

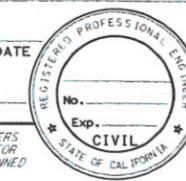
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

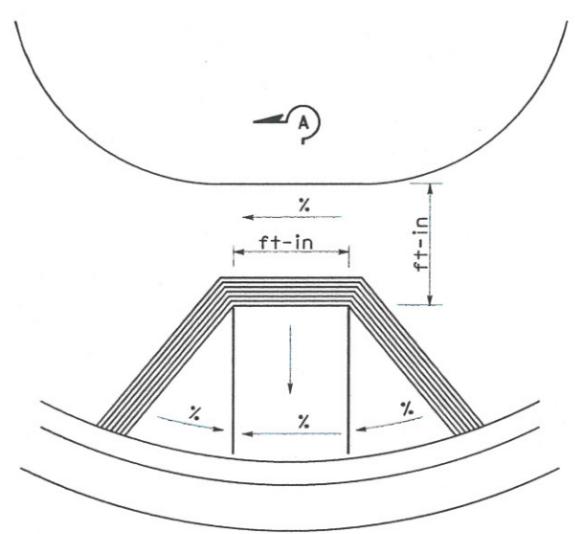
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

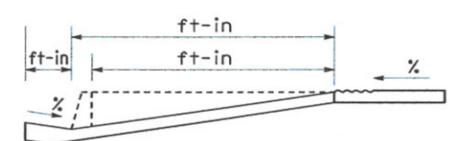
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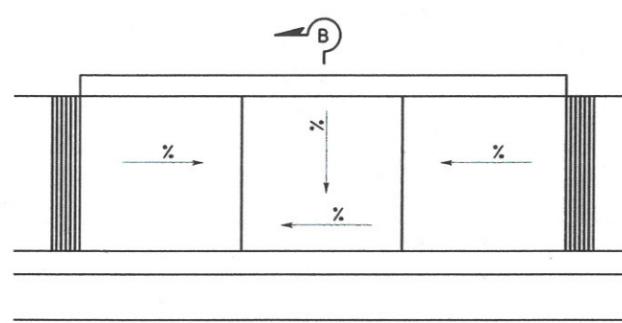
- Showing a detail for a curb ramp or driveway does not automatically mean that the "PRE/POST CONSTRUCTION SURVEYS" bid item will apply for that specific curb ramp or driveway. Some construction details will be for the purpose of estimating minor concrete quantities, showing new/existing clear width obstructions or showing control elevations points.
  - Only those curb ramps or driveways listed in the quantity table for the "PRE/POST CONSTRUCTION SURVEYS" bid item will be included as part of the bid item.
  - Any curb ramp that cannot be designed to meet the "conservative" design slopes and dimensions shown in the Revised Standard Plans (RSPs) must be shown as a construction detail and be labeled as modified. The actual slopes, elevations and dimensions are to be shown. The terms "maximum" or "minimum" shall not be used on the project plans (construction details sheet) for any curb ramp or driveway.
  - An odd configuration for a curb ramp is still to be considered and labeled as "modified." But as long as the "conservative" design slopes and dimensions meet those shown in the Revised Standard Plans, these odd shaped curb ramps are not to be included as part of the "PRE/POST CONSTRUCTION SURVEYS" bid item.
  - Once the forms are in place and after the modified curb ramp or driveway (one that does not meet the "conservative" slopes and dimensions in the RSPs) is constructed, the slopes and dimensions will be verified per the specification for "PRE/POST CONSTRUCTION SURVEYS." The final constructed slopes and dimensions (for all curb ramps) must meet the values the designer intended and must be within the "allowable slope variation" allowed by the Division of Construction (see Construction Policy Bulletin 14-1).
- Components or elements of a curb ramp or driveway include the:
- ramp
  - flare
  - landing (turning space)
  - gutter counter slope
- When designing the slopes and widths of each curb ramp or driveway, make sure the slope does not exceed (or the dimension is not less than) the designed values on the entire surface of the curb ramp or driveway feature. This is especially important on a radial configuration (where the inner radius is the controlling factor).



