State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

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To: DISTRICT DIRECTORS
DEPUTY DIRECTORS
DIVISION CHIEFS

Date: October 24, 2006

File: 608

From: MARK LEJA
Chief
Division of Design

Subject: Design Information Bulletin 82-03 "Pedestrian Accessibility Guidelines for Highway Projects"

Effective immediately, Design Information Bulletin (DIB) 82-03 supersedes DIB 82-02. DIB 82-03 is now available on the Division of Design website at: www.dot.ca.gov/hq/oppd/dib/dib82-03.pdf.

Summary of Significant Changes

1. The "Alteration" description, which triggers ADA upgrades, has been modified to use the provisions of the Draft Guidelines for Public Rights of Way (DGPROW) Federal regulations. Section 4.1.2 contains further discussion on the types of work that are considered "Alterations" of existing facilities.

2. Table 4.1.3 Pedestrian Facility Upgrades on RRR Projects has been deleted. This Table is no longer needed with the modification to the "Alteration" description.

3. A standard has been added to allow the grade of a sidewalk not to exceed the grade of the adjacent roadway, per the DGPROW. This change allows that a sidewalk grade may exceed 5% without having to comply with the ramp/landing requirements.

4. The discussion for open "guardrails" (pedestrian barrier rails) has been modified to be listed as a standard, per current State code.

5. The State and Federal standards have been added pertaining to "protruding objects." A discussion on cane detectability and the use of pedestrian barricades, as specified in Standard Plan ES-7P, has been added.

6. A Licensed Architect or Landscape Architect, per State code, may now prepare, sign, and seal the Exception to Accessibility Design Standard document provided the same architect designed the "on-site" improvements. This is in accord with State code provisions that allow Licensed Architects and Landscape Architects to be in responsible charge of these improvements.

7. The Exception to Accessibility Design Standard document has been revised. The section entitled "Cost to Make Standard" has been replaced with the section "Work Required to Make Standard." This section is to be used to disclose the magnitude of the required work involved to create an ADA compliant facility. The cost of providing an accessible pedestrian facility is not a factor in granting an exception to an accessibility design standard. Accessibility design exceptions are to be approved early in the project development process.

If you have any questions, please contact Kevin Herritt at (916) 653-0253, or David Cordova at (916) 653-0485. Project specific questions can be referred to your Design Coordinator or Senior Design Specialist for Project Support.

KHerritt/DCordova:dlt

cc: Holders of the Highway Design Manual
Deputy District Directors for Design
Deputy District Directors for Project Management
Deputy District Directors for Planning
Deputy District Directors for Maintenance and Operations
District Permit Engineers

DESIGN INFORMATION BULLETIN NUMBER 82-03

Department of Transportation
Division of Design
Office of Geometric Design Standards

PEDESTRIAN ACCESSIBILITY GUIDELINES FOR HIGHWAY PROJECTS

APPROVED BY:

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October 19, 2006

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1.0 BACKGROUND

The Americans with Disabilities Act (ADA) of 1990, along with it's 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 Federal Highway Administration (FHWA) has recommended that the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) shall apply to the design of the California Department of Transportation (Department) facilities. Although the current ADAAG is not specifically written for public rights-of-way projects, some of the ADAAG provisions can apply to the highway environment and are included in this Design Information Bulletin (DIB).

In addition to ADAAG, 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/bikeped/tranmemo.htm. Also, certain portions of the Draft Guidelines for Public Rights-of-Way (DGPROW) released by the US Access Board are used in this DIB.

Title 24 of the California Code of Regulations is similar to the ADAAG 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, the Department (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 that they comply with the State pedestrian accessibility code.

Please note, 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. 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 the creation of Departmental 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 shown. As appropriate, reference documents are mentioned within the brackets to indicate the source of the definition.

Accessible Route: A continuous, unobstructed path connecting all accessible elements and spaces of a building or facility [ADAAG].

