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Americans with Disabilities Act (ADA) Curb Ramp Inspection



January 2020

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What we'll cover:

Curb Ramps

- ADA Background & Terminology
- Requirements of ADA/NYS DOT
- Field Inspection
- Common Issues
- Q & A



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1990 Americans with Disabilities Act (ADA)


- Wide-ranging civil rights law that prohibits discrimination based on disability (*not just permanent or physical disabilities*)
- Includes accessibility requirements for public facilities



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ADA Guidelines


- Actual criteria for ensuring "access to the built environment for people with disabilities"
- Developed by U.S. Access Board
- Enforced by U.S. Department of Justice
- USDOJ designates USDOT/FHWA to handle compliance for highways



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ADAAG and PROWAG

- 1991 Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- 2011 (Proposed) Public Rights-of-Way Accessibility Guidelines (PROWAG)




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ADAAG and PROWAG

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NYS DOT Standard for New Construction



Critical Elements for the Design, Layout and Construction of Pedestrian Facilities

Element	Reference (NYSDOT Manual of Design and Construction)	Design and Layout Limits	Limits for Work Acceptance
a. Curb Ramp / Blended Transition			
Sidewalk width for perpendicular type	R304.1	144" min.	144" min.
Sidewalk width for parallel type	R304.2	48" min.	48" min.
Sidewalk width for combination type	R304.3	72" min.	72" min.
Width	R304.1.1	48" min.	48" min.
Slope of flared side, within pedestrian circulation path	R304.2.1	9.3% max.	10% max.
Slope of flared side, outside pedestrian circulation path	R304.2.1	No max. slope, shall be graded.	No max. slope, shall be graded.
Grade (running slope) for ramp	R304.2.2	7.5% max.	5.0% min. - 8.5% max.
Length of ramp with a grade (running slope) exceeding 8.5%	R304.2.2.1	15' - 17' min.	15' min.
Cross slope at intersection with yield or stop control	R304.3.1	1.5% max.	2% max.
Cross slope at intersection without yield or stop control (including any signal but flashing red)	R304.3.1	Match highway grade	Match highway grade
Grade (running slope) for blended transition	R304.3.1	4.5% max.	5% max.

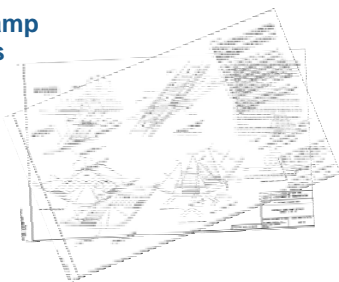
www.dot.ny.gov/divisions/engineering/design/dqab/hdm/chapter-18
or Google "NYSDOT HDM 18"

Examples of NYSDOT Design and Layout Values vs. ADA Acceptance Values

Element	Design and Layout	ADA Acceptance
Curb ramp running slope	7.5%	8.3%
Curb ramp cross slope	1.5%	2.0%
Sidewalk running slope	4.5%	5.0%
Sidewalk cross slope	1.5%	2.0%

608 "Pedestrian Facilities" Standard Sheets

- 14 standard ramp configurations
- Transitions
- Sections
- Detectable warning placement
- Ramp side options



Anatomy of a Curb Ramp - Terminology



Anatomy of a Curb Ramp - Terminology



Anatomy of a Curb Ramp - Terminology



Blended Transition



Sidewalks - Terminology

Pedestrian Access Route vs. Pedestrian Circulation Path



Sidewalks - Terminology

Pedestrian Access Route vs. **Pedestrian Circulation Path**



Field Inspection

- 4 foot digital level
- 25 foot tape measure
- Digital camera (GPS enabled is useful to capture coordinates)
- Critical Elements Sheet
- Plan/aerial location map