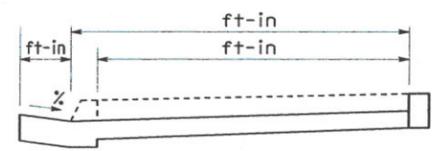
**CURB RAMP  
MODIFIED CASE A**



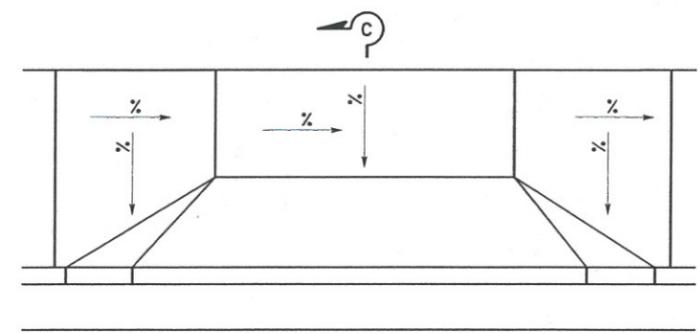
**SECTION A-A**



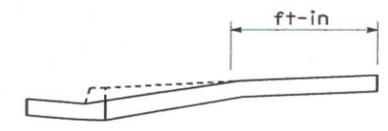
**CURB RAMP  
MODIFIED CASE B**



**SECTION B-B**



**MODIFIED DRIVEWAY**



**SECTION C-C**

**SCHEMATICS FOR CURB RAMP AND DRIVEWAY  
DESIGN CRITERIA**

**SCHEMATIC  
CONSTRUCTION DETAILS**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 FUNCTIONAL SUPERVISOR  
 CALCULATED/DESIGNED BY  
 CHECKED BY  
 REVISED BY  
 DATE REVISED

SCHEMATICS FOR CURB RAMP-DRIVEWAY, DESIGN, RELEASED 05/09/2014  
 DATE PLOTTED => 06-MAY-2014  
 TIME PLOTTED => 08:15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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GENERAL GUIDELINES FOR CURB RAMP DESIGN, RELEASED 05/09/2014

BLUE = MANDATORY  
 RED = RECOMMENDED (OPTIONAL)  
 GREEN = MANDATORY (EXISTING CURB RAMP)  
 BROWN = MANDATORY (SHOWN ON SECTION VIEW)

**ELEVATION ALONG FLOWLINE**

- BCR
- 1/4 Delta Line - if used
- 1/2 Delta Line
- 3/4 Delta Line - if used
- ECR
- Centerline of curb ramp  
Also curb lip, back of landing and top of curb
- Both sides of bottom landing

**ELEVATION FOR CURBS**

- Top of curb (TC) - both ends of retaining curb (inner radius of curb ramp)
- Top of curb (TC) - both ends of the curb and gutter

**DIMENSIONS**

- Width of curb ramp (optional if same as landing)
- Width of landings
- Length of curb ramps. If there is a radial configuration, the inner radius will be the controlling factor for determining the length and slope.
- If the curb ramp length is 15' or less, the running slope cannot exceed 8.3%
- If the curb ramp length is greater than 15', the running slope may exceed 8.3%
- The length of curb ramp does not have to exceed 15' (see DIB 82 Section 4.3.8 (1)), but may in certain situations where the slope can be held below the 8.3% maximum.
- Length of ramp (outer radius of curb ramp)
- Width of adjacent sidewalk
- Length from BCR or ECR to centerline of curb ramp
- Length from BCR or ECR to begin of curb ramp

