1. Introduction

The City of Portland welcomes the opportunity to create a most accessible City. To accomplish this, the significance of providing curb cuts in the form of ADA compliant curb ramps cannot be over emphasized. The purpose of this ADA Curb Ramp Inspection Manual is to provide the user with step by step instructions to complete the Inspection Form. This will help ensure that newly constructed curb ramps within the public right-of-way meet the City of Portland’s requirements as further supported by the Americans with Disabilities Act (ADA). This document is intended to describe the City’s processes and best practices for collecting the data needed to confirm ADA compliant curb ramps within City right-of-way are constructed throughout the City.

 Updates and advancements of this document are anticipated. Please forward suggestions for modifications to adacreecprogram@portlandoregon.gov.

2. Applicability

This Inspection Manual applies to curb ramps constructed within the City of Portland right-of-way. For curb ramps criteria for ramps located within City of Portland right-of-way including those on or along ODOT roadways, See Design and Review of Curb Ramps On or Along State Highways Letter of Intent at

https://www.portlandoregon.gov/transportation/article/710584

and City Engineer Directive ST 002

https://www.portlandoregon.gov/transportation/article/642948

In summary, for ramps on or along an ODOT roadway, ODOT inspection criteria apply (including ODOT inspection forms and design exceptions). For ramps on or along an ODOT roadway AND within the City’s jurisdiction, the additional criteria of ramp perpendicularity and a maximum 11% grade break at the bottom of the ramp to the street cross slope apply.

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3. Definitions

- **Level, or flat**: slopes that are equal to or less than 2%.
- **Flush**: No vertical discontinuities. No lips greater than ¼”.
- **Landing**: Part of the Accessible Route (AR) used by a pedestrian to change direction of travel.
  - The entirety of the landing must be level. The landing must be minimum of 4’ x 4’.
    A landing is required at the top of ramp on all ramps. The landing must be in-line with the ramp.
  - For diagonal ramps a landing is required at the bottom connection to pavement.

- **Through Pedestrian Zone (TPZ)**: Typically, the minimum corridor width of 6’ is required, with 4-foot minimum width allowable at pinch points, hard and smooth surfacing path that has a level cross slope and is free from all vertical obstructions, including but not limited to curbs, hydrants, trees, poles, benches, and tables. The Through Pedestrian Zone is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. See Portland Pedestrian Design Guide at https://www.portlandoregon.gov/transportation/article/84048

4. Ramp Geometry Types

For City of Portland Standard Ramp Drawings See Standard Drawing P-547
https://www.portlandoregon.gov/transportation/article/634489

and Standard Drawing P-548
https://www.portlandoregon.gov/transportation/article/634488

- **Perpendicular Ramp**: The ramp is perpendicular to the curb, and users will generally be traveling perpendicular to vehicular traffic when they enter the street at the bottom of the ramp. Perpendicular ramps may be at corners or mid-block locations.
- **Diagonal Ramp**: A straight path of travel down the ramp will lead diagonally into the center of the intersection. The ramp is diagonal to the user's path of travel and users will be traveling diagonal to the vehicular traffic when they enter the street at the bottom of the ramp. The ramp may be intended for multiple target directions of travel.

![Diagonal Ramp Diagram]

- **Parallel Ramp (Drop Ramp)**: A parallel curb ramp has two ramps leading down towards a center level landing at the bottom between both ramps with a level landing at the top of each ramp. A parallel curb ramp is one that is oriented in line with the user's path of travel on the sidewalk. This is sometimes referred to as a “drop” ramp.

![Parallel Ramp Diagram]

- **Combination Ramp (Split Ramp)**: This is a special geometry intermediate between a perpendicular ramp and a parallel ramp. A combined curb ramp uses the concept of the parallel ramp to lower the elevation level of the landing and then uses a perpendicular ramp to bridge the remaining elevation gap between the landing and the street.

![Combination Ramp Diagram]
5. How to Inspect a Ramp

a. Preparation

**Workmanship:** Before measuring the ramp, check that:

- All curb ramp surfaces are smooth and even, and that there are no humps, bump, lumps or sags as required in Section 0759.50 of the City of Portland Standard Specifications.
- There are no lips or ridges at any point on the surface, score lines, or edge of panels, including at the interface between the bottom of the ramp and street paving.
- The tactile panel shall be firmly attached per manufacturer’s recommendation.
- All accessible route grade breaks are perpendicular to the direction of travel.

**Measurement:**

- Be Safe. If any condition compromises safety for you or the public then hold off inspection until the unsafe condition can be eliminated.
- Verify the work is sufficiently complete to establish pass / fail measurements.
- Clean the area to be measured with a broom.
- Use this form to identify where each measurement is to be taken.
  - Lengths and widths are measured to the nearest 0.1 foot.
  - Slopes are measured to the nearest 0.1%.
- Use only a 4-foot level for all measurements unless you note otherwise.

