Ramp Camp

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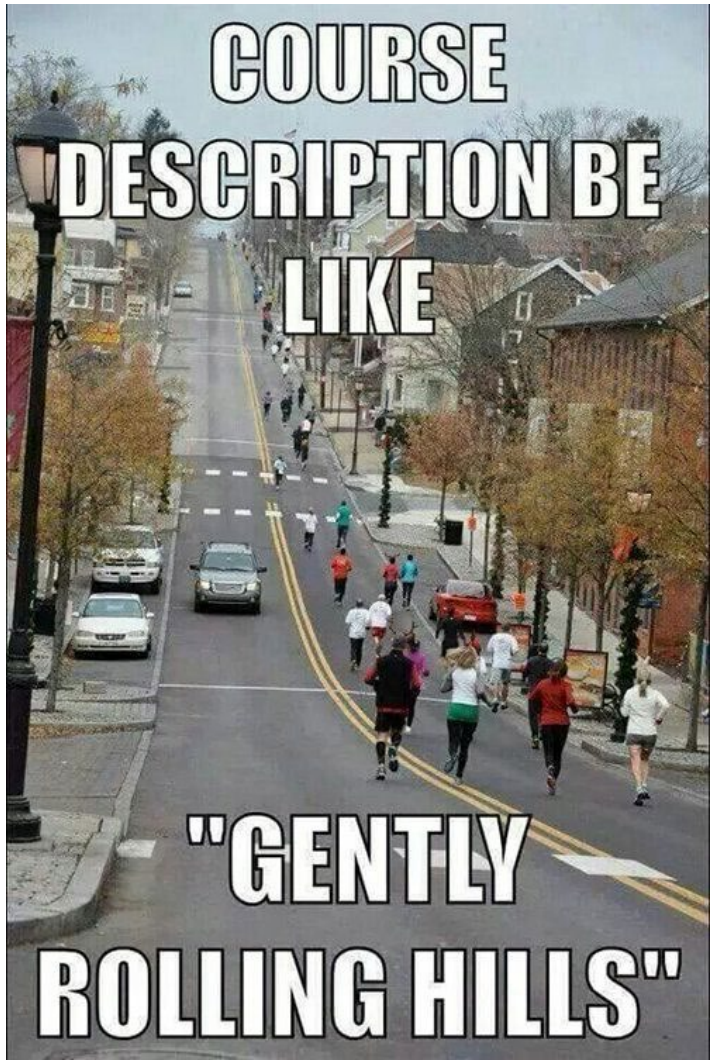
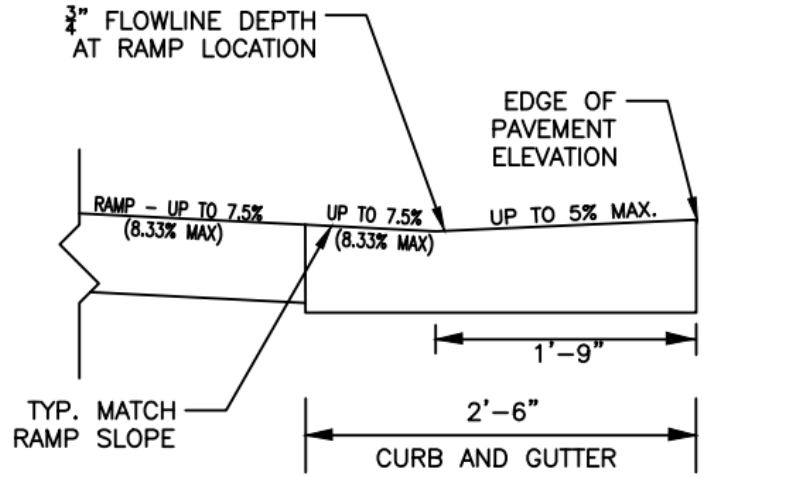
PROWAG requirements



- Maximum running slope of 5% for sidewalks, including SUP.
  - Exception: if there is an adjacent roadway that exceeds 5%, the sidewalk shall not exceed the slope of the adjacent roadway.
- Maximum cross slope of pedestrian access routes = 2.1% (1:48)
- Maximum slope of flares located within walkable surfaces = 10% (1:10)

PROWAG requirements

- Grade breaks must be perpendicular to pedestrian access route
  - Grade breaks shall not exceed 13.3%. If this is not possible a transitional space of 2’ shall be provided.
  - This applies to the curb and gutter at the bottom of the ramp. The counter slope should be 5% max (as shown on the right).
- Domes shall not exceed 5 feet from back of curb and shall encompass entire width of the ramp.
- Provide a curb ramp or blended transition for each crosswalk, or a single blended transition that spans all crosswalks at the intersection corner.