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

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

Historic Property/Historical Resources: Under Federal law [36 CFR 800.16(l)] 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*]. This includes a person with a disability.

Person with Disability: An individual who has a physical impairment, including impaired sensory, manual or speaking abilities, that results in a functional limitation in gaining access to and using a building or facility [California Code of Regulations Title 24].

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

Sidewalk: A surfaced pedestrian way contiguous to a street used by the public [California Code of Regulations Title 24]. 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 or the potential of removing or altering a load-bearing structure prevent the incorporation of accessibility features [ADAAG].

Technically Infeasible: An alteration that has little likelihood of being accomplished because existing physical or site constraints prohibit modification or addition of elements, spaces, or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility [ADAAG].

Transition Plan: The Department's written commitment to accomplish ADA compliance in its services, programs, and activities. Modifications to the State highway infrastructure is part of the commitment.

Vehicular Way: A route intended for vehicular traffic, such as a street, driveway, or parking lot [ADAAG].

Walk or Walkway: An exterior pathway with a prepared surface intended for pedestrian use, including general pedestrian areas such as plazas and courts [ADAAG].

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. 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 it is found that 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 because existing physical structural conditions would require removing or altering a load-bearing member which is an essential part of an existing structure; or because other existing physical or site constraints prohibit modification or addition of elements, spaces, or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility. For new construction, the accessibility design standard must be structurally impracticable and only in those rare circumstances when the unique characteristics of terrain prevent the incorporation of the accessibility standard. Approval of accessibility design exceptions shall occur prior to approval of the project initiation document or as soon as the recommended alternative is identified. Accessibility design exceptions shall be submitted, using the Exception to Accessibility Design Standards document format [See Attachment], to the Design Reviewer for comments and are ultimately approved by the Design Coordinator. The Division of Engineering Services – Office of Transportation Architecture (OTA) will determine the compliance with accessibility design standards related to building projects. Please note, the related site work not part of the building 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_08-23-04.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. dsa.dgs.ca.gov/ContactDSA/default.htm. 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 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 Part 1, Title 24, Chapter 5, Article 1, Section 5-104 of the *California Building Code* - -

> "The filing fee for project applications is 0.2 percent of the first $500,000 of estimated construction cost, plus 0.1 percent of the estimated cost between $500,000 to $2,000,000, plus 0.01 percent of the estimated cost over $2,000,000. The minimum fee in any case is $200.00."

The DSA website provides a fee calculator to determine the filing fee. The Internet site address for the DSA fee calculator is: www.applications.dgs.ca.gov/dsa/eTrackerWeb/Calinput.asp. The fees to be paid by the Department 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 EA and the appropriate Agency 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 EA. The District and EA 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 are an attempt to 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 Reviewer or Design Coordinator is recommended to discuss pedestrian accessibility issues and their resolution.

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 or spaces are altered, each altered element or space within the limits or scope of the project shall comply with the applicable requirements for new construction to the maximum extent feasible. The limits of the project refers to the work that will physically impact a pedestrian feature and the

scope of the project refers to the work on a pedestrian feature identified in the project initiation document or the project report.

The following types of highway work are considered to be alterations of existing facilities:

1. Resurfacing, restoration, and rehabilitation (RRR) work that will physically impact or is scoped to address existing sidewalks, including those crossing driveways, curb ramps, and crosswalks need to be evaluated for pedestrian accessibility and comply with the guidance in Section 4.1.3 of this DIB. When determining the scope of a RRR project, the curb ramps immediately adjacent to the RRR work are assumed to be within the scope of the project.
2. Traffic signalization work that will physically impact or is scoped to address sidewalks, curb ramps and crosswalks are to comply with the pedestrian accessibility guidance in this DIB.
3. Any other work that will physically impact or is scoped to address a pedestrian facility requires that the pedestrian facilities comply with the pedestrian accessibility guidance in this DIB.

