

### 2-2.6 Construction Details

Construction details present supplementary information that cannot be shown on the layouts because of complex and extensive details required. Drawings on construction details should typically depict greater detail of items shown on layouts. Do not use construction detail sheets as a way of creating a second set of complete layouts. Do not substitute construction details sheets for layouts to avoid complying with standard presentation of plotting scale, match lines, stationing, orientation, curve data, etc. Utilize construction details to enlarge spot locations to more clearly show the pertinent information. Details shown on construction detail sheets are unique to a specific project and are those for which there are no Standard Plans or may be a detail from a standard plan modified to fit site conditions. If the project requires only a small number of plan sheets and space is available on the layouts, construction details can be shown on the layouts.

Standard Plan details are never to be included as part of the contract plans unless a Standard Plan detail is modified. When a portion of a Standard Plan drawing must be modified and included in the project plans, only the affected dimensions should be shown and a reference made to the applicable Standard Plan sheet. If a Standard Plan drawing needs substantial modification and is included in the project plans, the modified detail should be fully dimensioned and no reference made to the associated standard plan for additional dimensions.

Some drawings on construction detail sheets are not drawn to a specific scale. These drawings are usually drawn at a one to one size, but when enlarged to fit the border they must remain proportionally correct. Most

construction detail sheets are labeled "No Scale," except for the possible inclusion of construction details such as curb returns (usually at a scale of 1"= 20'). Each curb return is to be shown as a construction detail. Curb returns need to be fully dimensioned so that they are buildable and the quantities are calculable. For information on curb ramps, see the subsection on curb ramps in this section.

Curb return staking intervals for each curb return must include BCR and ECR. Depending on the length of curve,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  delta lines will need to be shown. See Chapter 12 Section 12.5-8 of the Caltrans Surveys Manual for additional information about staking intervals for various curve lengths at the curb flow line. Information shown for curb returns typically includes:

- Radius
- Radius point
- Offsets shown with respect to BCR, ECR,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and  $\frac{3}{4}$  delta lines

Examples of other construction items that may require construction details are curb and dike transitions, sidewalks, curbs, pavement surfacing conforms, and driveways. Details for other work (for example: drainage, signing, pavement delineation, etc.) are usually shown on their own detail sheets.

Pavement elevations may be shown on construction detail sheets when it is pertinent to the detail. Pavement elevations generally will be required at large curb returns, some speed-change lanes and at transition areas that cannot be defined with information on the profiles and superelevation diagrams.

Standard drawings of other agencies, when applicable to the project, shall be included as part of the project plan set. If there is

specification information on the standard drawings from other agencies, it must be removed and included in the specifications portion of the PS&E submittal. Referring to a standard drawing number from another agency is not acceptable.

### Curb Ramps

The design of curb ramps must meet current design policy and standards developed in accordance with the Americans with Disabilities Act (ADA) of 1990. The design of curb ramps should meet the Caltrans conservative design standards shown in the Caltrans Standard Plans. If site condition constraints do not allow meeting these conservative design standards, then the prescribed accessibility design standards set forth in Design Information Bulletin 82 (DIB 82) “Pedestrian Accessibility Guidelines for Highway Projects” must be met.

The Department of Transportation is authorized to certify accessibility design compliance for all projects on State Rights-of-Way (see DIB 82). For highway projects (where there is no building work) the project engineer and project manager are responsible for certifying accessibility design compliance at Ready to List (RTL). For transportation buildings and facilities on State Rights-of-Way, the Office of Transportation Architecture (OTA) and/or the Office of Electrical, Mechanical, Water & Wastewater Engineering (TAEMWW) is responsible for certifying accessibility design compliance (see TAEMWW Memo To Designers 7-7.1).

A construction detail for each curb ramp in the project must be included in the advertised contract plans. This includes curb ramps that meet all of the aspects of the conservative design standards or curb ramps with aspects

that do not meet the conservative design standards but meet the Federal/California standards. A detail for each curb ramp, whether a remove/replace or new location, conveys to the bidder/contractor that an ADA compliant curb ramp can be constructed per the design shown on the plans.