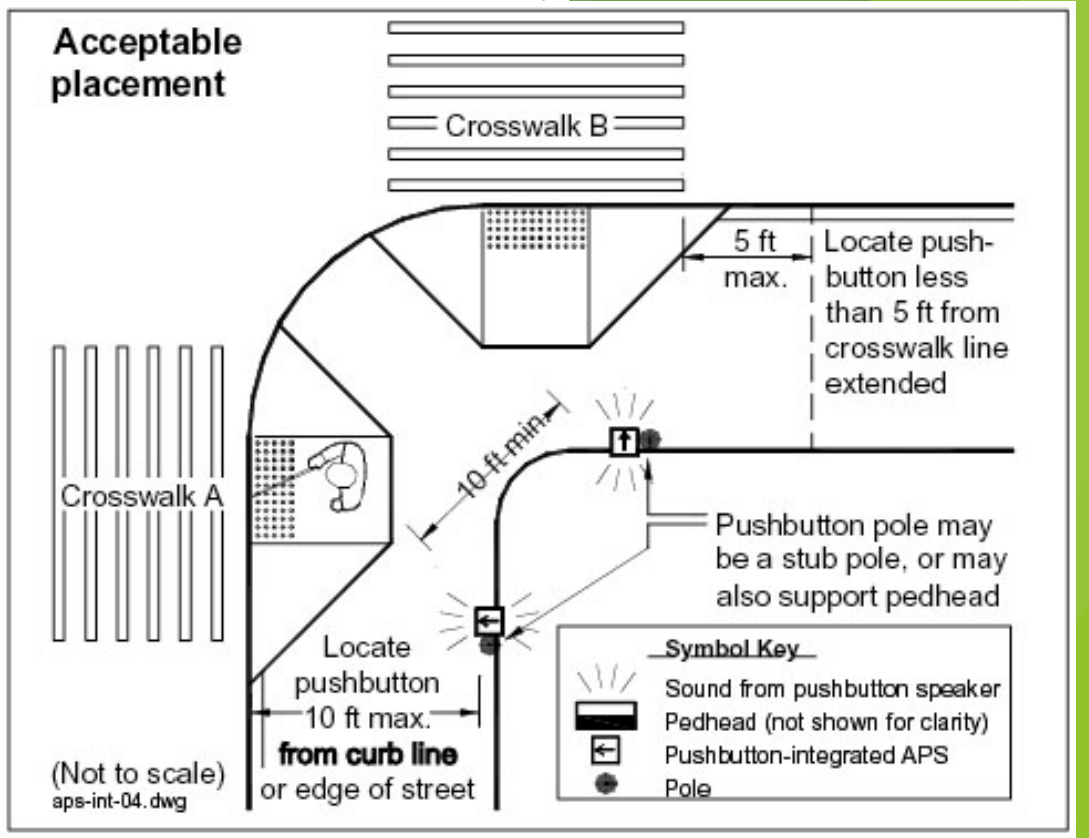


2’–6” CURB AND GUTTER RAMP DETAIL

MAXIMUM SLOPES FOR CURB AND GUTTER DEPRESSION AT RAMPS

PROWAG requirements

- Push buttons
  - Pushbutton should be directly adject to the pedestrian access route so that it is within the reach of the pedestrian.
  - Shall be no greater than 5 feet from the side of a curb ramp run or the edge of the farthest associated crosswalk line from the center of the intersection
  - Shall be between 1.5 and 10 feet from the edge of the curb or pavement
  - Shall be 10ft or more apart from another push button

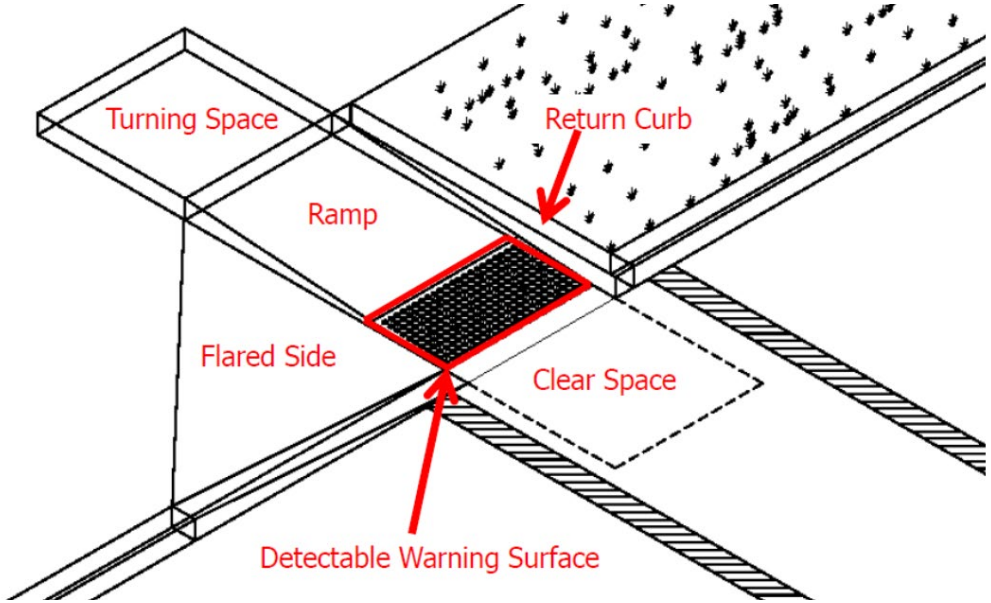


PROWAG requirements

- Grade breaks are not allowed on ramps – entire ramp must maintain constant slope
- Maximum running slope of curb ramp = 8.3% (1:12)
  - Exception: *"Where the curb ramp length must exceed 15 feet to achieve a 1:12 (8.3%) running slope, the curb ramp length shall extend at least 15 feet and may have a running slope greater than 1:12 (8.3%)."*

