

Design Considerations



The following slides will discuss design considerations for curb ramps.

Level Landings



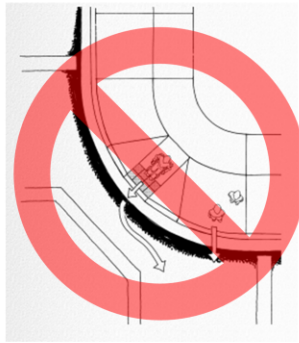
Problem:

Perpendicular curb ramps without level landings are poor design because they cause severe cross slopes and rapid changes in cross slope over short distances.

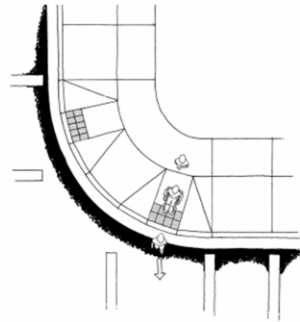


In the picture you can see how pedestrians must traverse the flares and ramps which is never ideal. Also, landing areas are not provided for the curb ramps.

Diagonal Ramps are **NOT** ideal



At diagonal curb ramps, wheelchair users cross in different location than other pedestrians.




With 2 separate ramps pedestrians cross at the same location.



Diagonal ramps are not ideal. The pedestrians located along the straight segment of curb are more visible to vehicles. The clear space and landing requirements make diagonal ramps difficult to construct.

Separate curb ramps must always be considered prior to installing a diagonal ramp.

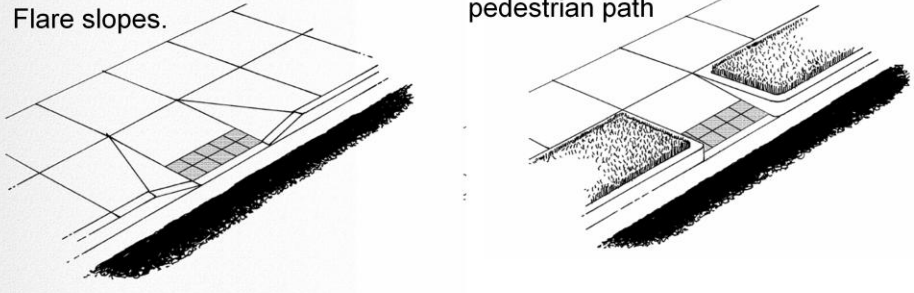


Poor Design


Unexpected vertical drop.

Flare slopes.

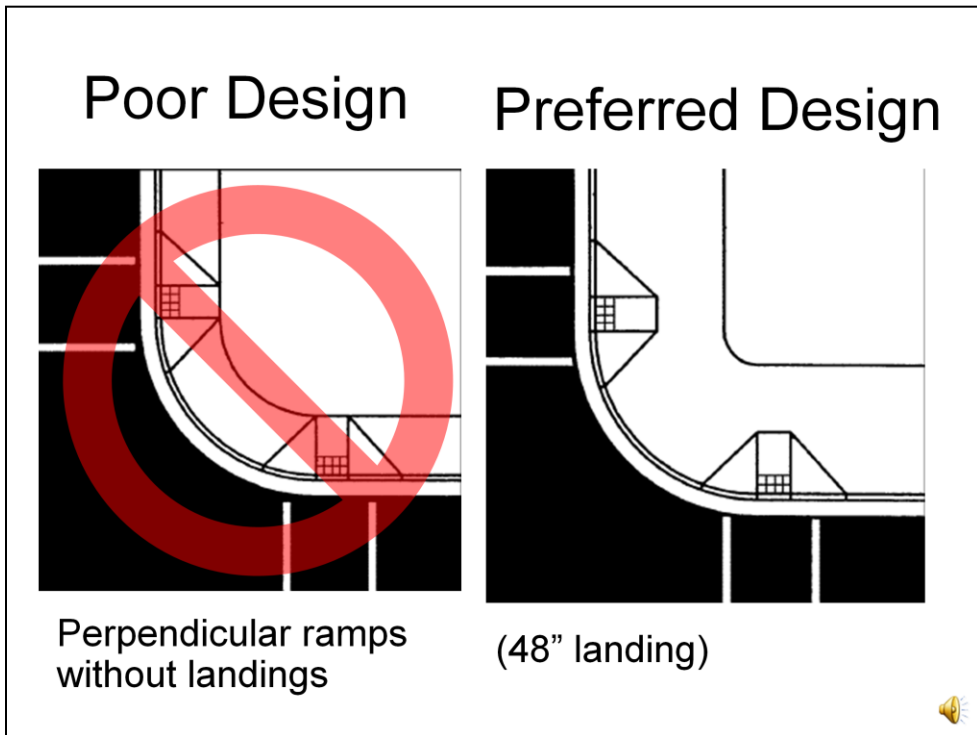
Protect vertical drop or remove from pedestrian path