**SLOPES**

- Running slope of curb ramp
- Cross slope of curb ramp
- Slope of bottom landing
- Cross slope of bottom landing (in certain circumstances shall be permitted to equal the street or highway grade (see DIB 82 Section 4.3.8 (8)). Also see 4.1.2 for further guidance.
- Cross slope of the sidewalk
- Gutter pan slope (show on the "Section View"). Counter slope applies 24" from flowline, along the accessible path for the width of the bottom landing (see DIB 82 Section 4.3.8 (4))

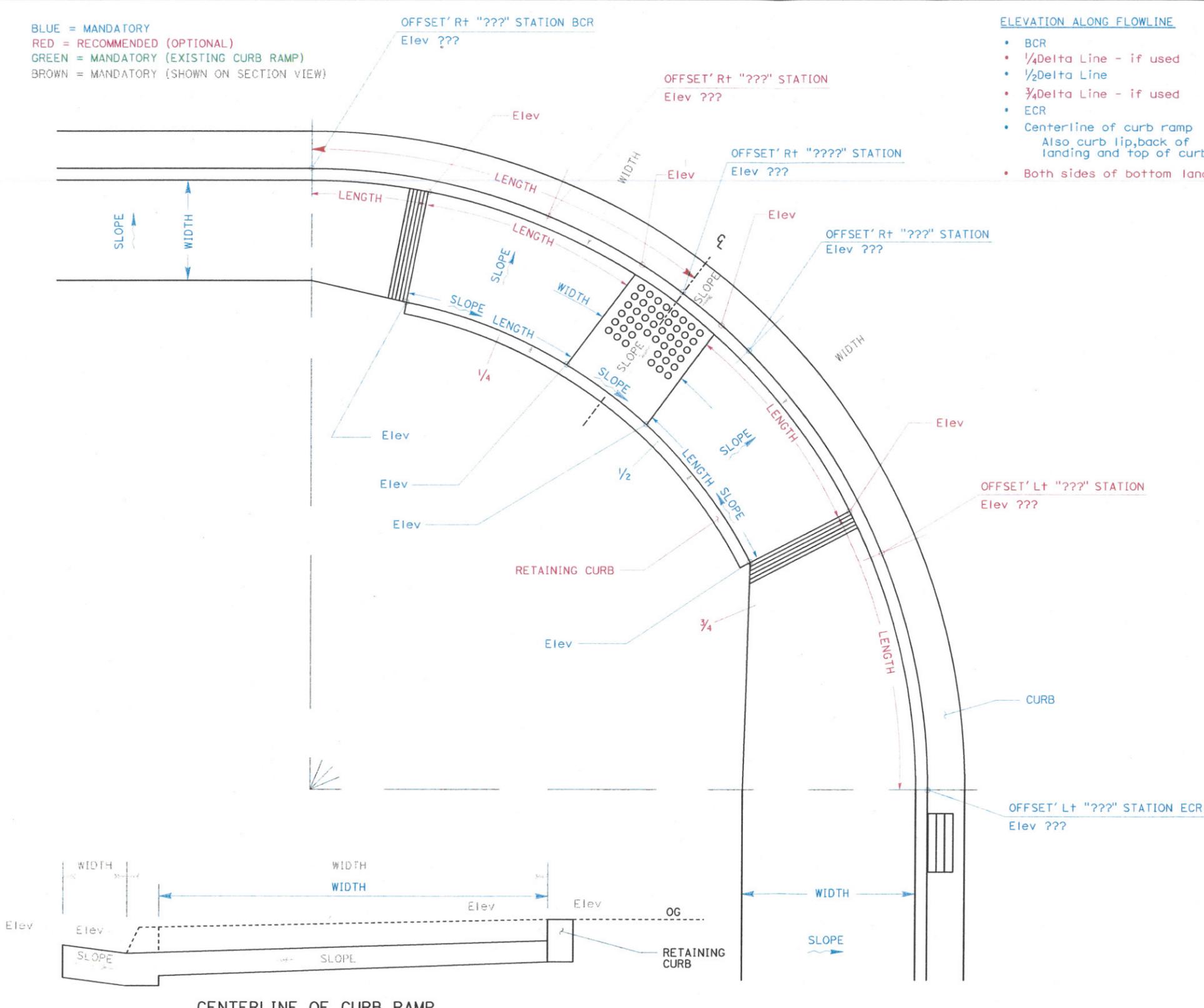
**MISCELLANEOUS**

- Label type of curb
- Label retaining curb
- Show delta lines when surveys needs to stake a new occurrence of a curb ramp

