is unobstructed, the high side reach will be 44 inches maximum, and the low side reach shall be 16 inches minimum above the finished grade. These are common measurements for adults and children ages 9 and above.

Dist – Co – Rte
PM
Project ID or Encroachment Permit Number

EXCEPTION TO ACCESSIBILITY DESIGN STANDARDS



Prepared by:

(Name), Registered Civil Engineer³

Submitted by: _____
(Name), Design Engineer

Date: _____

Recommended by: _____
(Name), Project Manager

Date: _____

Concurrence¹ by: _____
(Name), Office Chief
Or District/Region Division Chief of Design

Date: _____

Approved² by: _____
(Name), Design Coordinator

Date: _____

Notes:

1. Must be a Supervising Transportation Engineer or higher Civil Service Engineering Classification.
2. Delete this signature line for Rail or Transit Station projects (DSA is the approving entity).
3. A Licensed Architect or Licensed Landscape Architect may prepare this document and sign and seal it in lieu of a Registered Civil Engineer, provided the same Licensed Architect or Licensed Landscape Architect designed the on-site improvements. Use the seal of the appropriate licensed person in responsible charge.

This documentation shall be filed in the district Project History Files. A copy shall be sent to Division of Design, Division Chief, attention Design Exception. Attach, as necessary, the information discussed in Item Number 3. At a minimum, the Exception to Accessibility Design Standards should contain the following sections:

1. Project Description

Describe the overall project scope and the proposed pedestrian facility design portion. Provide geographic project limits and lengths. Also, describe the existing highway facility as well as the existing pedestrian facilities.

If using an accessibility standard not listed in DIB 82-05, describe the accessibility standard and its reference of origin.

2. Project Costs

Provide the total capital cost estimate of the project. Also, provide an estimate of the capital cost of the proposed pedestrian features.

3. Nonstandard Feature(s)

Describe the nonstandard accessibility feature(s) to be constructed or to be maintained in an alteration. Provide sufficient information in written and graphic (layouts, cross sections, profiles, details, etc.) format to convey the extent of noncompliance with accessibility standards.

4. Standard(s) for Which Exception is Requested

State the accessibility standard from DIB 82-05.

5. Reason for Exception

The request for exception to accessibility design standards must state the reason why the facility or element is in whole or in part structurally impracticable (for new construction) or technically infeasible (for alterations) to comply with DIB 82-05 standards. Exceptions must be based on factors which may include historical significance, existing terrain, environmental issues, right of way constraints, conflicts with other design standards, and/or other significant considerations. Excessive cost may be supplemental information but cannot be used to support an exception related to a structural impracticability or technical infeasibility.

The four (4) factors for unreasonable hardships related to Clear Width, discussed in Section 4.3.3 of DIB 82-05, are to be documented in this section.

6. Work Required to Make Standard

Provide a description of the additional work in excess of the proposed project work required to meet the subject accessibility standard.

7. Reviews and Concurrence

As appropriate, provide the names of the Headquarters Design and District personnel who have discussed and concurred with this document; and include date of their concurrence.

Curb Ramp Scoping and Design Guide

A. Introduction

This guidance has been developed to assist designers of curb ramps to be familiar with design requirements and construction considerations for these facilities. Section 4.3 of this DIB contains the accessibility standards in accordance with the 2010 ADA Standards, which replaced the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG). The goal is to design fully accessible facilities. However, in certain circumstances where physical or project scope constraints prevent meeting strict compliance with the accessibility standards, the facilities may be designed to be compliant to the extent practicable as explained in this guide.

The *Highway Design Manual* (HDM), Index 105.5 provides a discussion on pedestrian movement, location of curb ramp placement, and the number of curb ramps at each corner. Also discussed in HDM Topic 401 is the pedestrian as a factor in design of intersections.