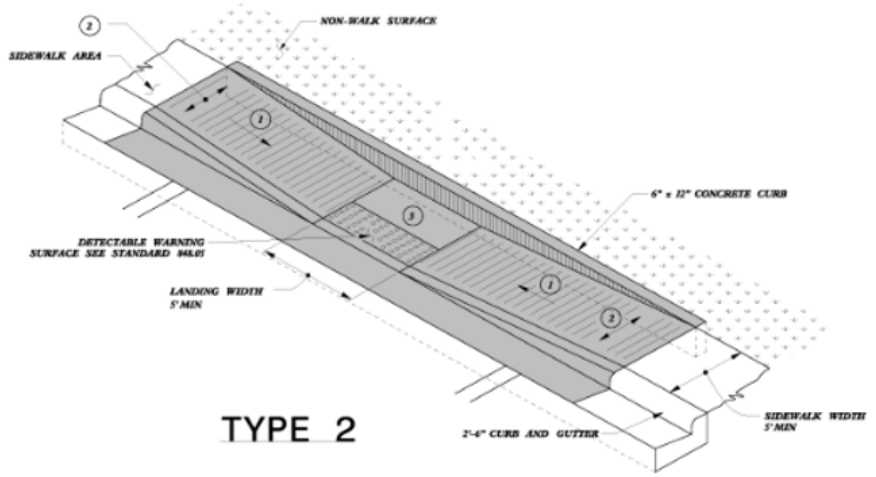
PROWAG requirements

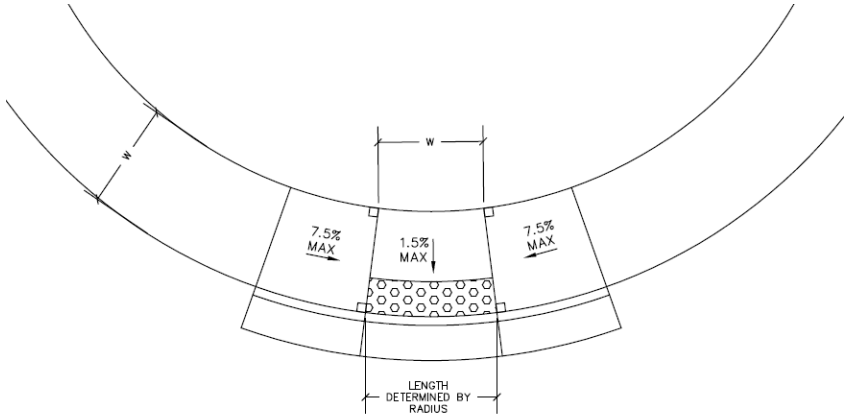
- Landings are required when a change in direction is necessary to access a curb ramp from a pedestrian access route
  - Minimum landing size = 48” x 48”
    - Exception for SUPs which require the width to match the SUP width.
  - Cross slopes of landings shall not exceed 2.1% or the adjacent roadway grade (whichever is greater)
- Clear area is required for a perpendicular ramp, which is the area at the bottom of the ramp.
  - Minimum clear area size = 48” x 48”
    - Exception for SUPs which require the width to match the SUP width.
  - Must be within the crosswalk and outside of the parallel vehicle/bike travel lanes.



Parallel Ramps (NCDOT std 848.06)

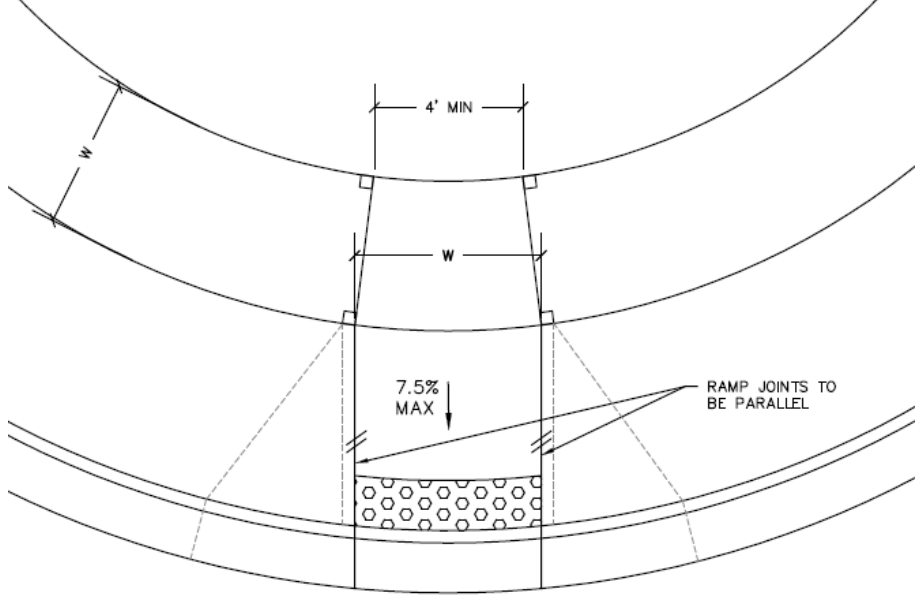
- Parallel ramps are named such because the ramp direction is parallel to the adjacent roadway
- Joints should always be perpendicular to sidewalk.
- The width at the back of the level landing should equal the sidewalk width.
- Length at the front of the landing is determined by the radius.