**INFORMATION FOR EXISTING CURB RAMPS**

- Length from sawcut (conform) to a known point (e.g., BCR/ECR or begin of curb ramp)
- Label sawcut
- Length of conforming transition to match existing sidewalk slope
- Cross slope at conform
- Width of existing sidewalk
- Elevations at conform
- Delta lines are optional

**CONSTRUCTION DETAILS**



**GENERAL GUIDELINES FOR CURB RAMP DESIGN**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR
DATE PLOTTED => 06-MAY-2014	TIME PLOTTED => 08:24			

CURB RAMPS WHERE SIDEWALK DOES NOT EXIST, RELEASED 05/09/2014

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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SLOPE RUN	ELEVATION DIFFERENCE			
	PERCENT SLOPE			
	1.5%	5.0%	7.5%	9.0%
2'	0.03	0.10	0.15	0.18
4'	0.06	0.20	0.30	0.36
6'	0.09	0.30	0.45	0.54
8'	0.12	0.40	0.60	0.72
10'	0.15	0.50	0.75	0.90
12'	0.18	0.60	0.90	1.08
15'	0.22	0.75	1.12	1.35

**NOTE:**  
FOR DETAILS NOT SHOWN, SEE REVISED STANDARD PLANS A88A.

The curb ramps drawn on Construction Details sheets are to show all the information needed to construct the curb ramp. The Layout sheets should only show the location of the curb ramp with its identifying number.

Elevation difference (in feet) between two points for a given distance at percent slopes used when designing to design standards.

The numbering for curb ramp curve data information shown on Construction Details sheet(s) usually starts with the No. 1 for each detail sheet. The numbering for the curve data information for each alignment shown on the Layout sheets, are NOT to be repeated on the Construction Details sheet(s).

**CURVE DATA**

No.	⊙	R	Δ	T	L
1		33.00'	90°0'0"	33.00'	51.84'

Showing a detail for each curb ramp allows the designer and bidder or contractor to determine the various quantities for constructing the curb ramp.

Curb ramp grooving and detectable warning surface shall be drawn with each curb ramp detail, but labeling is not necessary as the specifics for each are clearly shown and identified in the Revised Standard Plans.

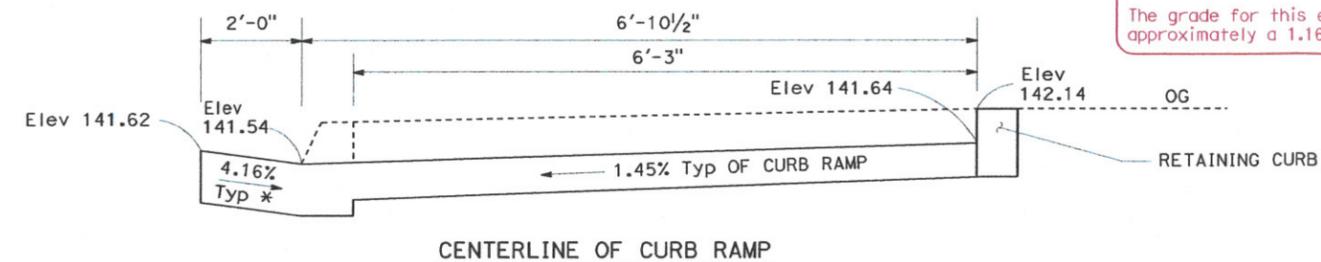
This example is designed to meet or be more conservative than the design standards shown in the Revised Standard Plans. Even though this curb ramp meets or is more conservative than the design standards shown in the Revised Standard Plans, the slopes, dimensions and elevations need to be shown in order for the contractor to build the curb ramp per the design.