Preferred Design

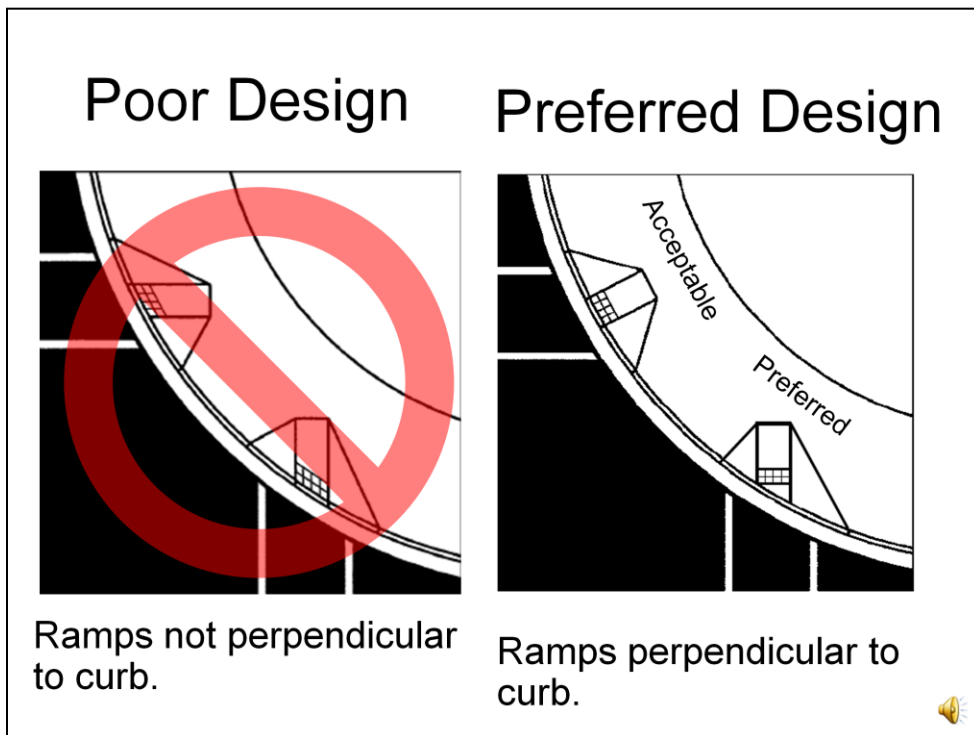


Unexpected vertical drops in the pedestrian path are not acceptable. The vertical drop must be flared as shown on the bottom left or removed from the pedestrian path as shown on the bottom right.