B. Project Scoping

Curb ramps may be included as part of the project scope and funded from many different sources. Generally, projects with curb ramp work are considered roadway alterations (see Section 4.1.2). The Clarification of FHWA's Oversight Role Memorandum, Questions and Answers Attachment at http://www.fhwa.dot.gov/civilrights/programs/ada_sect504qa.cfm#q1, dated September 12, 2006, states the following regarding project scope and alterations:

17. What projects constitute an alteration to the public right-of-way?

An alteration is a change to a facility in the public right-of-way that affects or could affect access, circulation, or use. Projects altering the use of the public right-of-way must incorporate pedestrian access improvements within the scope of the project to meet the requirements of the ADA and Section 504. These projects have the potential to affect the structure, grade, or use of the roadway. Alterations include items such as reconstruction, rehabilitation, widening, resurfacing (see USDOJ-FHWA technical assistance dated 6-28-13 for additional clarification), signal installation and upgrades, and projects of similar scale and effect (6-28-2013).

The draft implementing ADA regulations, Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), recognizes that existing highway grades built to the surrounding terrain are appropriate reasons for not building to full standard. Although this is currently a draft document, the FHWA has recommended this document as best practice guidance. The draft PROWAG says:

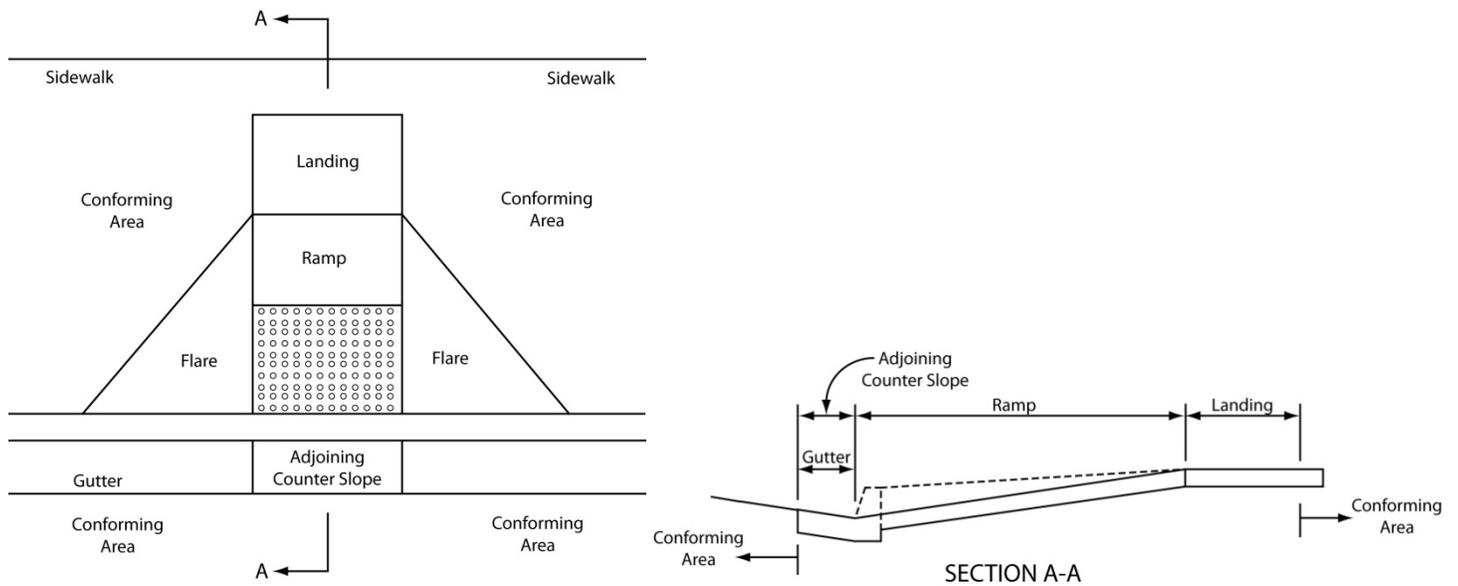
R202.3.1 Existing Physical Constraints. Where existing physical constraints make it impracticable for altered elements, spaces, or facilities to fully comply with the requirements for new construction, compliance is required to the extent practicable within the scope of the project. Existing physical constraints include, but are not limited to, underlying terrain, right-of-way availability, underground structures, adjacent developed facilities, drainage, or the presence of a notable natural or historic feature.