Multiple curb ramps within a project may be based on a similar case type (e.g. Case A or Case C) but each curb ramp location has its own unique site conditions and constraints (i.e. profiles, cross slopes, right of way or utility/electrical systems features). Standard plans A88A and A88B along with DIB 82 provide guidance and design criteria on various considerations that go into designing a curb ramp, but by themselves they don’t provide the contractor with the specific design information needed to construct each individual curb ramp.

Each curb ramp detail is to show obstacles or constraints that have to be addressed (relocated) during the design phase. The elevations, slopes and dimensions are to be shown on each curb ramp detail. Some information may appear to be redundant but there are multiple consumers, and each may require information in a format that meets their needs. The necessary information to call out for each curb ramp on the construction detail will vary depending on the design complexity of the curb ramp and the existing site conditions (see curb ramp examples). By showing each curb ramp detail, the quantity of minor concrete and detectable warning surface (DWS) can be verified by the bidder/contractor for each curb ramp location as shown by the designer on the detail. Information shown for curb ramps typically includes but is not limited to:

- Slopes
- Elevations

- Cross slopes
- Transition areas
- Conform areas
- Pertinent dimensions for ramp, sidewalk and curbs
- Flow line alignment
- Retaining curb
- Detectable Warning Surface (DWS) (with dimensions if not common 3' x 4' shape)

Identify each curb ramp on the layouts with a curb ramp number. Do not reuse a curb ramp number. The construction detail for each curb ramp will be labeled by its number, with an option to add a modifier (i.e. Case A, Case CM, blended, etc.), see curb ramp examples.

Each curb ramp location is NOT a location of construction as identified on the title sheet. Multiple curb ramps at an intersection may or may not be part of one location of construction. See Section 2-1 for more information about locations of construction.

Depending on the site conditions, it is not always necessary to design to the maximum slope and minimum dimension of the accessibility design standards. Do not call out a slope as “maximum” or a dimension as “minimum” on plans or details. Each construction detail is to provide specific design information for the contractor to construct each curb ramp from the project plans. Survey data provided during the design phase for curb ramp locations assists the designer when verifying that a compliant curb ramp can be constructed before the contract is advertised.

Any curb ramp design, regardless of case type or unique configuration, initially strives to meet the conservative design slopes and dimensions shown in the standard plans. If any aspect of an individual curb ramp does

not meet the conservative design standards, the curb ramp must be included in the quantity and individually identified in the quantity table for the bid item “PRE/POST CONSTRUCTION SURVEYS” in the summary of quantities. A curb ramp where all aspects meet the conservative design standards, is NOT to be included.

The Division of Construction requires inspection documentation of all completed permanent pedestrian facilities. For each slope or dimension check, Construction takes and records three readings equally dispersed across the surface to be measured. The readings are not averaged. See Construction Policy Bulletin (CPB) 17-1 and Construction Manual Section 4-7303 for more information.

### Driveways

The design of driveways must be in accordance with the Highway Design Manual (HDM), Topic 205 – Road Connections and Driveways and the Standard Plans for driveways. Information shown for driveways typically includes:

- Driveway width
- Sidewalk width, if different from driveway width
- Elevations – top of driveway at beginning and ending, back of sidewalk at beginning and ending of driveway, and at joins (see Standard Plans)
- X-dimension (see Standard Plans)
- Slope of driveway
- Cross slope of the pedestrian path on the driveway

Do not call out a slope as “maximum” or a dimension as “minimum” on driveway plans or details. Survey data provide the designer

with the actual site conditions to meet the appropriate design parameters.

The Division of Construction requires inspection documentation of completed permanent pedestrian facilities, including driveways. For each slope or dimension check, Construction takes and records three readings equally dispersed across the surface to be measured. The readings are not averaged. See Construction Policy Bulletin (CPB) 17-1 and Construction Manual Section 4-7303 for more information.

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