Capital preventive maintenance (CapM) projects, preventive maintenance, or routine maintenance work are not considered alterations. These types of projects may be designed following the guidance in this DIB, but they are not required to unless the work physically affects a pedestrian facility.

4.1.3 Accessibility Requirements on RRR Projects

RRR projects that are alterations (see Section 4.1.2) require reconstructing the affected existing pedestrian facilities to full ADA standards to the maximum extent feasible, unless doing so is shown to be "technically infeasible" (see Section 2.0 "Definitions"). The Design Coordinator must agree with the finding that the work is technically infeasible and then approve a supporting Exception to Accessibility Design Standards document. Cost cannot be a consideration in justifying technically infeasible. In addition, the accessibility needs of the communities and highway users, in particular the needs of customers with disabilities, need to be considered on each project. Early stakeholder participation, as appropriate to identify accessibility deficiencies, is recommended, especially when adding work to the Department Transition Plan.

Any pedestrian facility work that needs to be completed outside of the scope of the alteration 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 Coordinator needs to be contacted and involved in submitting this information to the Headquarters Division of Civil Rights. The District ADA Coordinators (Liaisons) are identified on the Department's Intranet site at: http://onramp.dot.ca.gov/eo/eo_ada.htm. Externally sponsored work that is not being designed by the Department is not exempt from this requirement. The Department representative that is working with the external sponsor for the work is required to contact the District ADA Coordinator and assist them in submitting any work to the Headquarters Division of Civil Rights for inclusion in the Department's 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.

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 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) to meet the requirements. 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.

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. 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 even where it is legal for a pedestrian to traverse along a highway. Many small communities in California do not have pedestrian facilities, which were the result of decisions in the past prior to the ADA. As a community grows, and the presence of pedestrians become prevalent, highway improvements that include pedestrian facilities should be considered as part of a highway project.

Deciding to construct pedestrian facilities and elements where none exists 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 would 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 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," also in the *Project Development Procedures Manual.*

4.3 Accessibility Design Standards

The most current version of the *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. Modifying the features shown on the *Standard Plans* or designing pedestrian facilities not covered by the *Standard Plans* 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.
[ADAAG 4.5.1 and Title 24 1124B.1]

(2) Changes in level up to 6 mm may be vertical and without edge treatment.
[ADAAG 4.5.2 and Title 24 1124B.2]

(3) Changes in level between 6 mm and 13 mm shall be beveled with a slope no greater than 1:2 (50%).
[ADAAG 4.5.2 and Title 24 1124B.2]

(4) Changes in level greater than 13 mm shall be accomplished by means of a ramp.
[ADAAG 4.5.2]

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* published by the United States Department of Transportation.

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.

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. However, material used to provide contrast on detectable warnings on walkway surfaces should have a contrast by at least 70%. This is intended to assist the visually impaired pedestrian. This contrast is calculated by [(B1-B2)/B1] x 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) Walks shall have 2030 mm minimum clear headroom.
[ADAAG 4.4.2 and Title 24 1133B.8.6.2]

It should be noted that the *Manual on Uniform Traffic Control Devices* (MUTCD) requires a vertical clearance at pedestrian pathways to the bottom of signs to be at least 2.1 m. This will cover 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

(1) The typical walkway minimum width of an accessible route shall be at least 1.2 m.
[Title 24 1133B.7.1]

(2) At any point of an accessible route, 815 mm must be provided as a minimum lateral clearance to an obstruction, i.e., a light standard.
[ADAAG 4.2.1 and Title 24 1118B.1]

(3) If an accessible route has less than 1.5 m clear width, then passing spaces at least 1.5 m by 1.5 m shall be located at reasonable intervals not to exceed 61 m.
[ADAAG 4.3.4]

For sidewalks, a 1.2 m width can only be used if an exception to the advisory standard width in Index 105.1 of the *Highway Design Manual (HDM)* is approved. In many cases a local agency standard will provide greater accessibility than the standard in the *HDM*, in which case the local agency standard should be used.