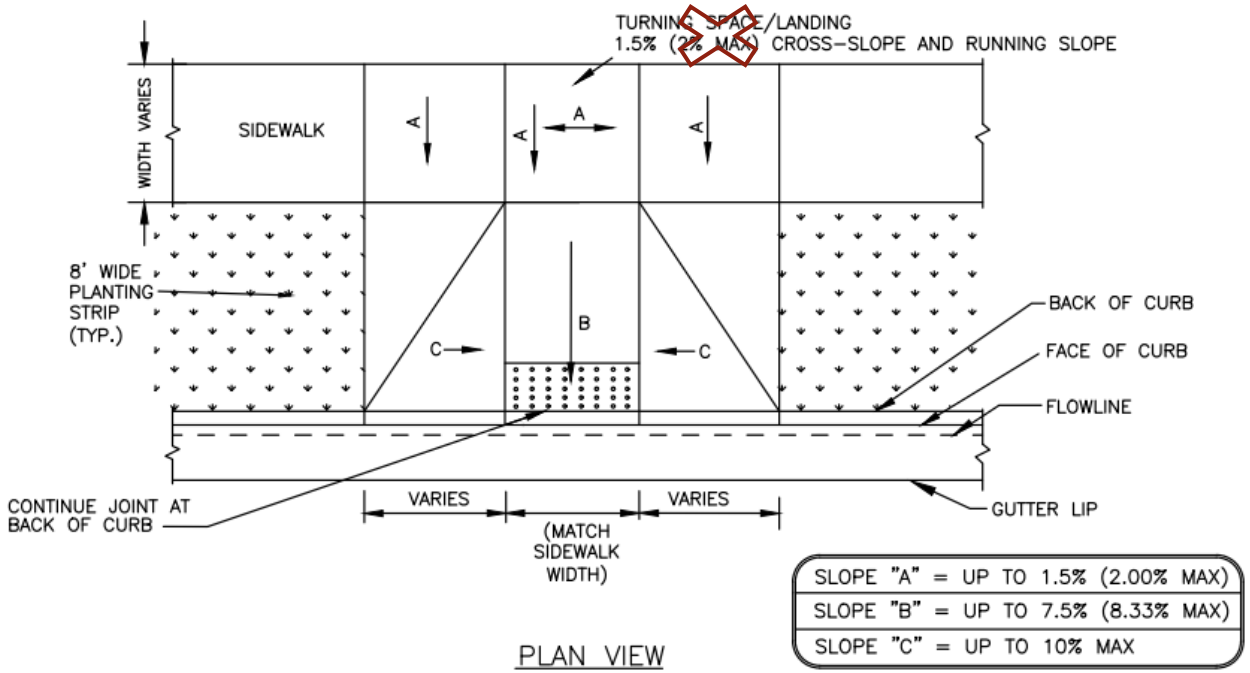




Perpendicular Ramps (CLDSM 10.31/10.33)

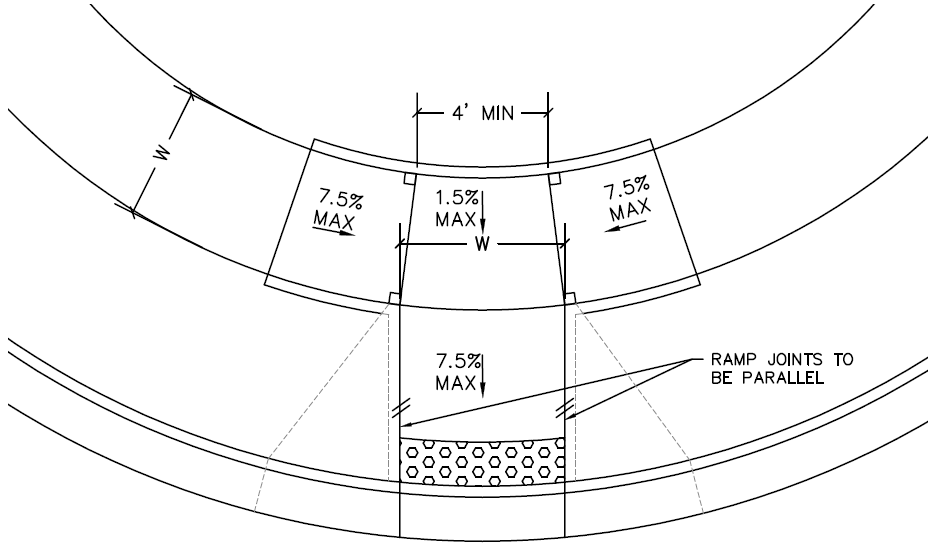
- Perpendicular ramps are named such because the ramp direction is perpendicular to the adjacent roadway curb
- Joints IN THE SIDEWALK should always be perpendicular to sidewalk.
- Ramp edges are always parallel to each other and equal in length.
- Around a radius, the back of the level landing should be 4’ minimum, and the front of your level landing and ramp should equal the width of the sidewalk.