This example is NOT to be included in the "PRE/POST CONSTRUCTION SURVEYS" bid item, as all of the curb ramp slopes and widths meet the design standards shown in the Revised Standard Plans.

The profile of the flowline controls most of the elevations associated with the curb ramp.

The lengths and running slope on each side of the bottom landing will most likely be different slopes and lengths.

The grade for this example is relatively flat, approximately a 1.16% slope from BCR to ECR.



\* Typical for the width of the bottom landing (accessible pathway). For additional information on Counter Slopes, see Revised Standard Plan A88A (Note 9), or DIB 82 Section 4.3.8 - (4) and (8).

**NEW CURB RAMP WHERE CURB, GUTTER AND SIDEWALK DOES NOT CURRENTLY EXIST**

- MANDATORY FOR CONSTRUCTION OF CURB RAMPS**
- Station, offset and elevation of the BCR and ECR at the gutter flowline.
  - Station, offset and elevation of the 1/2 Delta Line at the flowline.
  - Show centerline of curb ramp with station, offset and elevation at the gutter flowline. A section view along the curb ramp centerline is included to show slopes and additional elevations. Additional elevations should include the curb lip (at roadway surface), the back of landing and the top of curb.
  - Showing a section view(s) will assist the contractor to better understand the design slopes for ADA compliance.
  - Elevation where the top of the ramp and back of sidewalk meet (or begin and end of retaining curb).
  - Length of curb ramp running slope(s).
  - Curb ramps shall have a running slope not steeper than 8.3% Max, but shall not require the ramp length to exceed 15 feet (see DIB 82 Section 4.3.8 (1)).
  - Width of curb ramp, landing (turning space) and adjacent sidewalk.
  - Running slope and cross slope of curb ramp. Slope and cross slope of bottom landing. Cross slope of sidewalk. Gutter pan slope (counter slope) within width of landing.
  - Alignment line for state highway or ramps, with stationing labeled every full station.
  - Alignment line for local street when used for station and offsets.

- RECOMMENDED FOR CONSTRUCTION OF CURB RAMPS**
- If the gutter flowline is not a constant grade, then additional elevations may need to be shown beyond just the BCR and ECR, such as grade breaks or both sides of the bottom landing.
  - Elevation at top of curb (TOC) at both ends of the curb and gutter.
  - Showing the radius point and the delta lines. Depending on the length of curve, show the 1/4 and 3/4 Delta Lines for longer length curb returns (see Surveys Manual).
  - Showing additional distances to key points will better enable the contractor to achieve the design values for ADA compliance. Such as the length from the BCR and ECR to the begin of the curb ramp or centerline of the curb ramp.
  - Drainage inlets should not be located within the curb ramp accessible pathway.
  - At each curb ramp, check if there is any existing survey monumentation that may be obliterated by the construction of the new curb ramp. If found, contact Right of Way Engineering.
  - Provide only those pavement elevations that are directly related to the slopes affecting the construction of the curb ramps and crosswalks.
  - Label all slopes, lengths and dimensions of the curb ramp, even if they meet the design standards shown in the Revised Standard Plans. Place a note referring to the Revised Standard Plans for details not shown.
  - Label the type of curb and the retaining curb.
  - Show symbol for pedestrian push button locations with a reference to see the Electrical Systems plan sheets for further details.
  - Utility features (poles and covers) should not be located within the limits of the curb ramp, and should not restrict the pedestrian route.