Placement of above ground utilities within the pedestrian accessible route are discouraged, however they may be placed or remain in place if circumstances dictate, provided that a clear width that at least equivalent to the minimum width specified in this DIB is provided.

4.3.4 Grade

(1) All walks with continuous gradients shall have level areas at least 1.5 m in length at intervals of at least every 122 m.
[Title 24 1133B.7.6]

(2) Where the walkway of a pedestrian access route is contained within a street or highway border, its grade shall not exceed the general grade established for the adjacent street or highway.
[DGPROW R301.4.2]

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% and still be considered level. The practical use of the accessibility standard in (1) above is thus applied for grades exceeding 2%. Any part of an accessible route with a slope greater than 1:20 (5%) 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) No more than a 1:50 (2%) cross slope shall be constructed on a walkway that is an accessible route.
[ADAAG 4.3.7 and Title 24 1133B.7.1.3]

Drainage is always a design consideration for exterior facilities. Walkways shall be designed so that water will not accumulate on the surface.

4.3.6 Grates and Railroad Tracks

(1) If gratings are located in walks, then they shall have spaces no greater than 13 mm 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.
[ADAAG 4.5.4 and Title 24 1133B.7.2]

(2) Where a path crosses tracks, the opening for wheel flanges shall be permitted to be 64 mm maximum.
[ADAAG 10.3.1(13)]

Walks shall be free of grating whenever possible.

4.3.7 Ramps

(1) Slopes that are greater than 1:20 will be considered ramps and must not exceed a 760 mm rise without landings.
[ADAAG 4.8.2 and Title 24 1133B.5.1, 1133B.5.4.1]

(2) The maximum slope of a ramp shall not exceed 1:12 (8.33%).
[ADAAG 4.8.2 and Title 24 1133B.5.3]

(3) The cross slope of ramp surfaces shall be no greater than 1:50 (2%).
[ADAAG 4.8.6 and Title 24 1133B.5.3.1]

(4) In the case of a historic property/historical resource, ramps greater than 1:12 (8.33%), but no greater than 1:10, cannot exceed a horizontal distance of 3.6 m. Or, ramps of 1:6 slope cannot exceed a horizontal distance of 330 mm. Signs shall be posted at upper and lower levels to indicate steepness of the slope.
[Title 24 8-603.5]

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 1:12 (8.33%), then the minimum radius needed is 14.6 m; otherwise, a smaller radius will provide a path that exceeds the maximum 2% 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%	8.8 m
8.33%	14.6 m

4.3.8 Curb Ramps

(1) Curb ramps shall be a minimum of 1.2 m in width and shall lie, generally, in a single sloped plane, with a minimum of surface warping and cross slope.
[Title 24 1127B.5.2]

(2) Transitions from ramps to walks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed 1:20 (5%) within 1.2 m of the top and bottom of the curb ramp.
[ADAAG 4.7.2 and Title 24 1127B.5.3]

(3) In general, for the flare, a maximum slope of 1:10 (10%) parallel to curb is used. However, if the level landing at the top of the curb ramp is less than 1.2 m, the slope of the flares shall not exceed 1:12 (8.33%).
[ADAAG 4.7.5 and Title 24 1127B.5.3, 1127B.5.4]

(4) In the case of a single (diagonal) curb ramp with flared sides, it shall have at least a 600 mm long segment of straight curb located on each side of the curb ramp and within the marked crossing, if the crosswalk is marked.
[ADAAG 4.7.10 and Title 24 1127B.5.10]

(5) In the case of a marked crosswalk, the bottom of diagonal curb ramps shall have a clearance to the crosswalk marking of 1.2 m minimum.
[ADAAG 4.7.10 and Title 24 1127B.5.10]

Regarding (4) above, this standard applies only on flared sides; the Caltrans Case C curb ramp and others without flares are not subject to this standard. Curb ramps are the most common type of ramp. Different types of curb ramps have been approved and are contained in the *Standard Plans*. 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.

