

All designs need to be ADA compliant and follow the ADA Standards unless all alternatives have been explored and the results have been documented. While ADA compliance is the minimum standard that must be met, in order to meet the long term objectives, all designs must also be constructible, maintainable, and address the range of pedestrian user needs. The ADA Standards were created to implement best practices and incorporate lessons learned in a manner that provides construction tolerances and meets the long term maintenance and usability needs.

MnDOT PROWAG MUTCD	CURB RAMP DESIGN CRITERIA	revision: 1/12/2018
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ITEM		MIN	MAX	STANDARD	REASON*	GUIDANCE
LANDING		4' X 4'	VARIES	5' X 5'	C & U	1) Match Pedestrian Access Routes (PAR). 2) Enlarge landings to achieve perpendicular grade breaks. 3) Landings should be designed in one continuous plane.
RAMP SLOPE	(F)	2.0%	5.0%	4.0%	C, M & U	1) Maintains drainage in gutter. 2) Blend in better with surrounding terrain. 3) Reduce removal limits while minimizing v-curb. 4) For (S) Fans, see Curb Ramp Standard Plans 5-297.250 Pg 1 of 6 Note 10.
	(S)	5.0%	8.3%	7.0%		
	FAN	2.0%	5.0%	4.0%		
ONCE YOU HAVE REACHED THE 3" MIN CURB HEIGHT, THE CURB HEIGHT SHOULD MATCH PAR HEIGHT. SHOW INTERMEDIATE CURB HEIGHTS WHEN (A) LANDING ELEVATIONS ARE LESS THAN THE TYPICAL CURB SECTION OR (B) BOULEVARDS ARE LESS THAN 3 FEET AT THE CURB RAMP OR (C) WHEN SIDEWALK IS AT BACK OF CURB.					M & U	Avoid inverse sloped boulevards and keep landing above or within an inch of the top of curb to reduce trip hazards. Utilizing an appropriate ramp slope helps maintain the PAR height and provides a very usable pedestrian network, in addition to the guidance seen above.
RAMP WIDTH		4'	VARIES	6' MIN APS 6' MIN COMMERCIAL AREA MATCH TRAIL WIDTH	M & U	Match PARs.
RAMP LENGTH		3'	15'	4' MIN 6' MAX	C & U	Construction can build a minimum 2.5' ramp if necessary.
LANDING & RAMP CROSS SLOPE		POSITIVE FLOW	2.0%	1.0% MIN 1.5% MAX	C	Steep trails and side landings use 0.5% cross slope.
GUTTER FLOWLINE		POSITIVE FLOW	2.0%	1.0% MIN 1.5% MAX	C	Maintain positive drainage, flowline with radial domes should have a continuous grade, show tabling of curb and gutter with adequate construction limits if existing flowline is over 3%. If 2-3%, state designer intent to obtain <2% with note on plan.
ROADWAY CROSS SLOPE		POSITIVE FLOW	5.0%	1.0% MIN 5.0% MAX	C & U	Used when adjusting flowline, maintain positive drainage to edge of road and do not exceed 5%.

- (1) Design to the nearest minimum half-foot increment, one-foot increment (preferred) for all ADA and APS Applications.
- (2) When inverse grades are present, minimize the elevation change of the PAR unless proven necessary to maintain drainage.
- (3) With regards to v-curb/grading, see Curb Ramp Standard Plans 5-297.250 Pg 1 of 6 Note 7. Talk with property/land owners to find out which treatment they would prefer.
- (4) With regards to multiple ramps design at a quadrant, see Curb Ramp Standard Plans 5-297.250 Pg 2 of 6 Note 4. The "bump" typically happens when ramp separation is minimal on a combined directional and no (or narrow) boulevard is present. In these instances, a Fan/Depressed Corner will alleviate this problem and provide better maintainability and usability. 7' min. separation between ramps should be achieved in areas with concrete boulevards while 5.5' min. separation applies for areas with grass boulevards.
- (5) Flowlines need a 3" minimum freeboard to doorways. (3" below threshold i.e. depressed corners must not be used when adjacent to corner doorways at buildings).

*C for Constructability, M for Maintainability, U for Usability.

ITEM	MIN	MAX	STANDARD	REASON*	GUIDANCE
PUSH BUTTON STATION SETBACK	1.5'	10'	4' MIN URBAN, 6-8' MIN RURAL, 9.5' MAX	M	Push button setback measured from the back of curb (urban) or edge of roadway (rural) at outside zero point.
PUSH BUTTON FROM INITIAL RAMP GRADE BREAK OR BACK OF WALK	0.75'	-	2' MIN	C & U	Place push button 2' min from edge of landing to provide usable push button access. 6' MAR takes priority over this criteria.
MAINTENANCE ACCESS ROUTE (MAR)	6'	-	-	M & U	Move push button to back of landing when 6' MAR cannot be achieved. Talk with local agencies to understand their snow and ice maintenance requirement widths.
PUSH BUTTON OFFSET FROM OUTSIDE EDGE OF CROSSWALK	0'	5'	-	U	When the push button is offset from the edge of crosswalk a walkable flare is preferred over a graded flare so users who depart from the push button will traverse a concrete surface. Distance is measured perpendicularly from extension of crosswalk.
PUSH BUTTON SEPARATION	10'	-	10.5' MIN	C	Must meet minimum MAR criteria at pork chop islands.