The ADAAG and its replacement, the 2010 ADA Standards, discusses how both physical constraints and limits of the project's scope may determine when ADA facilities may be considered "technically infeasible". Therefore, both the 2010 ADA Standards and the draft PROWAG allows for ADA improvements to be constructed to the extent technically feasible or practicable. The clear primary goal of each document is to construct accessible facilities in compliance with their standards.

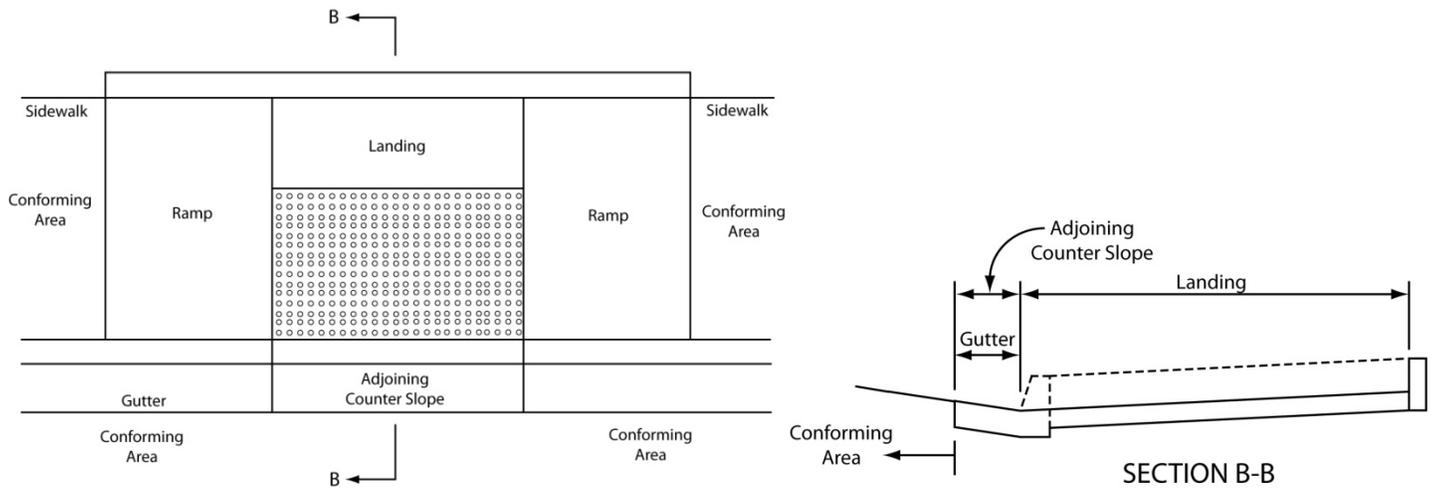
Curb ramps are a key accessibility feature in the public right of way since they will act as a refuge associated with a pedestrian crossing. It may be a challenge to design curb ramps into an existing network of pedestrian sidewalks and crossings because sidewalks and crossings are subject to the existing roadway features, which are designed according to geometric highway standards approved by the Federal Highway Administration in the HDM. In spite of this potential dichotomy, curb ramps are to be given the priority of meeting the full accessibility standards and then conforming to the surrounding area as necessary. Conforming to the surrounding area should also be designed to fully meet accessibility standards. In some limited instances constraints may prevent strict compliance of the conforming area. In these instances the conforming area shall comply with the ADA to the “extent practicable within the scope of the project.”

For the purpose of this guide, a typical curb ramp (Case A and Case C) will consist of basic features shown below. A Blended Transition is also shown, which would require a Construction Detail. These features are to be designed to meet full accessibility standards. See Section 4.3 and Standard Plan A88A for more details and the applicable standards.