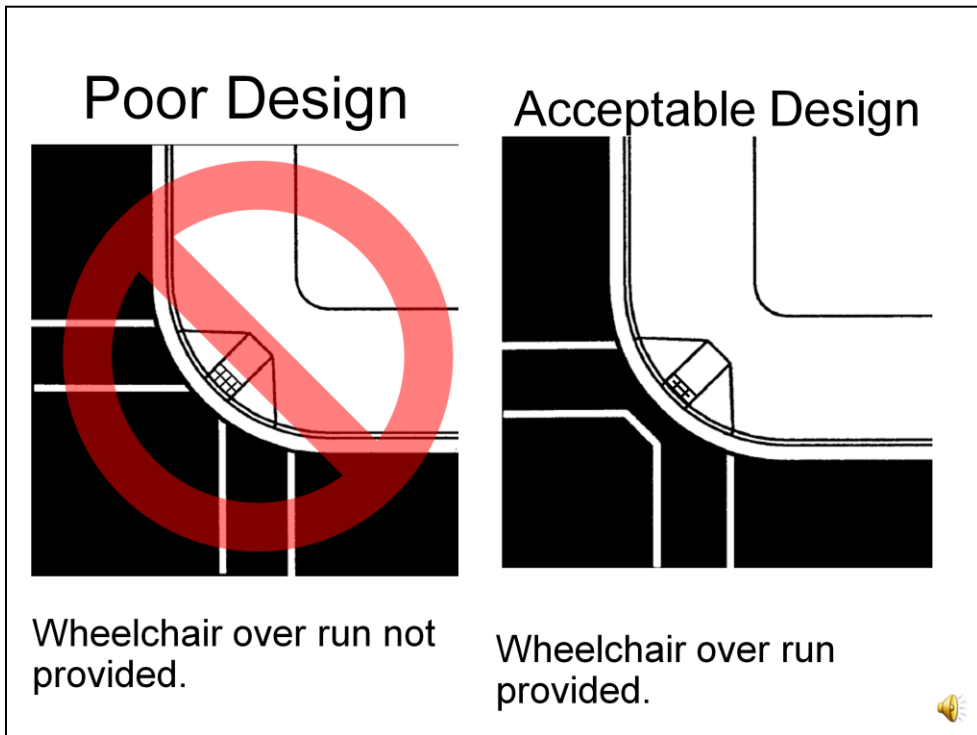
The graphic on the left does not provide level landings with the Type 1 proposed design. The graphic on the right does provide the landings.

Notice how the sidewalk width increase from the graphic on the left. If the sidewalk width can not be increased, investigate the use of a type 2 curb ramp.



The left graphic is poor design since the curb ramp is not perpendicular to the curb. This will cause an uneven surface for persons in wheelchairs.

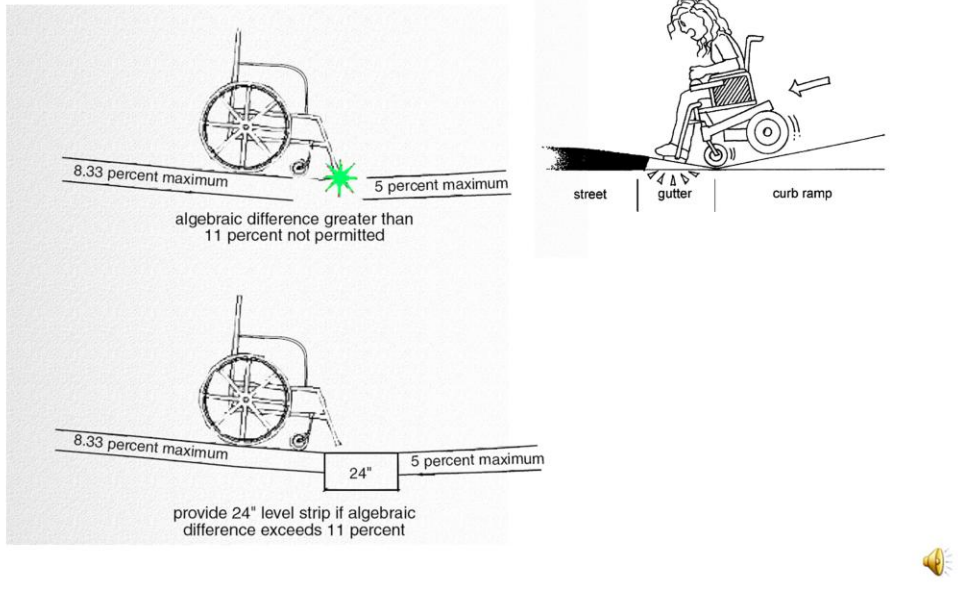
The design on the right shows two different methods of keeping the grade break perpendicular to the ramp. The top option shows the ramp perpendicular to the curb. However this causes the curb ramp to not align with the crossing. The bottom option is preferred because the design uses a triangular landing to keep the grade break perpendicular to the curb ramp and keeps the curb ramp aligned with the crossing.



The left graphic is a poor design since the curb ramp places the pedestrian in the middle of the street.

On the right is an acceptable design if a diagonal ramp must be installed.