Curb ramps placed within crosswalk markings do not have to be aligned in the direction of the crosswalk marking. 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.

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% cross slope.

TABLE 4.3.8 – Curb Ramp Runs for Sidewalks with 2% Cross Slopes

Height of Curb Face	Curb Ramp Run (Horizontal Length)
100 mm	1.6 m
127 mm	2.0 m
150 mm	2.4 m
178 mm	2.8 m
190 mm	3.0 m
200 mm	3.2 m

4.3.9 Medians and Islands

(1) Raised medians or islands in street crossing paths shall be either cut through level with the street or have curb ramps and a level area at least 1.2 m long between curb ramps. [ADAAG 4.7.11]

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) If a ramp run has a rise greater than 150 mm or a horizontal projection greater than 1830 mm, then it shall have handrails on both sides.
[ADAAG 4.8.5 and Title 24 1133B.5.5.1]

(2) Handrails shall be provided along both sides of ramp segments. Handrails shall be continuous within the full length of each stair flight or ramp run.
[ADAAG 4.8.5(1) and Title 24 1133B.5.5.1]

(3) The clear space between the handrail and the wall (if any) shall be 38 mm.
[ADAAG 4.8.5(3) and Title 24 1133B.5.5.1]

(4) Gripping surfaces shall be continuous.
[ADAAG 4.8.5(4)]

(5) Top of handrail gripping surfaces shall be mounted between 865 mm and 965 mm above ramp surface.
[ADAAG 4.8.5(5) and Title 24 1133B.5.5.1]

(6) Handrails shall not rotate within their fittings.
[ADAAG 4.8.5(7)]

(7) The grip portion shall not be less than 32 mm nor more than 38 mm, or the shape shall provide an equivalent gripping surface and all surfaces shall be smooth with no sharp corners.
[Title 24 1133B.5.5.1]

4.3.11 Warning Curb and Guardrail

Guardrail as used in this section is defined from the *California Building Code* [Title 24 208-G] as a vertical barrier erected along the open edges of a floor opening, wall opening, ramp, platform, runway or other elevated area to prevent persons from falling off the open edge.

(1) Abrupt changes in level, except between a walk or sidewalk and an adjacent street or driveway, exceeding 102 mm in a vertical dimension, such as at planters or fountains located in or adjacent to walks, sidewalks or other pedestrian ways, shall be identified by curbs projecting at least 152 mm in height above the walk or sidewalk surface to warn the blind of a potential drop off.
[Title 24 1133B.8.1]

(2) When a guardrail or handrail is provided, no curb is required when a guide rail is provided centered 76 mm plus or minus 25 mm above the surface of the walk or sidewalk, the walk is 5 percent or less gradient or no adjacent hazard exists.
[Title 24 1133B.8.1]

(3) Where the edge of a pedestrian path, including ramps, has a drop off of more than 762 mm, the path shall be protected by a guardrail.
[Title 24 509.1, 1133B.5.7]

(4) The top of guardrails shall not be less than 1067 mm in height.
[Title 24 1133B.5.7.3]

(5) Open guardrails shall have intermediate rails or an ornamental pattern such that a sphere 102 mm in diameter cannot pass through.
[Title 24 1133B.5.7.4]

Chain link fence Type CL-1.2 satisfies the requirements of a guardrail, see the *Standard Plans* for details. As a good practice, if the above-mentioned 102 mm and 762 mm drop off occurs within a horizontal distance of 600 mm from the edge of the pedestrian path, this path should still require the warning curb/guardrail.

4.3.12 Wheel Guides

Where the ramp surface is not bounded by a wall or fence and the ramp exceeds 3 m in length, the ramp shall comply with one of the following requirements:

(1) A guide curb a minimum of 50 mm in height shall be provided at each side of the ramp [Title 24 1133B.5.6.1]; or,

(2) A wheel guide rail shall be provided, centered 76 mm plus or minus 25 mm above the surface of the ramp.
[Title 24 1133B.5.6.2]

These requirements are not applicable to sidewalks or on curb ramps.