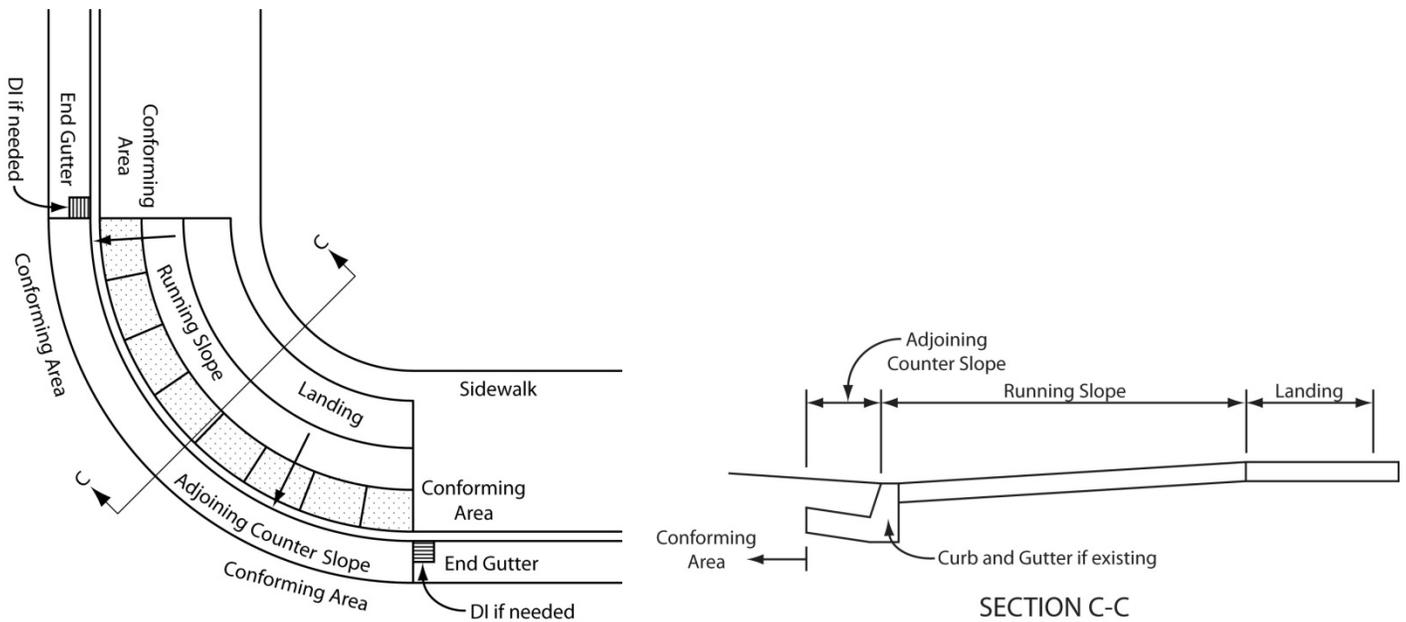
Perpendicular Curb Ramp (Case A):



Parallel Curb Ramp (Case C):



Blended Transition:



It is expected that scoping decisions will lead to designing the curb ramp features to full accessibility standards. Consultation with the Design Coordinator or the Design Reviewer will help ensure these expectations are met.

C. Project Development

The level of design detail will depend on the phase of the project in the project development process. The following should be considered for each phase.

Project Initiation Document (PID)