Field Inspection

- Standard methods of measurement on back of "Critical Elements" sheet



8. Inspection Methods and Acceptance Criteria

- A. Grades (Sloping Surfaces)**
Average of at least 2 digital level measurements using a 4 foot straight edge, along the centerline (direction of travel) and offset 1.2' to 1.8' to either side of the centerline of the ramp, roadway, curb ramp, etc. Acceptance based on grades less than or equal to the ADA limit.
- B. Cross Slope**
Average of at least 2 digital level measurements using a 4 foot straight edge, perpendicular to the centerline (direction of travel) of the sidewalk, taken (when length allowed) at 5' to 10' intervals. For ramps, use an average of at least 2 digital level measurements taken within a foot of curb perpendicular to ramp grade. Acceptance based on slopes less than or equal to the ADA limit.
- C. Area Slopes**
Take Grade and Cross Slope measurements (as stated above). Acceptance based on slopes less than or equal to the ADA limit.
- D. Widths and Offsets**
Average of at least 2 measuring tape measurements taken perpendicular to the centerline (direction of travel) of the sidewalk at either the restriction point or (when length allowed) 10' intervals. Acceptance based on widths greater to or equal to the ADA limit.
- E. Lengths**
Average of at least 2 measuring tape, wheel, or reel measurements taken within a foot of the centerline (direction of travel) or railing, ramp, sidewalk, etc., with the measurement along the grade of the railing, sidewalk, ramp, curb ramp, etc. (i.e., not a horizontal measurement for sloped surfaces). Acceptance based on lengths greater to or equal to the ADA limit and passing over separation less than or equal to the ADA limit.
- F. Rise or Vertical Distance**
Average of at least 2 measurements vertically. For landings or step runs, take at least a foot apart. For landings, average of at least 2 measurements using a survey tool and level of the nose/edge of the landing and base of ramp or stairs.
- G. Obstacles, Protrusions, and all others**
As directed by this specification.


Critical Measurements

- Ramp width
- Flare slopes
- Running slope
- Counter slope
- Joint widths/cracks
- Vertical changes
- Detectable warning placement
- Turning space dimensions and slopes



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Curb Ramp Flares



10% max. for acceptance
9.5% max. for layout

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Curb Ramp Flares

No maximum slope outside of Pedestrian Circulation Path



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RAMP FLARE

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RUNNING SLOPE

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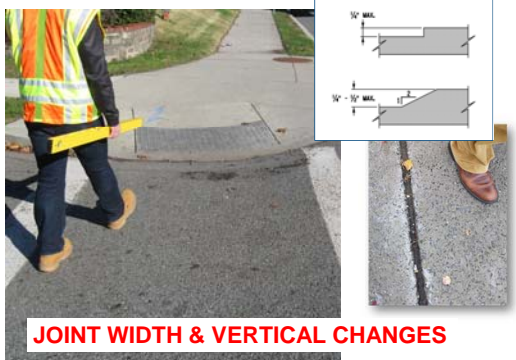
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RUNNING SLOPE TOO STEEP

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JOINT WIDTH & VERTICAL CHANGES

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Counter Slope

street gutter curb ramp

CURB RAMP GRADE (G1) ROADWAY CROSS SLOPE (G2)

CLEAR SPACE 4'-0"

COUNTER SLOPE CONDITION 1
 $A \times (G2 - G1)$
ALGEBRAIC DIFFERENCE BETWEEN ROADWAY CROSS SLOPE AND CURB RAMP GRADE IS LESS THAN 1.5%

CURB RAMP GRADE (G1) ROADWAY CROSS SLOPE (G2)

24" MIN. TRANSITION STRIP WALK GRADE ALSO

CLEAR SPACE 4'-0"

COUNTER SLOPE CONDITION 2
 $A \times (G2 - G1)$
ALGEBRAIC DIFFERENCE BETWEEN ROADWAY CROSS SLOPE AND CURB RAMP GRADE IS GREATER THAN 1.5%
TRANSITION STRIP REQUIRED WALK GRADE ALSO

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Detectable Warnings

- Replace the curb as a cue for visually impaired pedestrians
- DWs do not indicate correct direction of travel
- DWs are not a universal "danger" warning