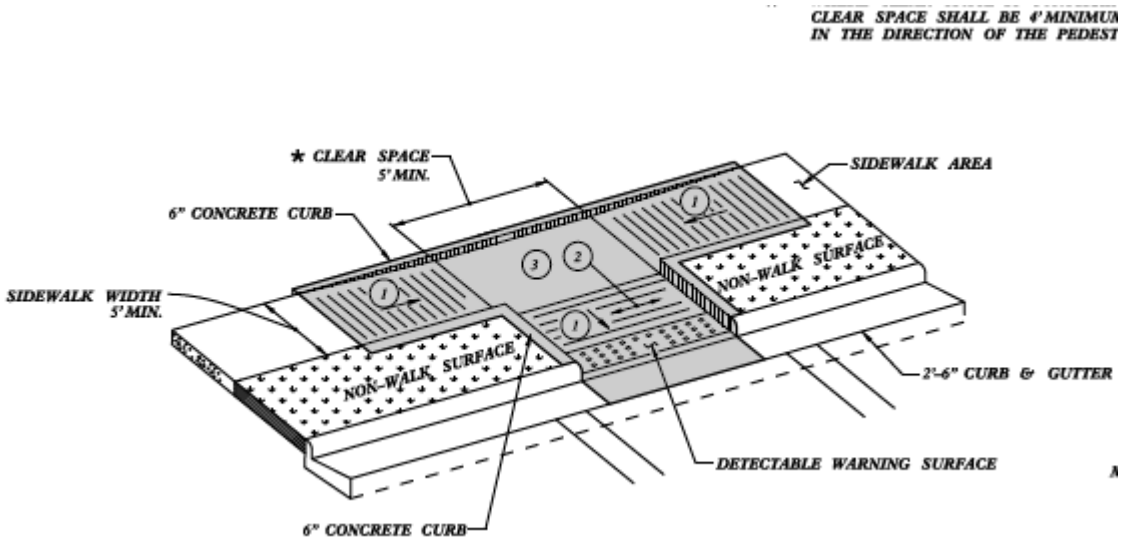


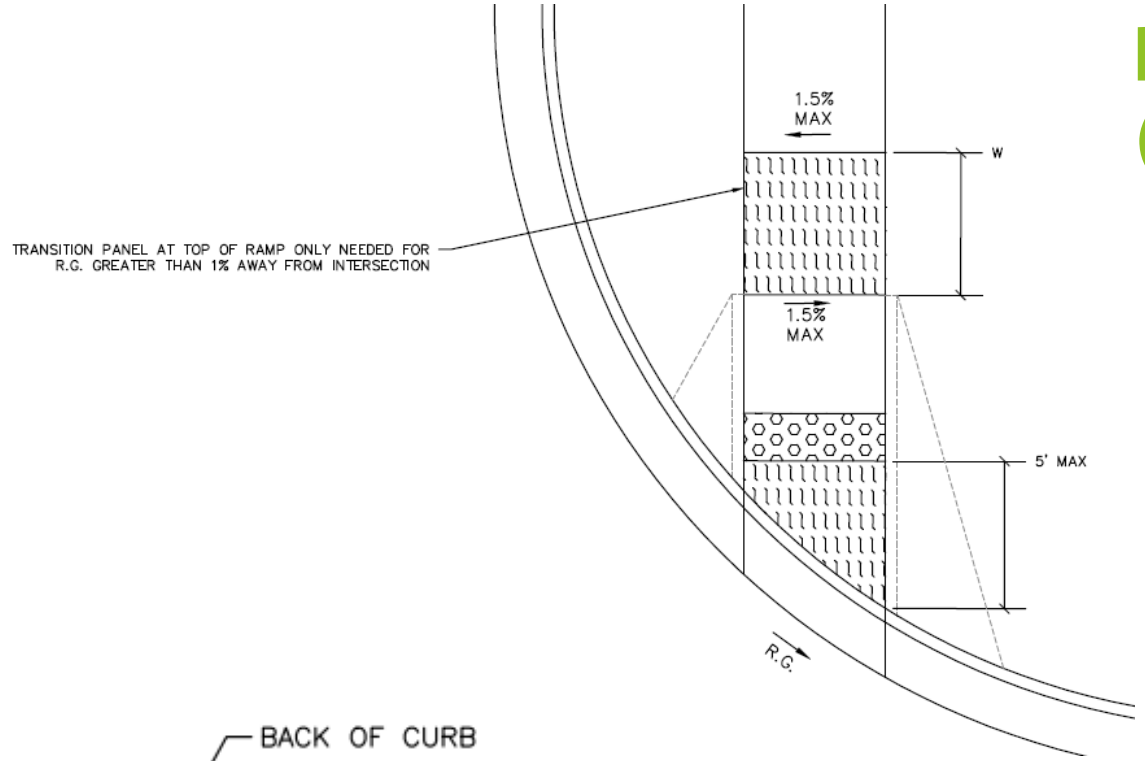


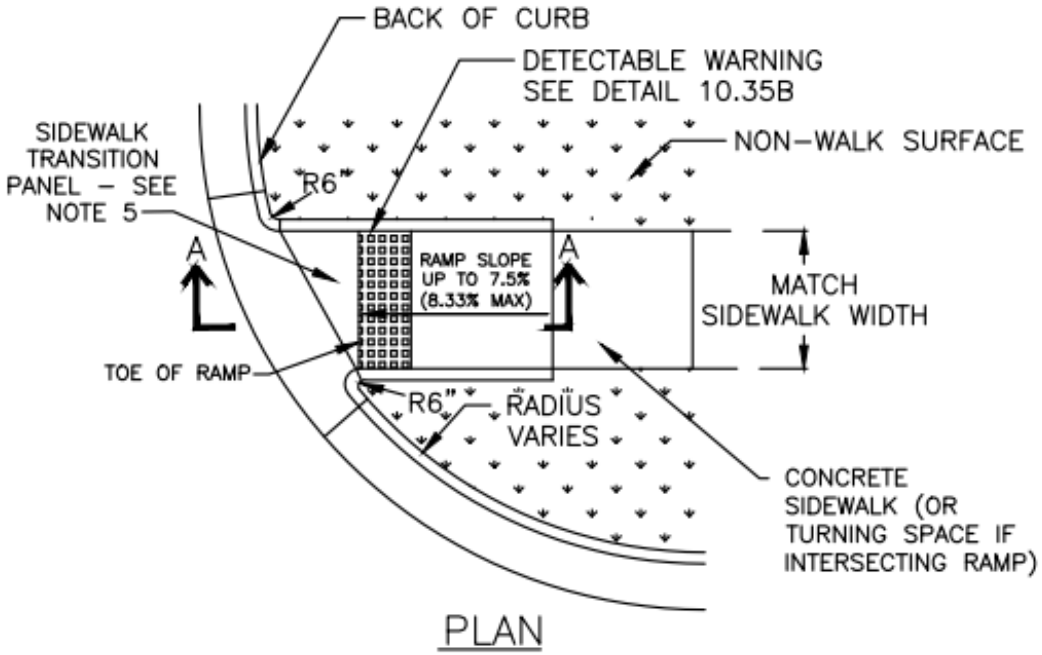
Type 3 Ramps (NCDOT std 848.06)

- Type 3 ramps are a combination type of ramp that includes perpendicular elements as well as parallel
- Use this ramp type when a perpendicular ramp layout is desired, but ramp slope exceeds 8.3%
- Joints IN THE SIDEWALK should always be perpendicular to sidewalk.
- Ramp edges are always parallel to each other and equal in length.
- Around a radius, the back of the level landing should be 4’ minimum, and the front of your level landing and ramp should equal the width of the sidewalk.