- (1) A leveled landing shall be adjacent to all push buttons.
- (2) Keep all push buttons outside of sidewalk PAR's. Push buttons shall not be in the middle of shared-use paths. Allowable push button encroachment: 2' on 10' wide trails and 1' on 8' wide trails if needed.
- (3) When sidewalk is at the back of curb, the push button should be placed toward the back of walk. Typically placed at 8' - 9.5' from the back of curb.
- (4) When installing new signal poles, it is preferred to get them out of the way as to not obstruct the pedestrian facilities. When in congested quadrants (i.e. downtown corridors), APS push buttons on signal poles are preferred although new signal poles need thorough underground utility coordination.

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ITEM	MIN	MAX	STANDARD	REASON*	GUIDANCE
LANDING	5' X 5'	VARIES	-	C & U	MATCH PARs, enlarge landings to achieve perpendicular grade breaks.
SIDEWALK CROSS SLOPE	POSITIVE FLOW	2.0%	1.5% MAX 1.0% MIN	C	For steep sidewalk running slopes greater than 5%, flatter cross-slopes should be used 0.5% typical.
SIDEWALK RUNNING SLOPE		5.0%	-	C, M & U	For sidewalk running slopes, the max. running slope is 5% (unless roadway grade is steeper).
SIDEWALK RAMP SLOPE	5.0%	8.3%	7.0%	C, M & U	Only for sidewalk not adjacent to roadway. A landing is needed for every 30" of vertical rise with compliant handrails on both sides of ramp For building access, ramp slopes are 5% max. unless covered.
SIDEWALK OFFSET AND TAPER	-	-	-	M & U	Maximum offset is 1/2 the width of the ramp. On Curb ramp retrofit projects the min. sidewalk taper is 1:3 with 1:5 being preferred. However the min. taper for sidewalk reconstruction projects is 1:10.
SIDEWALK WIDTH	5'	VARIES	-	M & U	<ol style="list-style-type: none"> 1) Based on context and volume of users. 2) Talk with local partners to understand their snow and ice maintenance requirements. 3) Recommend 10' min measured from back of curb for commercial areas with doorways at back of walk.
SIDEWALK WIDTH AT BACK OF CURB (NON-COMMERCIAL AREAS)	5'-6'	VARIES	7' MIN 8' PREFERRED	M & U	The sidewalk minimums of 5'-6' should only be used if there are no driveway, lighting or sign impacts present with in the sidewalk.
SIDEWALK PAVED BOULEVARD SLOPE	POSITIVE FLOW	8%	1.0% MIN 5.0% MAX	M & U	Slopes greater than 8% can become tripping hazards for user traversing the curb and sloped boulevard. Adjust centerline road profile or flatten the shoulder/parking lane to raise the curb line to achieve desired boulevard slope.
PAVED BOULEVARD WIDTH	2' MIN	-	1/3 BLVD. WIDTH TO 2/3 PAR WIDTH	M & U	For example a 9' sidewalk at a min. should have 6' wide par with a 3' wide boulevard.
GRASS BOULEVARD WIDTH	3' MIN	-	4' FOR 4" HIGH CURB 6' FOR 6" HIGH CURB	M & U	When the boulevard width is less than 3', it should be paved.
PAR WIDTH	4' MIN	VARIES	6' MIN ADJ. TO BUILDINGS. 2/3 PAR MIN TO 1/3 BLVD	M & U	PAR width adjacent to buildings should be 6' min. to allow for a 1' buffer to the building and doorways. The 6' min. PAR takes priority over 2/3 PAR width to 1/3 boulevard criteria.

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ITEM	MIN	MAX	STANDARD	REASON*	GUIDANCE
APRON LENGTH	18"	-	6' FOR 6" CURB HEIGHT, 4' FOR 4" CURB HEIGHT	U	Add one foot of driveway apron length for every inch of designed curb height if Right-of-Way (ROW) allows.
COMMERCIAL APRON SLOPE RESIDENTIAL APRON SLOPE	POSITIVE FLOW	10% 12%	1.0% MIN 8.0% MAX	U	Design adequate slope for PAR to match designed curb height, maintain consistent PAR elevation and limit the sidewalk roller coaster effect.
PAR HEIGHT (6" C&G)	0"	6"	3" MIN, 6" PREFERRED	M & U	1) Minimize sidewalk roller coaster effect. 2) Desirable to keep PAR elevation continuous or at least in the upper half of curb height. 3) Do not introduce unnecessary elevation changes into the PAR. 4) Standard criteria do not apply to parallel driveway. Recommend to not have consecutive parallel driveway in a series.
PAR HEIGHT (4" C&G)	0"	4"	2" MIN, 4" PREFERRED		
PAR CROSS SLOPE	0.5%	2.0%	1.0% MIN 1.5% MAX	C, M & U	-
SIDEWALK RUNNING SLOPE (PAR) AT DRIVEWAY TRANSITIONS	2.0%	5.0%	4.0% MAX	C, M & U	Can match roadway slope if roadway profile is >5%
PEDESTRIAN ACCESS ROUTE (PAR)	4'	VARIES	5' MIN	C & U	Preferred to match sidewalk/trail widths
BACK OF CURB HEIGHT AT DRIVEWAY APRON	1"	3"	1"	M & U	1) Refer to Sidewalk & Driveway Standard Plan 5-297.254. 2) DW Curb Type 2 can be used to maintain drainage in gutter flowline at negative driveways. 4" curb height is preferred in sidewalk fill areas and in areas adjacent to negative driveways slipping downward from the roadway. 3) Only use DW Curb Type 3 with garage doors at back of walk or minor usage driveways like railroad access along tracks.

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