1. Seek sufficient funds to allow ADA facilities to be adequately scoped into the project. This should be a project development team decision.
2. Identify where curb ramps are missing or if they exist, but do not meet the accessibility standards and best practices (see Section 4.0). Usually, a recommendation from the District Traffic Operations unit will be the basis of this early scope. An access request or grievance filed by the public or the need identified in the ADA Transition Plan could also be the basis of the project.
3. Identify potential constraints, e.g., utilities, signal hardware, electrical, drainage, structures, R/W, etc. using as-built plans, mapping and photos.
4. Perform a site visit with staff from District/Region Design, Traffic, District ADA Engineer and other functional units as needed, e.g., Structures, Surveys, Hydraulics, R/W, etc.
 - a. Measure the existing curb ramps or other pedestrian facilities to determine if they meet the standards in Section 4.3. Measurements of curb heights, sidewalk width, sidewalk running/cross slope, flow line slope, pavement cross slope, etc., will help to ascertain what will be required in order for a curb ramp to be designed to meet full standards.
 - b. Determine the appropriate type of curb ramp for each location.
 - c. Determine approximate dimensions of each proposed curb ramp, considering existing curb height, existing slopes of roadbed gutter, roadbed pavement, and sidewalks.
 - d. Identify all existing features within limits of each proposed curb ramp, e.g., signal poles, drainage inlets, utilities, R/W fence, bridge, buildings, evidence of truck offtracking, pavement markings, etc.
 - e. Consider capturing stormwater runoff prior to each curb ramp.
 - f. Include other features (see Section 4.0) that improve accessibility within the project.
5. Determine what portion of the adjacent sidewalk will need to be reconstructed to provide a standard top landing (e.g., Case A Curb Ramp) as well as a transition section to conform back to the existing sidewalk. Transition sections should be outside the boundary of the top landing to a reasonable distance, e.g., a sidewalk contraction joint or to a structure. Consult with the Design Reviewer or Design Coordinator regarding the reasonable conforming distance.
6. Work with the District Traffic Operations unit to determine the proper scope and cost of traffic related items such as striping and signal activation details.
7. Avoid designing to maximum slopes and minimum dimensions of the accessibility standards. See the conservative slopes and widths in the curb ramp standard plans.
8. Identify right of way, utility relocation, and drainage needs at each location.
9. Include the necessary funds and time for resolving conflicts as noted above in the schedule and estimate.
10. Evaluate reconstructing the roadbed pavement if necessary. Readily achievable roadbed work is considered practicable.
11. Curb ramps are the most common solution when a curb obstructs the pedestrian accessible route. Occasionally, solutions such as raising roadbed pavement to the top of curb, thereby creating a blended curb ramp or transition, is a valid alternate design.
12. Consider scoping stand alone ADA curb ramp projects to combine curb ramps with similar work involved, such as those on existing structures requiring special construction materials and techniques, those with significant relocations, and the less complex locations. This may lead to the decision to break up the curb ramps identified in the PID process for multiple highway projects.
13. Estimate contract item quantities to provide sufficient funding to meet the ADA standards at each location.

Project Approval and Environmental Document (PA&ED)

1. Perform a site visit with staff from District/Region Design, Traffic, District ADA Engineer and other functional units as needed, e.g., Structures, Surveys, Hydraulics, R/W, etc. to:
 - a. Verify type of curb ramp or pedestrian facility for each location.
 - b. Verify dimensions of each proposed curb ramp, considering existing curb height, existing slopes of gutter, pavement, and sidewalks.
 - c. Verify all existing features within limits of each proposed curb ramp, e.g., signal poles, drainage inlets, utilities, R/W fence, bridge, buildings, evidence of truck offtracking, pavement markings, etc.
 - d. Consider capturing stormwater runoff prior to each curb ramp.
 - e. Consider other features that should be included in the project to enhance accessibility (see Section 4.0).
2. Prepare survey request for locations with many constraints, e.g., R/W, significant utilities, street grades, and elevation changes.
3. Meet with functional units to determine feasibility of relocating existing features in conflict with each proposed curb ramp, e.g., Hydraulics, Electrical Design, Utilities, R/W (easements), Structures, etc.
4. Meet with functional units to identify additional features to be added to the project to improve pedestrian access, e.g., additional drainage, signs, profile adjustments, pavement markings, etc.
5. Prepare curb ramp designs that are fully compliant with the accessibility standards and best practices in Section 4.0. Once standard curb ramps and landings are designed, the transition to the existing sidewalk also should strictly meet the accessibility standards. When it is not feasible to design the transition to the accessibility standards, the transition shall be designed to comply with the accessibility standards to the “extent practicable within the scope of the project.” Documentation of the nonstandard conforming area is to be included in the Transition Plan and coordinated by the District ADA Engineer once a request is initiated by the designer. Documentation of the request (memo, e-mail, etc) is to be included in the Project History File. Documentation of an Exception to Accessibility Design Standards is not required.
6. If the curb ramps themselves cannot be designed to full accessibility standards, an approved Exception to Accessibility Design Standards, see Section 3.1, will be required. This will also document compliance with the ADA to the “extent practicable within the scope of the project.”