REVISIONS: 00-00-00  
 DATE PLOTTED: 06-04-2014  
 TIME PLOTTED: 08:53  
 STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Functional Supervisor  
 Calculated-Designed By  
 Checked By  
 Revised By  
 Date Revised  
 00-00-00

**NOTE:**  
FOR DETAILS NOT SHOWN, SEE REVISED STANDARD PLAN A88A.

The curb ramps drawn on Construction Detail sheets are to show all the information needed to construct the curb ramp. The Layout sheets should only show the location of the curb ramp with its identifying number.

Elevation difference (in feet) between two points for a given distance at percent slopes used when designing to design standards.

SLOPE RUN	ELEVATION DIFFERENCE			
	PERCENT SLOPE			
	1.5%	5.0%	7.5%	9.0%
2'	0.03	0.10	0.15	0.18
4'	0.06	0.20	0.30	0.36
6'	0.09	0.30	0.45	0.54
8'	0.12	0.40	0.60	0.72
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12'	0.18	0.60	0.90	1.08
15'	0.22	0.75	1.12	1.35

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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**CURVE DATA**

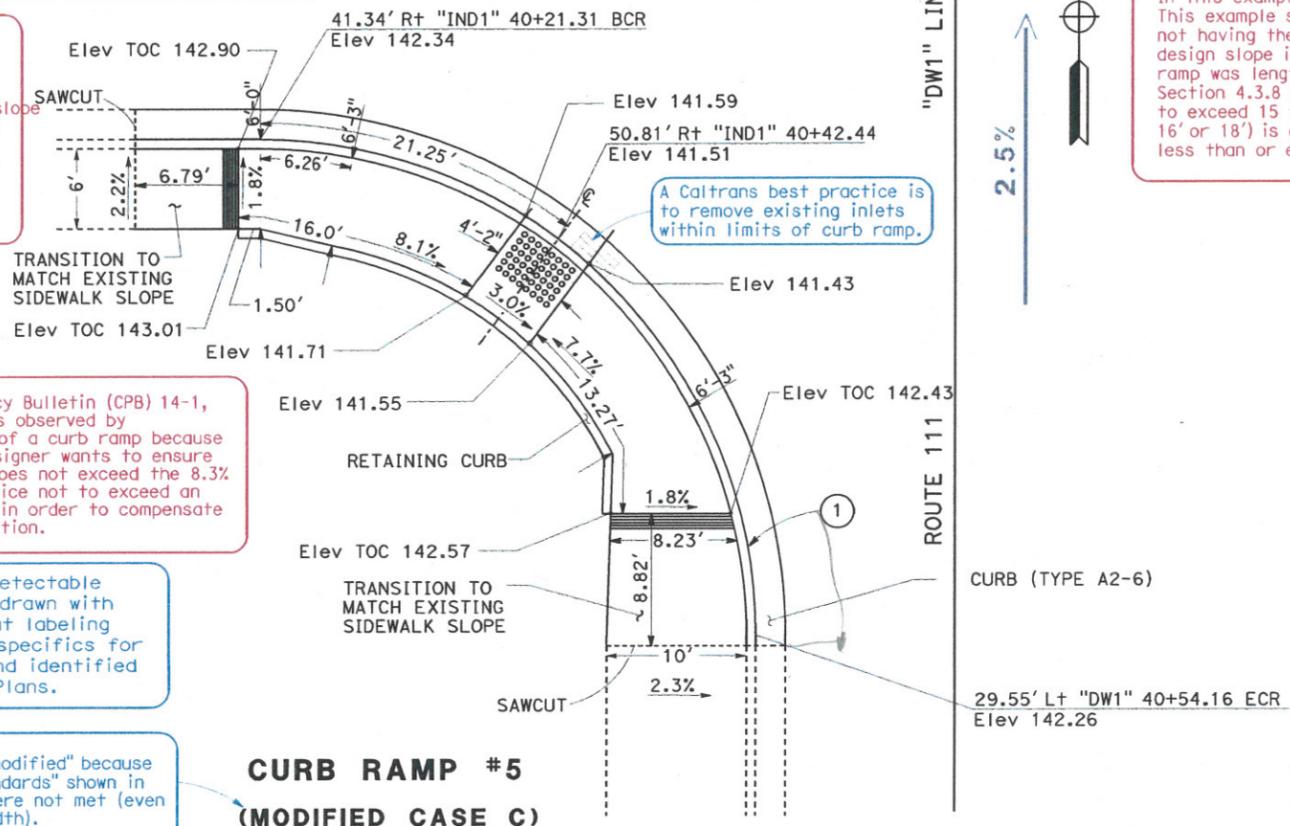
No.	R	Δ	T	L
1	33.00'	90°0'0"	33.00'	51.84'