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Detectable Warnings

Must cover entire width of curb ramp or Pedestrian Access Route for 24 in. in direction of pedestrian travel

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Detectable Warnings

Placement depends on the location of the lower grade break relative to the curb

Grade break is > 5 ft. from back of curb
DW is placed at back of curb

Grade break is < 5 ft. from back of curb
DW is placed on ramp above lower grade break

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Detectable Warnings

- DW placed at back of curb must be within 2 in. of back of curb
- DW placed on ramp must be within 2 in. of lower grade break

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Detectable Warnings

For running slopes over 5%, dome rows are oriented perpendicular to bottom grade break

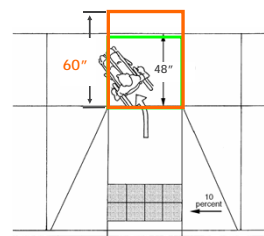
Detectable Warnings and Driveways

- DWs not needed for most driveways
- DWs are used at signal, stop- or yield-controlled commercial driveways



Turning Space

- Required where a turning maneuver is needed to orient to ramp run
- 60" min. in direction of pedestrian crossing when constrained
- Turning spaces can overlap or serve multiple ramps



Turning Space



PERPENDICULAR CURB RAMP with CONSTRAINT at BACK

Turning Space



PERPENDICULAR CURB RAMP without CONSTRAINT at BACK

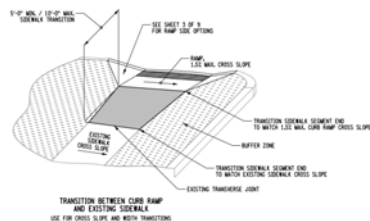
Turning Space

The slope in either direction can't exceed 1.5% for layout, or 2% for acceptance



Curb Ramps – Tying In

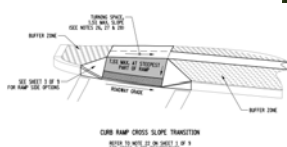
- Transitions to existing sidewalks and highway grade
- 5'-10' transition piece from old noncompliant sidewalk to new, compliant curb ramp



Curb Ramps – Tying In

Cross slope transitions

Highway grade exceeds 2% and isn't being adjusted



Curb Ramps – Other Considerations

- Curb ramps should generally be planar
- Grade breaks should be perpendicular to direction of travel
- Edges and joints should not be rounded
- Concrete should not be deeply scored. (Broom finish is fine.)

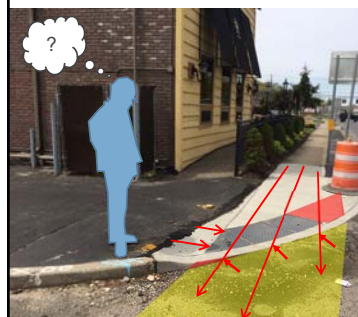


Curb Ramps – Other Considerations

- Drainage!
- Ponded water, ice, or washed-in debris can make an otherwise compliant ramp inaccessible



Example - Type 1 Ramp



- ✓ Running slope $\leq 8.3\%$
- ✓ Cross slope $\leq 2.0\%$
- ✓ Counter slope $\leq 13.3\%$
- ✓ Right flare (in a pedestrian circulation path) $\leq 10\%$
- ✓ Ramp width ≥ 48 in.
- ✓ No turning space needed
- ✓ Clear space outside of parallel vehicle travel lane
- ✗ Grade flush throughout, or $< \frac{1}{4}$ inch or $\frac{1}{2}$ inch with a 1:2 beveled edge
- ✗ Detectable warning covers full width of ramp for 24 in. in direction of ped. travel

Example - Type 7 Ramp



- ✓ Running slope $\leq 8.3\%$
- ✓ Cross slope $\leq 2.0\%$
- ✓ Counter slope $\leq 13.3\%$
- ✓ Both flares (in a pedestrian circulation path) $\leq 10\%$
- ✓ Ramp width ≥ 48 in.
- ✓ Clear space outside of parallel vehicle travel lane
- ✗ Grade flush throughout, or $< \frac{1}{4}$ inch or $\frac{1}{2}$ inch with a 1:2 beveled edge
- ✗ 60 in. x 48 in. turning space (constrained at back)
- ✗ Detectable warning covers full width of ramp for 24 in. in direction of ped. travel – within 2 in. of back of curb