Plans, Specifications, and Estimates (PS&E)

1. Use the survey data and field notes provided during the Project Report (PA&ED) phase to design the curb ramps.
2. The current curb ramp standard plans contain conservative slopes and widths in order to account for errors in design and construction; these show a 1.5% instead of 2.0%, 7.5% instead of 8.3%, 9% instead of 10%, and 50 inches instead of 4 ft. However, a Construction Detail should be developed for situations where the adjacent roadway is on a grade or there are space constraints. These Construction Details are to indicate the slopes and widths, and will require contractor surveys. Utilize SSP 73-3 (using minor concrete) for all sidewalks, curb ramps, or driveway crossings designed as part of the pedestrian route. For the contractor surveys, use the Bid Item for Pre/Post Construction Surveys. Follow the DES – Office Engineers guidance on how to use the specification and estimate the cost for the contractor surveys.
3. Follow the guidance in the *Plans Preparation Manual* regarding the placement, off-sets, call-outs, and features to be surveyed by the contractor.
4. Discuss with District Construction the need to provide cross sections.
5. Update the nonstandard accessibility documentation in the Transition Plan and/or the Exception to Accessibility Design Standards, per the discussion in Numbers 5 and 6 under PA&ED above, if necessary.

6. Asphalt concrete pavement conforming areas and Blended Transitions should use ½" Type B HMA for better workability.

D. Compliance

Curb ramps that are designed and constructed in accordance with DIB 82, standard plans and specifications will achieve compliance with the ADA. Design compliance is documented at Ready-to-List or at encroachment permit issuance per Section 3.1 of this DIB. Regions/Districts also document compliance at the conclusion of construction per the October 5, 2012 ADA Compliance Memo signed by Robert Pieplow.

If the Design Coordinator has approved an Exception to Accessibility Design Standards, this documentation will be referenced in the Project Report and will be made part of the Project History File. Also, if a request from the designer to the District ADA Engineer is made to include nonstandard conforming area designs to the existing facility in the Transition Plan, this request is to be included in the Project History File.

For existing pedestrian facilities, the documentation of not designing to full accessibility standards contained in a previously Project History File may be useful when deciding to scope a project in the beginning.

E. Other Considerations

The following are recommendations and reminders when designing curb ramps:

- Whether projects are stand alone curb ramp projects or other alterations of roadways, DIB 82 standards apply to all pedestrian facilities.
- When using the curb ramp standard plans, make sure to verify that a standard curb ramp can meet the accessibility standards in construction. Check to see if ample space is available and that there are no obstructions, e.g., utilities, drainage inlets, etc. If that is not the case, construction details will be required.
- Provide an adequate estimate and schedule at the PID phase to provide full standard curb ramp design.
- Do not design to the maximum slopes or the minimum widths if feasible.
- Consider relocating/redesigning the drainage system of an intersection in order to intercept flow before the curb ramp location.
- If pavement reconstruction is not part of the project scope, consider minor pavement work as needed to achieve standards.
- Consider modifying the alignment of the sidewalk transition segment to achieve standard slopes.
- Make sure the marked crossings are well placed. Involve the District Traffic Operations unit to help decide the need and/or placement of marked crosswalks in accordance with accessibility standards and the *CA MUTCD*.
- Right of way acquisition (fee, easements, etc.) or utility relocation may be necessary to solve an accessibility issue. This should be identified early in the process.
- Consider designing a curb extension (bulbout), see HDM Index 303.4, where right-of-way is limited to accommodate a standard curb ramp.
- Consider directional curb ramps (curb ramps aligned in the direction of pedestrian crossing) if an engineered design can show that no instability will occur.
- Curb ramps are normal solutions when a curb obstructs the pedestrian accessible route. However, there may be other solutions, e.g., a blended curb ramp. Consult with your Design Coordinator or Design Reviewer.