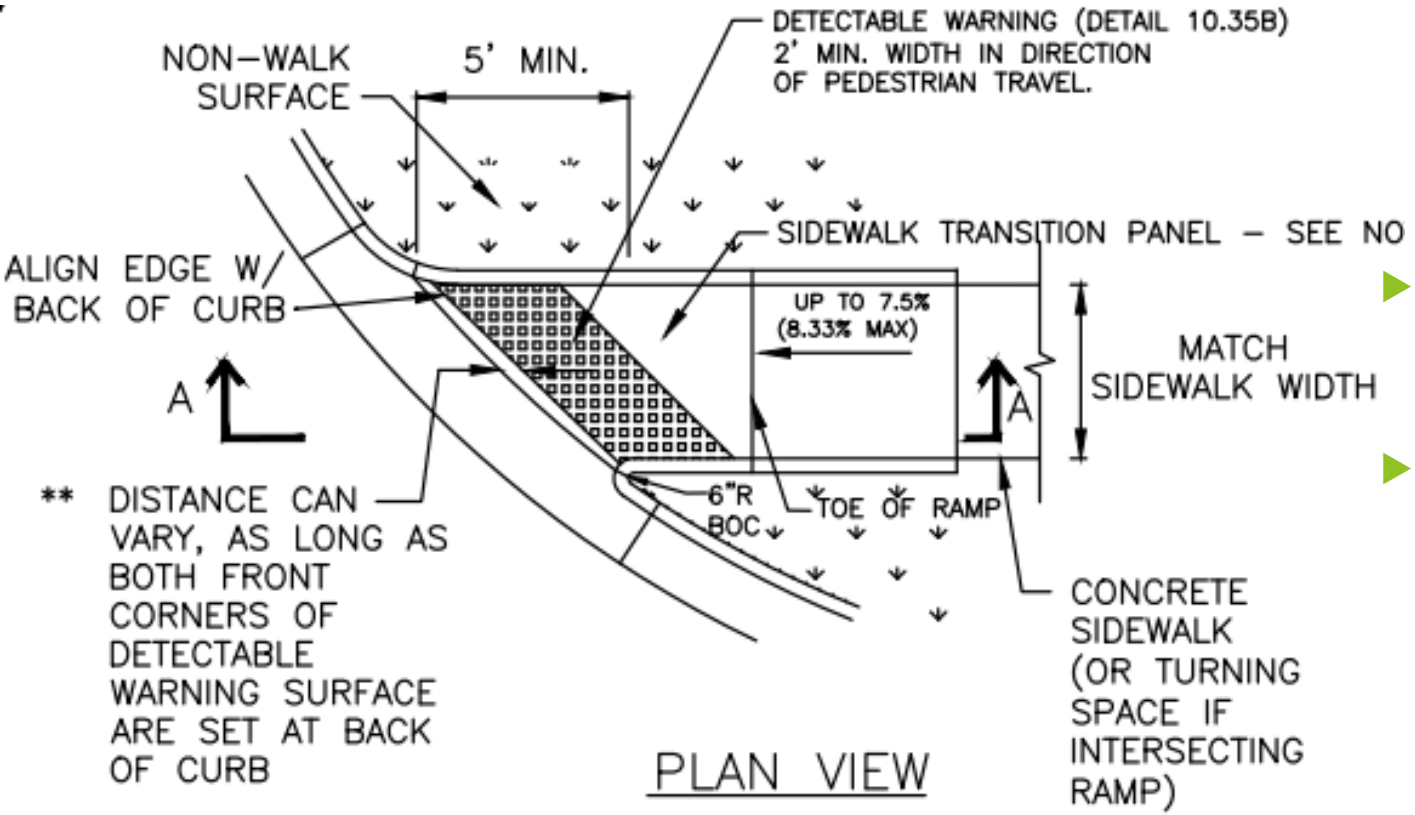


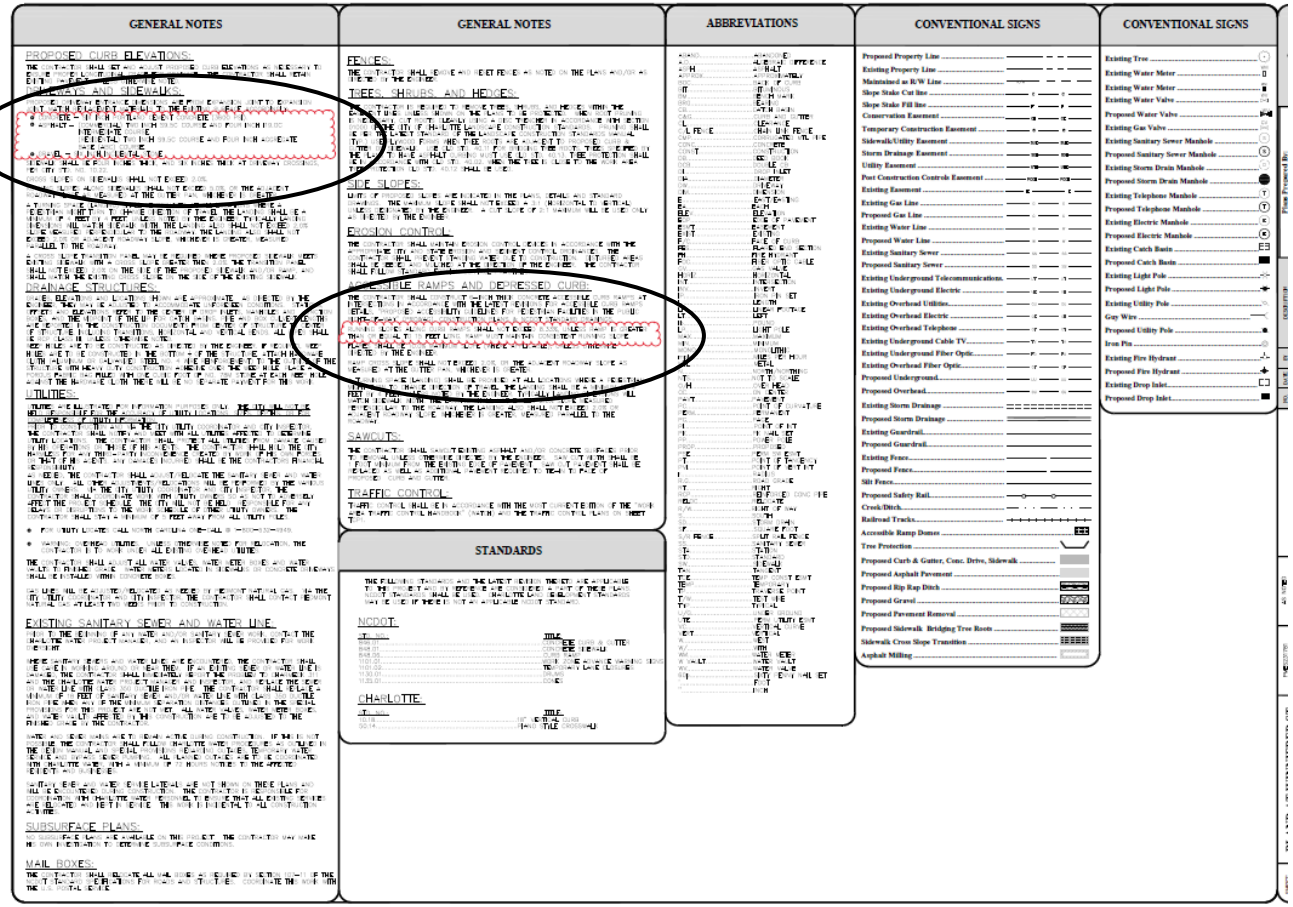
Directional Ramp (CLDSM 10.40A/10.40B)

- Directional ramps are a type of parallel ramp
- Ramp edges are usually unequal in length.
- Ramp cross slope should be the same direction as the intersecting roadway, unless the road grade is less than or equal to 1%.
- Domes shall not exceed 5 feet from back of curb
- It is recommended that the rate of transition to road grade be 0.5% per linear foot or less.
  - $L = \frac{R.G - 1.5\%}{0.5\%} \leq 5$
  - For road grades that exceed 4%, the transition rate cannot meet this recommendation and should be modified per the engineer's discretion.
- 10.40A: Domes perpendicular to ramp direction and ramp transition panel in front of dome

Large Radius Directional Ramps (CLDSM 10.40B)

- This detail moves the location of the domes adjacent to the roadway and shall be used in situations where domes would exceed 5 feet from the back of curb if placed perpendicularly
- Ramp transition panel is behind domes and therefore may exceed 5’
- Same transition slope information applies





General Notes Changes