Documentation



CONSISTENT PHOTO VIEWS

When one or more elements don't meet requirements:

- **Notify EIC**
- **Facility may need to be adjusted, redesigned, or formally justified as a nonstandard feature**
- **Nonstandard justifications include:**
 - Underlying Terrain
 - ROW Availability
 - Underground Structures
 - Adjacent Developed Facilities
 - Drainage
 - Presence of a Notable Natural Feature
 - Presence of a Notable Historic Feature
 - Other



NYSDOT References

- **ED- 15-004** - Design, Construction and Inspection of Pedestrian Facilities in the Public Right of Way
- **608 Standard sheets and Regional CRDs**
- **HDM Chapter 2**
 - ❑ NSFJ Forms
- **HDM Chapter 7**
 - ❑ ADA Reporting Table w/ Additional info added by R10
- **HDM Chapter 18**
 - ❑ Critical Elements Table
 - ❑ ED 15-004 FAQs



Questions?



Other Examples



Curb Ramp - Direction



The Good

New landing, acceptable slope, better direction.

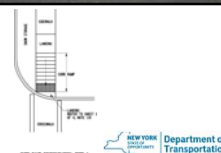


Curb Ramp Direction



The Bad

Intended design ignored, existing non-standard features maintained.



Ramp Slopes/ Cross Slopes

The Good

New landing, acceptable slope, bigger flare.

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Ramp Slopes/ Cross Slopes

The Bad

Re built but the turning space (formerly landing) is too steep, should be 2% maximum

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Ramp Slopes/ Cross Slopes

The Good

Acceptable slope and clear/turning space. Note, avoid exposed pole foundations.

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Ramp Slopes/ Cross Slopes

The Bad

Clear/turning space still too steep, they could have graded back slope.

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Curb Ramp Detectable Warnings

The Bad

The detectable warning is back too far (>5 feet) from the grade break to the back of curb.

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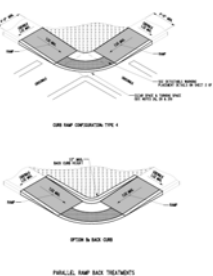
Curb Ramp Detectable Warnings

Small Radius Corner

Large Radius Corner

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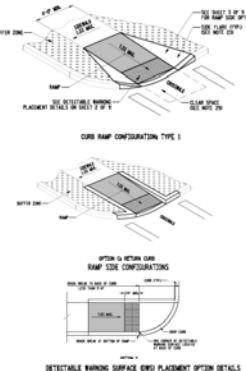
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Good example of the use of radial detectable warnings

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Drainage - Ponding at base of ramp



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Field Inspection

CURB RAMP INSPECTION FORM

SECTION	ITEM	YES/NO	REMARKS
1. GENERAL INFORMATION	1.1 Location of ramp		
	1.2 Date of inspection		
	1.3 Inspector		
	1.4 Project Name		
2. RAMP SURFACE	2.1 Surface material		
	2.2 Surface texture		
	2.3 Surface color		
	2.4 Surface condition		
3. CURB RAMP	3.1 Curb height		
	3.2 Curb width		
	3.3 Curb slope		
	3.4 Curb condition		
4. DETECTABLE WARNING	4.1 Material		
	4.2 Shape		
	4.3 Color		
	4.4 Condition		
5. DRAINAGE	5.1 Slope		
	5.2 Inlet		
	5.3 Outlet		
	5.4 Condition		

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ADA Reporting Table

ADA Reporting Table for Curb Ramps

Location	Intersection	Project Name	Coordinates (GPS)	Type	Left Side	Right Side	Back	ASAP	Notes
Blank Curb Ramps									
Regulated Curb Ramps									
Blank Curb Ramps									

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May 28, 2014