4.3.13 Landings

A level landing is allowed to be sloped up to 2% 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 *California Building Code* Section 1003.3.4.4 and confer with the Office of Transportation Architecture in the Division of Engineering Services.

Landings shall be designed as following:

(1) Ramps shall have level landings at bottom and top of each ramp and each ramp run.
[ADAAG 4.8.4 and Title 24 1133B.5.4.1]

(2) The landing shall be at least as wide as the ramp run leading to it.
[ADAAG 4.8.4(1) and Title 24 1133B.5.4.5]

(3) The landing length shall be at least 1.5 m.
[ADAAG 4.8.4(2) and Title 24 1133B.5.4.2, 1133B.5.4.7]

(4) Top landings shall be not less than 1.5 m wide and shall have a length of not less than 1.5 m in the direction of the ramp run.
[Title 24 1133B.5.4.2]

(5) If ramps change direction at a landing, the landing shall be at least 1.5 m by 1.5 m.
[ADAAG 4.8.4(3)]

(6) Intermediate and bottom landings at a change of direction in excess of 30 degrees shall have a dimension in the direction of the ramp run of not less than 1.8 m to accommodate the handrail extension.
[Title 24 1133B.5.4.6]

4.3.14 Detectable Warning Surface

(1) If a walk crosses or adjoins a vehicular way, and the walking surfaces are not separated by curbs, railings or other elements between the pedestrian areas and vehicular areas, the boundary between the areas shall be defined by a continuous detectable warning which is 914 mm wide.
[ADAAG 4.29.5 and Title 24 1133B.8.5]

Detectable warnings shall consist of raised truncated domes as shown on Standard Plans A88A, A88B, A90A, and A90B. Curb ramps shall contain detectable warning surfaces according to these *Standard Plans*.

4.3.15 Grooves

(1) Grooves shall consist of indentations at the top of a curb ramp as shown on Standard Plan A88A. The grooves shall form a 300 mm border at the level surface of the sidewalk.
[Title 24 1127B.5.7]

4.3.16 Bus Stops

(1) Where new bus stop pads are constructed at bus stops, bays or other areas where a lift or ramp is to be deployed, they shall have a firm, stable surface; a minimum

clear length of 2.4 m (measured from the curb or vehicle roadway edge) and a minimum clear width of 1.5 m (measured parallel to the vehicle roadway) to the maximum extent allowed by legal or site constraints.
[ADAAG 10.2.1(1)]

(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 760 mm by 1220 mm, entirely within the perimeter of the shelter.
[(ADAAG 10.2.1(2) and Title 24 1131B.4]

(3) Newly constructed bus stop pads must provide a square curb surface between the pad and road or other detectable warning [Title 24 1131B.4].

Caltrans Type A or B curb, will satisfy the square curb requirement.

(4) Bus stop pads shall be at same slope as the roadway in direction parallel to roadway profile grade, and maximum of 2 percent slope perpendicular to roadway.
[ADAAG 10.2.1(1) and Title 24 1131B.4]

4.3.17 Parking

(1) For off street parking, Table 4.3.17 establishes the number of accessible parking spaces required.
[ADAAG 4.1.2(5)(a) and Title 24 1129B.1]

(2) Where single spaces are provided, they shall consist of a 2.75 m wide parking area and a 1.53 m loading and unloading access aisle on the passenger side of the vehicle. When more than one space is provided, a 2.75 m wide parking area on each side of a 1.53 m loading and unloading access aisle in the center may be allowed. The minimum length of each parking space shall be 5.5 m.
[Title 24 1129B.4.1]

(3) One in every eight accessible spaces, but not less than one, shall be served by an access aisle that is, at a minimum, 2.44 m wide and placed on the side opposite the driver's side of the vehicle when the vehicle is driven forward into the parking space; the space shall be designated van accessible.
[ADAAG 4.1.2(5)(b) and Title 24 1129B.4.2]