In this example the cross slope of the bottom landing is 3%, which exceeds the design standard shown on RSP A88A. However, DIB 82 Section 4.3.8 (8) allows the cross slope of the curb ramp to match roadway grade in certain situations. The application of DIB 82 Section 4.1.2 will determine the necessary scope and design standards that are involved.

In the Caltrans Construction Policy Bulletin (CPB) 14-1, a 0.2% allowable slope variation is observed by Construction in the construction of a curb ramp because of the measuring device. If a designer wants to ensure that the constructed curb ramp does not exceed the 8.3% max slope, it may be a good practice not to exceed an 8.1% design slope for curb ramps in order to compensate for the 0.2% allowable slope variation.

Curb ramp grooving and detectable warning surface shall be drawn with each curb ramp detail, but labeling is not necessary as the specifics for each are clearly shown and identified in the Revised Standard Plans.

This example is considered "modified" because the "conservative design standards" shown in the Revised Standard Plans were not met (even if it is just one slope or width).  
In this example, the minimum dimensions shown in the Revised Standard Plans were met, but the slopes were not, thus this curb ramp must be included in the PRE/POST CONSTRUCTION SURVEYS bid item.



In this example, the design running slope on one side is 8.1%. This example strove to meet the 8.3% constructed slope by not having the design slope exceed 8.1%. To achieve the 8.1% design slope in this example, the length of the parallel curb ramp was lengthened to 16 feet. However, per DIB 82 Section 4.3.8 (1), the ramp length shall not be required to exceed 15 feet. But lengthening the ramp a few feet (to 16' or 18') is okay if it allows the constructed slope to be less than or equal to the Max 8.3%.

If a curb ramp length is less than or equal to 15', the controlling factor is the 8.3% Max slope. But when a ramp length is greater than 15', the controlling factor is the length and the running slope may exceed 8.3%. This situation occurs when the existing grades are steep and the ramp run will not intercept the sidewalk surface, or will be excessively long before obtaining a slope less than or equal to 8.3%.  
If there are questions about what "Best Practice" to apply when the ramp length reaches 15', contact the Project Delivery Coordinator, or ADA coordinator in HQ Division of Design.

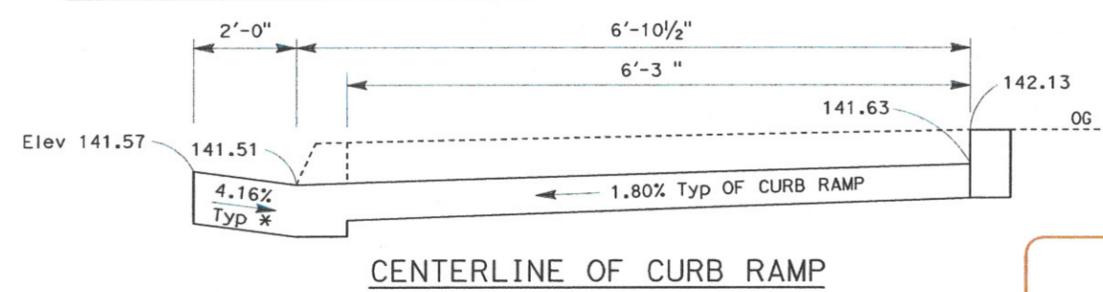
**MANDATORY FOR CONSTRUCTION OF CURB RAMPS**