**Tools to Use for Inspection:**

- Tape measure(s) that can measure in tenths of a foot and inches
- 4-foot, 2-foot and 6” electronic spirit levels that have a digital display that can be set to display tenths of a percent. Calibrate level at least once a day, and if ambient temperatures change by 20 degrees or more. Follow manufacturer’s recommendations for calibration method. The City uses both Stabila and Smarttool levels. The 4-foot level is the default measurement tool.
- The 2-foot level is used for restricted access measurements where a 4’ level wouldn’t provide an accurate reading. A 2’ level can also be used where street grades change rapidly away from the counter slope connection.
- The 6” level is used for when the top of curb cross slope does not match the ramp slope or in a 24” gutter pan with steeper grades on either side. Provide sketch where 2-foot or 6” levels are used.
- Camera (See “Photos” below for requirements)
- Broom
- Personal Protective Equipment as Required
b. Inspection Form - Step by Step Instructions

See Inspection Form below for references

1. Project #_______Federal Aid #_______(Wherever Available)

2. Street 1: (Generally “Street” running east-west)
   Street 2: (Generally “Avenue” running north-south)

3. Ramp Location: Select the designation of the ramp being inspected. Select one location per ramp. For non-standard intersections draw a field sketch.
   - NW1, NE1, SE1, SW1 have crosswalks perpendicular to Street 1.
   - NW2, NE2, SE2, SW2 have crosswalks perpendicular to Street 2.
   - NWC, NEC, SEC, SWC are diagonal ramps situated in the middle of the curb radius which may have one or two attached crosswalks.

Note: If the length of feature items 4 to 8 is longer than 4’, then measure in enough locations to capture entire dimension and record the largest slope value.

4. Measurements “A, B, C, D” are taken with “B” on the landing at the top of ramp. Note for top landings with a curb along “D” there is an additional 1’ clear required to the face of curb. (Parallel and Combination ramp configurations)

5. Measurements “E” and “I” represent the distance to the first grade transition from the landing to the running sidewalk profile. They should not include multiple grade breaks.

6. Measurements “F” and “H” are taken from the back of the circulation path to the front edge of the Through Pedestrian Zone. Measurements for “F” and “H” are taken in the accessible route.

Note: where an adjacent ramp covers the area normally measured for “E”, “F”, “H”, or “I” then for the length write the word Ramp and use a dash for the slope measurement.

7. Ramp Run “J” and “K”:
   - Running slope: take measurements at “J” and “K”. There should be no change of slope in the ramp throat. Measurement is taken from face of curb to line “B”. Ramps where the landing is higher than the gutter have positive “J” and “K” values.
   - Some tactile panels will not allow the level to fit between the buttons. It is acceptable to offset the level to the edge of the tactile as needed.
   - “J” and “K” may be taken at the back of curb if the top of curb slope does not match the ramp. If this is the case, then use 6” level to measure and record the top of curb cross slope at “J” and “K” in the comments section.
8. Tactile Panel
   - Confirm the color of panel is Federal Yellow.

9. Measurement “G” should be taken on the street side surface of the face of gutter. This distance should be a single plane.
   - Where standard curb is used “G” shall have a flush transition from ramp concrete to roadway surfacing. The full width of “G” shall be flush. (See PBOT Standard Detail P-540)
   - Where curb and gutter is used “G” shall have a flush transition from ramp concrete to gutter pan and a flush transition at the transition from gutter to roadway surfacing. (See P-540)

10. Counter Slopes
    - Counter slopes (CS) shall be taken in the paved street at the midline of the ramp. Where curb and gutter construction is used the CS shall be taken at the gutter. Street slopes toward the gutter are recorded as positive. Street slopes away from gutter are recorded as negative. The algebraic difference (AD) is taken by adding the greater of “J” and “K” to the CS.
    - Counter slope bottom landing for diagonal ramps shall be measured in the street in the area immediately in front of the ramp in a pattern documenting a 4’ x 4’ rectangular landing. In addition to the normal counter slope measurement fill in LA, LB, and LC.

11. Flare Slopes FS1 and FS2:
    - Measure Flare Slopes compared to the bottom of “J” or “K”. Positive slopes have the top of wing where the wing meets the back of curb higher than the ramp throat. If the top of wing is lower than the ramp throat, then record the result as a negative slope.

12. Street Grades G1 and G2:
    - Measure G1 and G2 relative to the bottom of “J” or “K”. Positive slopes have the outside edge higher than the ramp throat. If the outside edge is lower than the ramp throat, then record the result as a negative slope.
⑬ Relative Flare Slope Computation:
   - If FS1 and G1 have the same sign (positive or negative) then subtract G1 from FS1. If they have opposite signs, add the two slope values. The same computation is used for FS2 and G2. Draw in catch basins where appropriate.

⑭ Diagonal Ramp Bottom Landing: Is the 4’ x 4’ landing at gutter completely within any striped crosswalk? Show in photos and confirm in notes.