(4) Surface slopes of accessible parking spaces shall be the minimum possible and shall not exceed 1 unit vertical to 50 units horizontal (2% slope) in any direction. This applies to parking spaces and access aisles.
[ADAAG 4.6.3 and Title 24 1129B.4.4]

Accessible parking spaces serving a particular building shall be located on the shortest accessible route of travel from adjacent parking to an accessible entrance. In parking facilities that do not serve a particular building, accessible parking shall be located on the shortest accessible route of travel to an accessible pedestrian entrance of the parking facility. In buildings with multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located closest to the accessible entrances.

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 in Lot or Garage	Minimum Number of Spaces Required
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
1,000 and over	See Note 2

Notes:
1. Two percent of total.
2. Twenty plus one for each 100, or fraction over 1,001.

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 Headquarters Traffic 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 in Section 16 and in Sections 16.1 through 16.4.10 of the Federal Guide on "Outdoor Developed Areas" as found on the US Access Board website: www.access-board.gov/outdoor/outdoor-rec-rpt.htm. The provisions found on this website shall be regarded as enforceable design standards.
[Draft ADAAG 16]

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 16.1.1 "Extent of Application" may be used, as specified in the provisions, to support an exception.

The sign referenced in Section 16.2.10, "Signs," of the "Outdoor Developed Areas Guide" shall be the disabled persons sign, MUTCD Code RM-080.

4.3.19 Protruding Objects

(1) Objects protruding from walls (for example, telephones) with their leading edges between 685 mm and 2030 mm above the finished floor shall protrude no more than 102 mm into the walk. [ADAAG 4.4.1 and Title 24 1133B.8.6.1]

(2) Objects mounted with their leading edges at or below 685 mm above the finished floor may protrude any amount.
[ADAAG 4.4.1 and Title 24 1133B.8.6.1]

(3) Free-standing objects mounted on posts or pylons may overhang 305 mm maximum from 685 mm to 2030 mm above the ground or finished floor.
[ADAAG 4.4.1 and Title 24 1133B.8.6.1]

(4) Protruding objects shall not reduce the clear width of an accessible route or maneuvering space. [ADAAG 4.4.1 and Title 24 1133B.8.6.1]

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 685 mm are not considered detectable by cane. A critical zone, which is not considered detectable, is between 685 mm and 2030 mm above the pedestrian pathway surface. Many transportation elements within the pedestrian pathway are cane detectable, such as electrical systems hardware, and these are 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-7P should be used. Consult with your 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, a design exception will either be needed for a bicycle standard in Chapter 1000 of the *Highway Design Manual* or for a pedestrian accessibility standard in this DIB.

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 ADAAG 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 justification 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.

ATTACHMENT

Dist – Co – Rte
KP(PM)
Project EA or Encroachment Permit Number

EXCEPTION TO ACCESSIBILITY DESIGN STANDARDS

Prepared by:

_____
(Name), Registered Civil Engineer [3]

Submitted by: _____ Date: _____
(Name), Design Engineer

Recommended by: _____ Date: _____
(Name), Project Manager

Concurrence [1] by: _____ Date: _____
(Name), Office Chief
Or District/Region Division Chief of Design

Approved [2] by: _____ Date: _____
(Name), Design Coordinator

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.

ATTACHMENT

Dist – Co – Rte
KP(PM)
Project EA or Encroachment Permit Number

This documentation shall be filed in the district project history files. A copy shall be sent to Headquarters Division of Design, attention Design Report Routing. 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 82-03, 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 Features

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. Standards From Which an Exception is Requested

State the accessibility standard from DIB 82-03.

5. Reason for Exception

The request for exception to accessibility design standards as statutorily permitted must state the reason why the facility or element is whole or in part structurally impracticable (for new construction) or technically infeasible (for alterations) to comply with DIB 82-03 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.

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; plus, the date of their concurrence.