Under “DRIVEWAYS AND SIDEWALKS”

PROPOSED DRIVEWAY ENTRANCE DIMENSIONS ARE FROM EXPANSION JOINT TO EXPANSION JOINT. MATCH REPLACEMENT MATERIALS TO THE EXISTING SURFACE ACCORDINGLY:

- CONCRETE – SIX INCH PORTLAND CEMENT CONCRETE (3600 PSI).
- ASPHALT – (COMMERCIAL) TWO INCH S9.5B COURSE AND FOUR INCH I19.0C INTERMEDIATE COURSE.
  (RESIDENTAL) TWO INCH S9.5B COURSE AND FOUR INCH AGGREGATE BASE (ABC) COURSE.
- GRAVEL – SIX INCH INCIDENTAL STONE

SIDEWALK SHALL BE FOUR INCHES THICK, AND SIX INCHES THICK AT DRIVEWAY CROSSINGS, PER CITY STD. NO. 10.22.

JOINT. MATCH REPLACEMENT MATERIALS TO THE EXISTING SURFACE ACCORDINGLY:

- CONCRETE – SIX INCH PORTLAND CEMENT CONCRETE (3600 PSI).
- ASPHALT – (COMMERCIAL) TWO INCH S9.5C COURSE AND FOUR INCH I19.0C INTERMEDIATE COURSE.
  (RESIDENTAL) TWO INCH S9.5C COURSE AND FOUR INCH AGGREGATE BASE (ABC) COURSE.
- GRAVEL – SIX INCH INCIDENTAL STONE

SIDEWALK SHALL BE FOUR INCHES THICK, AND SIX INCHES THICK AT DRIVEWAY CROSSINGS, PER CITY STD. NO. 10.22.

CROSS SLOPES ON SIDEWALKS SHALL NOT EXCEED 2.0%.

Under “ACCESSIBLE RAMPS AND DEPRESSED CURB”

RIGHT-OF-WAY" (PROWAG), CONSTRUCTION PLANS & NCDOT STANDARD DRAWINGS.