⑮ Pushbutton Location
   - Check that the face of the pushbutton is generally parallel to the crosswalk that the pushbutton is intended for.
   - The center of the pushbutton should be located between 42 and 48 inches above the sidewalk surface
   - To measure the distance from the edge of the top landing to the pushbutton, use the 4-foot electronic spirit level and a tape measure to define the distance to the edge of the landing.
   - Maximum Reach distance –10” from edge of the level landing.

⑯ Historical Features: Are there any Historical Features within the limits measured on this form? If so, then document in notes and with photos.

⑰ Signature lines:
   - Inspector Sign and Date
   - Construction Manager

Photos
   - Using an approved camera or phone take at least two photos: one standing at the back of ramp facing the street, and one from the street facing the ramp. Take additional photos of any features that would cause the ramp to not be ADA compliant. Get pictures of any obstructions within the ADA ramp measurement area. Ensure that the camera or software records date, time, and location coordinates in the photo’s metadata. Add notes as needed on Page 2 of the form. The Inspection Form
The Inspection Form

### PBOT

**PORTLAND BUREAU OF TRANSPORTATION**

**FORM DATE:**

7/23/2019

Project #: 1

Federal Aid #: ____________________________

Inspected by: ____________________________

Comments on Back of Page? □

Date: ____________________________

Street 1: ____________________________

Street 2: ____________________________ (Include Station as needed for location)

Comments: ____________________________

Photo Time ____________________________

### Draw in storm inlet(s) in front of ramp

### Counter Slope (AC) or Gutter Counter Slope

### PERPENDICULAR RAMP MEASUREMENT

<table>
<thead>
<tr>
<th>Measure Dimensions</th>
<th>Meets Std. Drg. P-547 or P-548 Requirements?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>% Y N</td>
</tr>
<tr>
<td>B</td>
<td>% Y N</td>
</tr>
<tr>
<td>C</td>
<td>% Y N</td>
</tr>
<tr>
<td>D</td>
<td>% Y N</td>
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<tr>
<td>E</td>
<td>% Y N</td>
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<td>F</td>
<td>% Y N</td>
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<tr>
<td>G</td>
<td>% Y N</td>
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<tr>
<td>H</td>
<td>% Y N</td>
</tr>
<tr>
<td>I</td>
<td>% Y N</td>
</tr>
<tr>
<td>J</td>
<td>% Y N</td>
</tr>
<tr>
<td>K</td>
<td>% Y N</td>
</tr>
</tbody>
</table>

### Diagonal Ramps Only

| LA                 | % Y N                                       |
| LB                 | % Y N                                       |
| LC                 | % Y N                                       |

### Measure Slopes

<table>
<thead>
<tr>
<th>10</th>
<th>Counter Slope: % Y N</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Greater of J &amp; K: % Y N</td>
</tr>
<tr>
<td>12</td>
<td>Relative Flare Slope ≤ 10%? % Y N</td>
</tr>
<tr>
<td>13</td>
<td>Flare Slope 1: % Y N</td>
</tr>
<tr>
<td>14</td>
<td>G1 (Street Slope): % Y N</td>
</tr>
<tr>
<td>15</td>
<td>Flare Slope 2: % Y N</td>
</tr>
<tr>
<td>16</td>
<td>G2 (Street Slope): % Y N</td>
</tr>
</tbody>
</table>

Has the Ramp Been Altered From Design? Y N

Only Tactile Panel Installed? Y N

Tactile Panel Manufacturer: ____________________________

### Is the Ped. / Signal Pole Located Per Plans? Y N N/A (N - Attach photo)

Is the Ped Push Button positioned with face of push button parallel to the crosswalk to be used, with a mounting height of approximately 3.5", but no more than 4", above the sidewalk, at a maximum reach distance of 10" from edge of landing? Y N N/A (Explain)

### Is the Ramp Lip Flush? Y N

Any Historical Features? Y N If "Yes" Attach Picture

<table>
<thead>
<tr>
<th>Approved by Construction Manager</th>
<th>(Print Name)</th>
<th>(Signature) / Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>____________________________</td>
<td>(Print Name)</td>
</tr>
</tbody>
</table>

### RULES FOR MEASURING

1. Default use 4'-0" smart level, note if others used.
2. Calibrate smart level every day before field work.
3. Provide completed report to Construction Manager or Inspection Supervisor for review and signature.

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Ramp Geometry Type Measurements

**PERPENDICULAR RAMP MEASUREMENTS**

- Draw in storm inlet(s) in front of ramp
- Counter Slope

**COMBINATION RAMP MEASUREMENTS**

- Draw in storm inlet(s) in front of ramp
- Counter Slope or Gutter Counter Slope

**PARALLEL RAMP MEASUREMENTS**

- Draw in storm inlet(s) in front of ramp

**SIDEWALK END RAMP MEASUREMENTS**
Sample Inspection Form