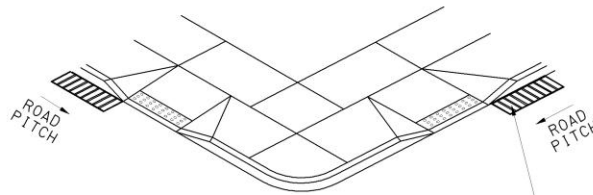
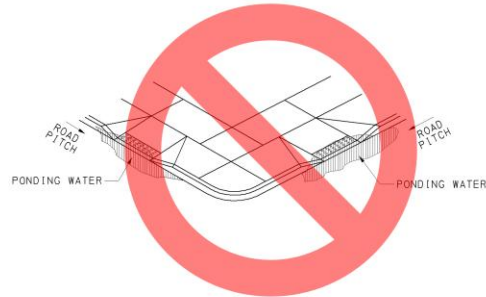
Changes in Grade



Changes in grade.

If the algebraic grade break exceeds 11%, wheelchairs may make contact with the road or ramp surface. To transition this algebraic grade break, use a level (2% max) 24" transition strip. This will create more a sag curve and will make the algebraic grade break more gentle.

Poor Design



Preferred Design

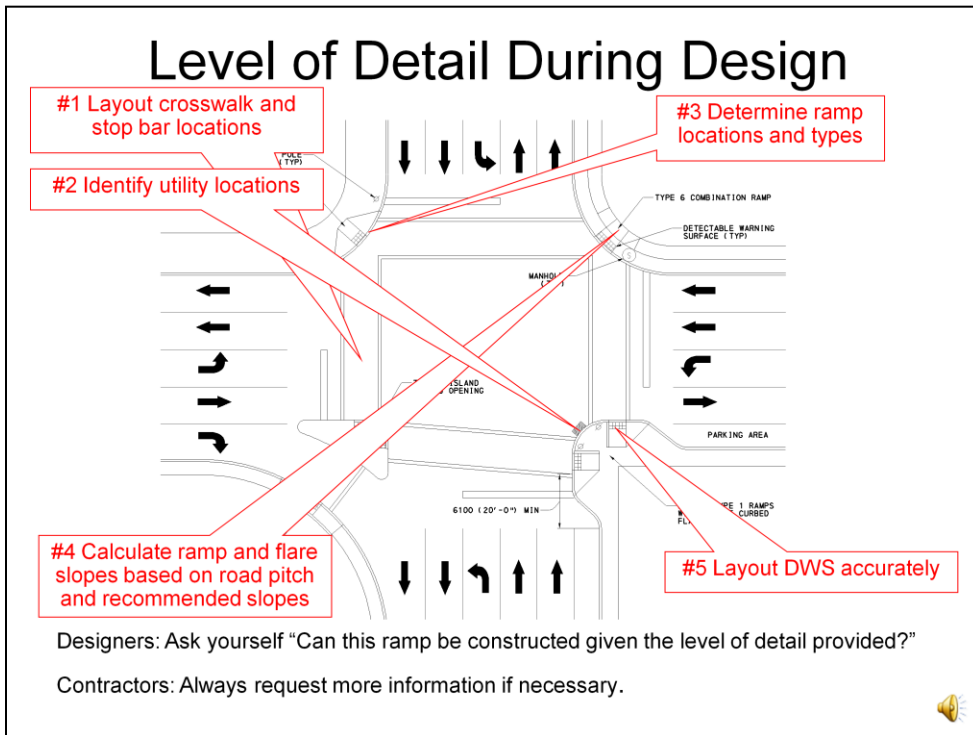
FOR NEW CONSTRUCTION
LOCATE INLET
UPSTREAM OF RAMPS
(TYP)



Locating curb ramps at the low point on the curb return will cause ponding.

Inlets must be placed at the low point.

For new construction, place inlets as necessary to intercept the drainage before it crosses the curb ramp. If flow line elevations are designed correctly, the curb ramp will not collect runoff.



Level of detail during design.

Curb ramps shall be designed by designers and constructed by contractors. This will take a team effort by both parties. Plans must show enough detail for the contractor to construct. If the plans simply show a label, the plans should not be accepted.

At a minimum, designers shall consider where pedestrians cross, existing and proposed utilities, ramp locations and types, calculate ramp and flare slopes and show them correctly, and show DWS correctly.