RUNNING SLOPES ALONG CURB RAMPS SHALL NOT EXCEED 8.3%, BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ALL PANELS OF THE RAMP MUST EQUAL THE SAME PERCENTAGE.

FLARES SHALL BE 10.0% MAXIMUM SLOPE (WHERE APPLICABLE), UNLESS OTHERWISE DIRECTED BY THE ENGINEER

RUNNING SLOPES ALONG CURB RAMPS SHALL NOT EXCEED 8.3 %, UNLESS RAMP IS GREATER THAN OR EQUAL TO 15 FEET LONG. RAMP MUST MAINTAIN CONSISTENT RUNNING SLOPE.

FLARES SHALL BE 10.0% MAXIMUM SLOPE (WHERE APPLICABLE), UNLESS OTHERWISE

Additional Minor changes per PROWAG final ruling

- Change 2.0% maximum ramp cross slope to 2.1%
- Change 8.33% maximum ramp running slope to 8.3%
- Change the phrase “turning space” to “landing”

ACCESSIBLE RAMPS AND DEPRESSED CURB:

THE CONTRACTOR SHALL CONSTRUCT 6-INCH THICK CONCRETE ACCESSIBLE CURB RAMPS AT INTERSECTIONS IN ACCORDANCE WITH THE LATEST REVISIONS FOR ACCESSIBLE CURB RAMPS DETAILS, "PROPOSED ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY" (PROWAG), CONSTRUCTION PLANS & NCDOT STANDARD DRAWINGS.

RUNNING SLOPES ALONG CURB RAMPS SHALL NOT EXCEED 8.3%, UNLESS RAMP IS GREATER THAN OR EQUAL TO 15 FEET LONG. RAMP MUST MAINTAIN CONSISTENT RUNNING SLOPE.

FLARES SHALL BE 10.0% MAXIMUM SLOPE (WHERE APPLICABLE), UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

RAMP CROSS SLOPE SHALL NOT EXCEED 2.1% OR THE ADJACENT ROADWAY SLOPE AS MEASURED AT THE GUTTER PAN, WHICHEVER IS GREATER.

A ~~TURNING SPACE~~ \LANDING\ SHALL BE PROVIDED AT ALL LOCATIONS WHERE A PEDESTRIAN MIGHT TURN TO CHANGE DIRECTION OF TRAVEL. THE LANDING SHALL BE A MINIMUM OF 4 FEET BY 4 FEET, UNLESS NOTED BY THE ENGINEER. TYPICALLY LANDING DIMENSIONS WILL MATCH SIDEWALK WIDTH. THE LANDING SHALL NOT EXCEED 2.1% SLOPE MEASURED PERPENDICULAR TO THE ROADWAY. THE LANDING ALSO SHALL NOT EXCEED 2.1% OR ADJACENT ROADWAY SLOPE, WHICHEVER IS GREATER, MEASURED PARALLEL TO THE ROADWAY.

DRIVEWAYS AND SIDEWALKS:

PROPOSED DRIVEWAY ENTRANCE DIMENSIONS ARE FROM EXPANSION JOINT TO EXPANSION JOINT. MATCH REPLACEMENT MATERIALS TO THE EXISTING SURFACE ACCORDINGLY:

- CONCRETE – SIX INCH PORTLAND CEMENT CONCRETE (3600 PSI).
- ASPHALT – (COMMERCIAL) TWO INCH S9.5C COURSE AND FOUR INCH I19.0C INTERMEDIATE COURSE.
  (RESIDENTAL) TWO INCH S9.5C COURSE AND FOUR INCH AGGREGATE BASE (ABC) COURSE.
- GRAVEL – SIX INCH INCIDENTAL STONE

SIDEWALK SHALL BE FOUR INCHES THICK, AND SIX INCHES THICK AT DRIVEWAY CROSSINGS, PER CITY STD. NO. 10.22.

CROSS SLOPES ON SIDEWALKS SHALL NOT EXCEED 2.1%

RUNNING SLOPES ALONG SIDEWALKS SHALL NOT EXCEED 5.0%, OR THE ADJACENT ROADWAY SLOPE AS MEASURED AT THE GUTTER PAN, WHICHEVER IS GREATER.

A ~~TURNING SPACE~~ \LANDING\ SHALL BE PROVIDED AT ALL LOCATIONS WHERE A PEDESTRIAN MIGHT TURN TO CHANGE DIRECTION OF TRAVEL. THE LANDING SHALL BE A MINIMUM OF 4 FEET BY 4 FEET, ~~UNLESS NOTED BY THE ENGINEER.~~ TYPICALLY LANDING DIMENSIONS WILL MATCH SIDEWALK WIDTH. THE LANDING ALSO SHALL NOT EXCEED 2.1% SLOPE MEASURED PERPENDICULAR TO THE ROADWAY. THE LANDING ALSO SHALL NOT EXCEED 2.1% OR ADJACENT ROADWAY SLOPE, WHICHEVER IS GREATER, MEASURED PARALLEL TO THE ROADWAY.

A CROSS SLOPE TRANSITION PANEL MAY BE REQUIRED WHERE PROPOSED SIDEWALK MEETS EXISTING SIDEWALK WITH A CROSS SLOPE GREATER THEN 2.1% THE TRANSITION PANEL SHALL NOT EXCEED 2.1% ON THE SIDE OF THE PROPOSED SIDEWALK AND/OR RAMP, AND SHALL MATCH THE EXISTING CROSS SLOPE ON THE SIDE OF THE EXISTING SIDEWALK.