- Station, offset and elevation of the BCR and ECR at the gutter flowline.
- Show centerline of curb ramp with station, offset and elevation at the gutter flowline. A section view along the curb ramp centerline is included to show slopes and additional elevations.  
Additional elevations should include the curb lip (at roadway surface), the back of landing and the top of curb.
- Showing a section view(s) will enable the contractor to better understand the design slopes for ADA compliance.
- Elevation where the top of the ramp and back of sidewalk meet (or begin and end of retaining curb).
- Length of curb ramp Running Slope(s).
- Length from sawcut (conform) to a known point(e.g., BCR/ECR or begin of curb ramp).
- Curb ramps shall have a running slope not steeper than 8.3% Max, but shall not require the ramp length to exceed 15 feet (see DIB 82 Section 4.3.8 (1)).
- Running Slope and Cross Slope of curb ramp. Slope and Cross Slope of bottom landing. Cross Slope of sidewalk. Gutter Pan Slope (counter slope) within width of landing.
- Width of curb ramp, landing (turning space) and adjacent sidewalk.
- Slope and width of existing sidewalk at the sawcut (conform point).
- Alignment line for state highway or ramps, with stationing labeled every full station.  
Alignment line for local street when used for station and offsets.

**RECOMMENDED FOR CONSTRUCTION OF CURB RAMPS**

- If the gutter flowline is not a constant grade, then additional elevations may need to be shown beyond just the BCR and ECR, such as grade breaks or both sides of the bottom landing.  
Elevation at top of curb (TOC) at both ends of the curb and gutter.
- Showing additional distances to key points will better enable the contractor to achieve the design values for ADA compliance.  
Show the length from the BCR and ECR to the begin of the curb ramp or centerline of the curb ramp.
- Existing drainage inlets within the limits of the curb ramp should be relocated outside the curb ramp accessible pathway.
- At each curb ramp, check if there is any existing survey monumentation that may be obliterated by the construction of the curb ramp. If found, contact Right of Way Engineering.
- Provide only those pavement elevations that are directly related to the slopes affecting the construction of the curb ramps and crosswalks
- Label the slopes, lengths and dimensions of the curb ramp, even if they meet the design standards shown in the Revised Standard Plans. Place a note referring to the Revised Standard Plans for details not shown.
- Label the type of curb and the retaining curb.
- Show a sidewalk conform slab if necessary, with elevations and slopes at the sawcut line.
- Show symbol for pedestrian push button locations, and with a reference to see the Electrical Systems plan sheets for further details.
- Utility features (poles and covers) should not be located within the limits of the curb ramp, and should not restrict the pedestrian route.

The profile of the flowline controls most of the elevations associated with the curb ramp.  
The length and running slope on each side of the ramp runs will most likely be different slopes and lengths.  
This grade for this example is moderately steep, approximately a 4.0% downward slope from BCR to the centerline and a 2.5% downward slope from ECR to the centerline. This creates a low point at the centerline. Consideration where best to place inlets must occur during design.



**NEW CURB RAMP WITHIN EXISTING CURB, GUTTER AND SIDEWALK**

\* Typical for the width of the bottom landing (accessible pathway). For additional information on Counter Slopes, see Revised Standard Plan A88A (Note 9), or DIB 82 Section 4.3.8 - (4) and (8).

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
Caltrans

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CALCULATED/DESIGNED BY  
CHECKED BY

FUNCTIONAL SUPERVISOR

DATE PLOTTED => 06-MAY-2014  
TIME PLOTTED => 08:27

NEW CURB RAMP WITHIN EXISTING SIDEWALK, RELEASED 05/09/2014